COCA-COLA'S WORLD WITH WASTE

The Soft Drink Company's Enormous and Worsening Plastic Problem and How Reusable Packaging Can Solve It

OCEANA Protecting the World's Oceans

COCA-COLA'S WORLD WITH WASTE

The Soft Drink Company's Enormous and Worsening Plastic Problem and How Reusable Packaging Can Solve It

March 2025

Cover: © Oceana/Mae Chatto

Contents

Executive Summary

The Coca-Cola Company has a plastic problem. Its use of single-use plastic packaging is creating brand, regulatory, environmental, and other risks (as the company has disclosed in its filings to the United States Securities and Exchange Commission (SEC)).[1] Despite the acknowledged risks, the company is using more rather than less plastic. Coca-Cola's annual plastic packaging use has increased from 2.96 million metric tons (6.53 billion pounds) in 2018 to nearly 3.45 million metric tons (7.61 billion pounds) in 2023.[2] The total number of Coca-Cola products sold annually in single-use plastic bottles has risen from 117 billion to a whopping 137 billion during the same period.[3] Coca-Cola's current annual plastic packaging footprint in the form of 500 milliliter bottles stacked on top of each other would circle around the earth more than 100 times.[4]

In this report, Oceana forecasts that if nothing changes, the company's annual plastic use will be over 4.13 million metric tons (9.12 billion pounds) by 2030 (a 1.17 million metric ton (2.58 billion pound) increase over the company's reported plastic use in 2018). Oceana also estimates, based on peer-reviewed scientific data, that by 2030 up to 602,000 metric tons (1.33 billion pounds) of the plastic packaging sold by Coca-Cola annually will become pollution in our waterways and oceans. This amount of plastic could fill the stomachs of over 18 million blue whales.[5] Between 2024 and 2030, Oceana estimates that a cumulative total of up to 3.61 million metric tons (nearly 8 billion pounds) of Coca-Cola's plastic packaging will enter aquatic systems — the equivalent of over 190 billion 500 milliliter plastic bottles.[6]

The company has a solution to its plastic problem — reusable packaging. Coca-Cola, unbeknownst to many, is a world leader in the sale of reusables. The company sells billions of reusable bottles every year. In 2023, 10.2% of the company's "packaging mix" were in reusable bottles (primarily refillable/returnable glass bottles).[7] The company sells its soda, water, and other products in reusable packaging in many countries including Brazil, Chile, Eritrea, Germany, Mexico, Nigeria, the Philippines, and even in the United States in South Texas.[8] In 2022, refillable glass and plastic bottles represented more than half of Coca-Cola's beverage sales in more than 20 markets, and more than 25% of sales in another 20 markets.[9] Coca-Cola stated in its 2024 Fourth Quarter earnings release that "Returnable glass bottles offer a unique competitive advantage."[10]

Importantly, refillable bottles can be used up to 25 times if made of plastic and up to 50 times if made of glass.[11] This means that a refillable bottle avoids the production and use of up to 49 additional single-use bottles. Each of those avoided throwaway bottles would have entered waste streams or been littered, with either pathway possibly leading to the oceans. In 2022, Coca-Cola reported a global collection rate of only 58% for their single-use polyethylene terephthalate (PET) plastic bottles.[12] In the U.S., the collection rate was much lower, at 28%.[13] In contrast, for that same year Coca-Cola reported that 93% of its refillable bottles were collected to be reused globally.[14]

Disappointingly, in December 2024, Coca-Cola discarded its goal to reach 25% reusable packaging by 2030.[15] Oceana modeled what could happen if the company met this goal, instead of abandoning it. It turns out that increasing reusables would allow the company to continue to grow its sales and revenues without growing its plastic footprint. Oceana found that if Coca-Cola were to reach 25% reusable packaging by 2030, the company could reduce both the weight of plastic packaging that it uses annually and the amount of this plastic that pollutes aquatic systems by 15% compared to a "business-as-usual" scenario. If Coca-Cola were to reach 26.4% reusable packaging, the

company could "bend its plastic curve" — reducing its annual plastic use below current levels by 2030.

Instead of prioritizing reuse, the company announced that it would double down on single-use plastic. The company's new goals for packaging are to aim to increase "recycled plastic use to 30% to 35% globally" and "help ensure the collection of 70% to 75% of the equivalent number of bottles and cans introduced into the market annually," both by 2035.[16] These two goals replace and weaken previous goals to use at least 50% recycled content across all packaging materials by 2030 and to collect and recycle a bottle or can for each one the company sells by 2030.[17] Even if realized, these new lackluster goals will do little to address the company's plastic problem.

Collecting plastic for recycling and selling single-use packaging with recycled plastic content will not reduce the company's overall plastic footprint. Adding recycled plastic to a bottle does not make it more likely to be collected or reused. And these recycled single-use plastic bottles can — just like bottles made of virgin plastic — become marine pollution. The Coca-Cola company uses estimates of national collection rates to forecast how many of its bottles might be collected because the company — for the most part — does not collect the single-use plastic bottles it and its bottlers produce.[18] This is because Coca-Cola is a beverage company, not a waste management company, and has a limited ability to impact how much plastic is collected.

© Shutterstock/Rokas Tenys

The Coca-Cola Company disclosed to the Ellen MacArthur Foundation that, in 2022, "the total rPET premium cost was $959 million" (rPET refers to recycled PET).[19] It appears, based on this note, that the company — and its bottling partners — spend nearly a billion dollars each year (in addition to normal operating costs) on purchasing rPET to make single-use plastic bottles and other packaging. Had Coca-Cola put that $959 million into reuse in the form of additional capital expenditures, Oceana estimates the company could have supported the sale of reusable packaging equivalent to roughly 10% the volume of its global sales in 2023, on top of existing refillable sales.[20] The company has the financial capacity and operational experience needed to scale up reusable packaging.

Many studies have found that plastic pollution is devastating the seas and harming ocean animals. Impacts on marine organisms include death and impairments to their ability to move, eat, grow, survive, and reproduce.[21] Tens of thousands of individual marine animals have consumed or become entangled in plastic.[22] As the influx of plastics into the ocean persists, the number of marine species impacted by this material continues to grow.

Coca-Cola was the number one polluter of branded plastic found in the environment, according to a recent study.[23] This research also revealed a direct correlation between plastic production and plastic pollution. The more plastic packaging businesses like Coca-Cola use, the more of their plastic packaging ends up in nature.

Importantly, more scientific research is finding that plastic is harming human beings. According to Coca-Cola's 2024 annual report, its customers consumed more than 2.2 billion servings of its products per day.[24] Presumably, many of the hundreds of millions of people drinking these beverages are also being exposed to the problematic health consequences of plastic. Coca-Cola should be concerned about the potential impact of plastic on its customers. Studies have connected microplastics, nanoplastics, and the chemicals used in plastics to health issues like dementia,[25] heart disease,[26] inflammatory bowel disease,[27] autism,[28] infertility,[29] attention deficit hyperactivity disorder (ADHD),[30] type 2 diabetes,[31] and cancer.[32] Plastic used in Coca-Cola's packaging can directly enter human bodies when customers drink beverages from plasti c bott les. Additi onally, people can be exposed to it when microplasti c polluti on from Coca-Cola's packaging becomes airborne and is inhaled, or it enters the environment or food web and is consumed (e.g., as sea salt or seafood).[33] In 2022, when microplasti cs were detected in human blood for the fi rst ti me, PET — the type of plasti c that Coca-Cola's single-use plasti c bott les are made of — was the most widely encountered polymer, found in 50% of the 22 samples tested.[34]

The Coca-Cola Company's plasti c use and status as one of the worst plasti c polluters in the world is increasingly a liability for the company and the planet. As such, the decision by the company to double down on single-use plasti c and move away from reuse should concern Coca-Cola's regulators, investors, employees, and customers.

The company needs to take real acti on to address its plasti c problem now instead of focusing on measures that don't meaningfully reduce its plasti c footprint. If the company is unwilling to do this on its own, policymakers need to consider measures to ensure that the company's massive plastic problem is addressed.

Coca-Cola disputes and critiques some of the conclusions and methodologies in this report. For Coca-Cola's full response, please see Appendix I.


© Oceana/Juan Cuetos

© Oceana/Diuvs de Jesus

The World's Top Plastic Polluter

In 1927, The Coca-Cola Company marketed its trademark soft drink as being "Around the Corner from Everywhere."[35] Nearly 100 years later, Coca-Cola is everywhere. Its beverages are sold in over 200 countries and territories.[36] In 2024, over 191 billion liters of Coca-Cola products were consumed globally at a rate of 2.2 billion servings per day.[37]

Almost half of the beverages sold by Coca-Cola are in throwaway plastic. In 2023, 47.7% of the volume of Coca-Cola beverages consumed around the world was packaged in single-use plastic packaging — a total of 137 billion bottles of various sizes.[38] In 2022, Coca-Cola's share of all single-use plastic bottles sold globally was 21.5%.[39] Because these single-use bottles are designed to be thrown away, large numbers become pollution all over the world. Coca-Cola is the top global plastic polluter according to brand audits of plastic pollution collected by over 200,000 volunteers in 87 countries by the global Break Free From Plastic movement.[40]

Scientific research published in 2024 in the journal Science using data from the Break Free From Plastic brand audits found that Coca-Cola products represented 11% of the 909,771 branded waste items found polluting the environment across 84 countries over a five-year period.[41] This research also revealed a direct correlation between plastic production and plastic pollution, such that every 1% increase in companies' plastic production is associated with a 1% increase in plastic pollution in the environment. The more plastic packaging businesses like Coca-Cola use, the more of their plastic packaging ends up in nature.

© Shutterstock/JRomero04

Coca-Cola's Worsening Plastic Problem

Based on historical trends of The Coca-Cola Company's revenue growth and use of plastic packaging, Oceana modeled the future revenue growth of the company, as well as the plastic packaging waste, and aquatic plastic pollution that the company is predicted to generate and be responsible for. This modeling was carried out for the years 2024 through 2030, for the purposes of informing and testing strategies to reduce plastic pollution.

Forecasted Revenue Growth

Over the past five years, Coca-Cola has experienced significant financial growth. In 2023, The Coca-Cola Company reported a net revenue of $45.8 billion, which marks a growth of 33.4% from 2018.[42] Applying a future annual revenue growth rate of 3.48% derived from financial analysts' forecasts of revenue growth of the company, Oceana forecasted an annual net revenue for Coca-Cola of $58.2 billion by 2030, up $12.4 billion from 2023 (See Figure 1).[43]

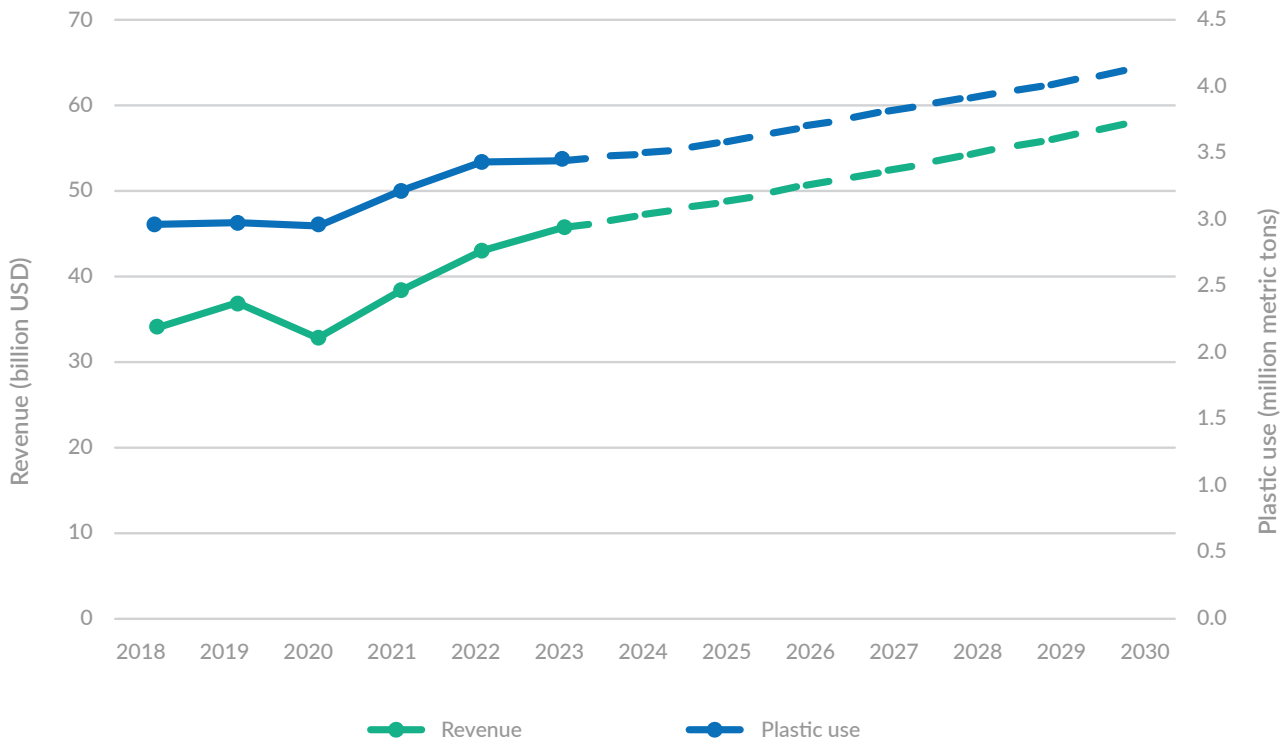
Forecasted Plastic Packaging Waste

As Coca-Cola's sales grow, so does its use of packaging. In 2023, Coca-Cola used just under 3.45 million metric tons (7.6 billion pounds) of plastic, 485,000 metric tons (1.07 billion pounds) more than in 2018, the first year that the company started publicly disclosing these figures.[44] This marks a 16% growth in plastic use in just five years. Coca-Cola's current annual plastic packaging footprint in the form of 500 milliliter bottles stacked on top of each other would circle around the Earth more than 100 times.[45]

Oceana used historical packaging data for the years 2018-2023 reported by Coca-Cola, to model future plastic packaging use by the company.[46] Without corporate action or government intervention, Oceana estimates that by 2030, plastic usage from sales of Coca-Cola products will increase by 20% (from last reported values in 2023), surpassing 4.13 million metric tons (9.12 billion pounds) of plastic per year by 2030 (See Figure 1). The cumulative total weight of plastic used between 2024 and 2030 by the company would amount to 26.7 million metric tons (58.8 billion pounds). This "business-as-usual" scenario is conservative as it assumes that Coca-Cola's sales in single-use plastic packaging do not increase relative to other packaging types. Given recent historical trends, it is possible that single-use plastic packaging use will grow more in relation to other packaging options resulting in a much larger overall future plastic footprint for the company. In 2018, Coca-Cola reported that single-use plastic bottles represented 45.5% of its packaging mix.[47] This figure rose to 47.7% in 2023.[48] In addition, the reported and forecasted plastic use by Coca-Cola only represents approximately 90% of the company's consumer-facing primary plastic packaging.[49] The company has stated that its reported data excludes closures, labels, pre-packaged non-refillable plastic cups, plastic bottles larger than 3 liters, fountain/food service cups, and coffee cups.

Oceana carried out a simple regression analysis comparing the company's reported revenue to reported plastic packaging for the years 2018-2023.[50] This analysis indicated a strong correlation (Pearson's correlation coefficient of 0.95). This correlation is problematic if trends continue in the long term given the many negative impacts of plastic on the environment and human health, and for Coca-Cola's business.

Figure 1. Historical and forecasted revenue growth and plastic use by The Coca-Cola Company. Solid lines represent trends between reported data points (2018-2023), dotted lines represent forecasted trends (2024-2030).



Forecasted Aquatic Plastic Pollution

In 2020, an international team of scientists led by Stephanie Borrelle at the University of Toronto predicted the growth in plastic waste going into aquatic systems (e.g., rivers, lakes, seas, and oceans), country-by-country, each year until 2030.[51] The study — published in the journal Science — estimated that 19 to 23 million metric tons (42 to 51 billion pounds) of the plastic generated globally in 2016 entered aquatic systems. The scientists predicted that annual total plastic pollution may reach up to 90 million metric tons (198 billion pounds) by 2030 unless extraordinary efforts are made to transform the global plastics economy.

The Borrelle study assumes that the closer to an aquatic ecosystem that waste is generated and inadequately managed, the greater the probability it will enter that aquatic ecosystem. Oceana applied the forecasted rates of emission of plastic pollution into aquatic ecosystems from the study to the forecasted plastic usage by Coca-Cola (as estimated by Oceana), to estimate plastic pollution into aquatic systems globally by the company from 2024 until 2030.

Without corporate action or government intervention, Oceana estimates that by 2030, up to 602,000 metric tons (1.33 billion pounds) of the plastic packaging sold by Coca-Cola annually will become pollution in our waterways and oceans. This amount of plastic could fill the stomachs of over 18 million blue whales.[52] Between 2024 and 2030, we estimate that a cumulative total of up to 3.61 million metric tons (7.96 billion pounds) of Coca-Cola's plastic packaging will enter aquatic systems — the equivalent of over 190 billion 500 milliliter single-use plastic bottles.[53]

© Greenpeace

What Plastic Pollution Does to Marine Life

From as early as the 1960s, marine life has been impacted by plastic pollution. In 1966, researchers found plastic in 74% of 100 albatross carcasses that had been collected from the remote Hawaiian Islands National Wildlife Refuge.[54] In 1989, a study determined that plastics made up nearly 40% of foreign material found in the stomachs of whales.[55] Now, plastic pollution pervades all corners of the ocean — from floating on its surface to settling in its deepest trenches, and from isolated shores to melting Arctic ice.[56] Plastic even lingers in the marine atmosphere above the water.[57] It seems everywhere that scientists look, plastic is found. And where researchers have studied the impacts of plastic on marine life, they have discovered that plastic and the chemicals added to plastic are negatively affecting all levels of the marine food web, with wider consequences to entire ecosystems.[58] Impacts on marine organisms include death and impairments to their ability to move, eat, grow, survive, and reproduce.[59] Tens of thousands of individual marine animals have consumed or become entangled in plastic including those from over 900 species of larger marine organisms.[60] As the influx of plastics into the ocean persists, the roster of marine species impacted by this ubiquitous material continues to grow.

Plastic found in sea turtle fecal matter.

Plastic bottles and cups are responsible for their own unique impact on marine life. Bottles for example, can become 'death traps' for smaller creatures, like crustaceans that enter the bottles but can't escape. In less than a week, crabs trapped in bottles, stranded on beaches, die from dehydration and sun exposure. This problem is compounded by the behavior of some crabs that release a scent when they die that draws other crabs looking for newly available habitat. On the beaches of two remote islands in the Indian Ocean littered with discarded plastic bottles, scientists documented this phenomenon in populations of hermit crabs.[61] These discarded plastic bottles become death traps for hermit crabs, with each bottle found to contain about nine dead crabs. The scientists estimated that more than half a million hermit crabs die each year after becoming trapped inside plastic bottle waste on these far-flung islands.

Both intact and broken plastic bottles and cups can be eaten by large marine animals that mistake plastic pollution for food. This plastic can cause the death of an animal through choking it, piercing the animal's gut wall,[62] or starving the animal when it feels full from eating plastic and stops eating nutritious food.[63] A single piece of plastic can be responsible for reoccurring repercussions when an animal that eats plastic is eaten by another animal.[64] In 2018, a sperm whale was found dead in Indonesia with nearly six kilograms of plastic waste, including 115 plastic cups and four plastic bottles, in its digestive system.[65] In 2020, an albatross died with an entire 500 milliliter plastic water bottle in its stomach after being found in an emaciated condition on a beach in New Zealand.[66]

Plastic bottle caps may also obstruct the digestive tract of marine animals or accumulate in their stomachs, either way causing a slow death through starvation.[67] In 2018, a viral video circulated of a fisher in Costa Rica pulling pieces of plastic — including three bottle caps — out of the stomach of a mahi-mahi.[68]

In sea turtles, gas buildup may occur when stomach juices and food are stuck behind plastic obstructions in their digestive tract, eventually causing the animals to float, which leads to starvation and makes them an easy target for predators.[69] Bottle caps are particularly lethal for sea turtles because they have downward spines in their throats which prevent them from regurgitating any hard substance they swallow. In 2011, a giant sea turtle was found dead on an Australian beach with 317 pieces of plastic — including bottle caps — in its digestive system.[70]

Once plastic bottles and cups break up, they eventually become microplastics (plastics which measure from 1 micrometer to 5 millimeters in length) and nanoplastics (plastics smaller than 1 micrometer) that can more easily be consumed and absorbed into marine organisms of all sizes. A range of biological processes in marine organisms have been reported to be impacted by microplastics, including feeding, reproduction, development, growth of adults and their offspring, gene expression, and tissue inflammation.[71]

Plastic packaging can also act as a source of toxic chemicals in the ocean when substances that were added during manufacturing leach from plastic pollution into the surrounding water, putting marine life at risk of harm from exposure.[72] Additionally, nano and microplastics attract and harbor chemical pollutants, which, when consumed together with these particles, cause additional harm.[73] A recent study found that when shrimp-like zooplankton were exposed in the lab to relatively high concentrations of chemicals including those commonly added to PET plastic bottles,[74] this hindered mating behavior and decreased sperm counts in the male animals.[75]

Without corporate action or government intervention, Oceana estimates that by 2030, up to 602,000 metric tons (1.33 billion pounds) of the plastic packaging sold annually by Coca-Cola could become pollution in our waterways and oceans.

© Instituto Mar Urbano/Ricardo Gomes

How Reuse Can Bend Coca-Cola's Plastic Growth Curve

A proven solution to reduce plastic pollution is reusable packaging. In the beverage sector, reusable packaging exists in large formats such as jugs, kegs, and barrels, and in small formats such as single-serve cups, and both single and multi-serve bottles. Reusable packaging in the form of bottles is generally referred to by drink companies and in advertising as "refillable bottles," or "returnable bottles." They differ from personal reusable bottles in that they are not owned, washed, and refilled by the consumer, but instead by a bottling company.

Where available, drinks in refillable bottles can be purchased from any type of retailer (supermarket or small store), as well as restaurants and hotels. Refillable bottles are returned by consumers when empty, often to the original point of sale, collected by the bottling company that owns them, taken back to the plant, then washed, refilled, delivered to the retailer, and sold (reused) again. Consumers return refillable bottles because they pay a deposit when they buy the drink that is refunded to them upon returning the bottle. This can also make drinks more affordable, which is the main reason for the popularity of refillable bottles in many parts of the world.

Refillable bottles can be made from both glass and PET plastic and are thicker and more durable than single-use bottles to facilitate reuse. The thicker bottles can also hold carbonation better, which industry experts have said can make soft drinks taste better, too.

Many types of beverages are sold in refillable bottles, including water, soft drinks, milk, and beer. In fact, a huge amount of beer is sold in refillable glass bottles by brewers worldwide. Anheuser-Busch InBev, the world's largest brewer, reported that approximately 41.2% of its volume was sold in returnable packaging in 2023.[76] Also in 2023, Heineken, the second-largest brewer in the world, reported that approximately 38% of their packaging was produced in a returnable format.[77] Heineken has also set a goal to have 43% of the volumes it sells be in a reusable format by 2030.[78]

Though disappearing in some parts of the world, refillable bottles are still widely purchased by consumers in many countries including Brazil, Chile, Eritrea, Germany, Mexico, Nigeria, the Philippines, and even the U.S. in South Texas.[79] Coca-Cola sells a lot of these bottles. As of 2022, refillable glass and plastic bottles represented more than half of Coca-Cola's beverage sales in more than 20 markets, and more than 25% of sales in another 20 markets.[80] The same year, reusable packaging accounted for approximately 10.4% of the company's total volume of packaged beverage sales globally.[81] In 2018, Coca-Cola introduced its refillable "Universal Bottle," which is now used across much of Latin America and South Africa. The bottle is a single color, shape, and size, and can interchangeably contain multiple sparkling and still brands, driving efficiency of collection, cleaning, and filling.[82]

Refillable glass bottles are also good for business. Coca-Cola stated in its 2024 Fourth Quarter earnings release that "Returnable glass bottles offer a unique competitive advantage" writing that,

> *"Returnable glass bottles are important to the company's RGM (Revenue Growth Management) capabilities, serving as both an affordable and premium package that can be tailored to local market needs. In developed markets across Western Europe, the bottle is a key premium package in away-from-home channels. In certain developing and emerging markets, returnable glass bottles are an affordable offering that enables the company to recruit*

Reuse Wins at the Olympics

New systems for reusable cups are rapidly growing in popularity and are being adopted at large events and sports and entertainment venues across the world. Like refillable bottles, reusable cups can be extremely effective at reducing single-use plastic packaging waste. When systems are well-designed and optimized to minimize waste, reusable cups can be used over 100 times and collection rates for these cups typically exceed 90%.[96]

In 2024, the Paris Olympic and Paralympic Games became the largest sporting event in history to serve beverages to spectators in reusable cups. The system was flawed, as some beverages were poured into reusable cups from single-use plastic bottles, and reusable cups were branded with the Olympic logo making them attractive to fans to take home as souvenirs and unable to be used at future events.[97] Despite this, the Paris 2024 Organizing Committee reported that the Games achieved a 52% reduction in single-use plastic compared to the London 2012 Games and a 70% reduction in the number of single-use plastic bottles used.[98] The report cited a "new drinks distribution model" including the use of drink fountains with reusable cups and returnable glass bottles, as well as promoting the use of personal water bottles, and reducing single-use plastic packaging as the key actions that were taken to achieve these outcomes.[99] Paris 2024 proved that reusable packaging used at scale can dramatically reduce single-use plastic packaging waste. Coca-Cola should commit to using reusable packaging at the upcoming Winter and Summer Olympic games in Italy and Los Angeles, respectively, as well as at the 2026 FIFA World Cup. Coca-Cola is a major sponsor of all these events.

Coca-Cola beverages were served to spectators at the Paris 2024 Olympic and Paralympic Games in reusable cups.

© Oceana/Agnes Lisik

consumers and develop the commercial beverage industry."[83]

Importantly, refillable bottles can be used up to 25 times if made of plastic and up to 50 times if made of glass.[84] What this means is that a refillable bottle avoids the production and use of up to 49 additional bottles. Each of those avoided throwaway bottles would have entered waste streams or been littered, with either pathway possibly leading to the oceans. For 2022, Coca-Cola reported a global collection rate of only 58% for their single-use PET plastic bottles.[85] In the U.S., the collection rate was much lower, at 28%.[86] In contrast, for the same year Coca-Cola reported that 93% of their refillable bottles were collected to be reused globally.[87] These bottles are closely managed in refillable systems because they have economic value for the bottling companies that own them. Refillable bottles are clearly the winning strategy to minimize plastic pollution.

In February 2022, Coca-Cola, in recognition of reusable packaging being "…among the most effective ways to reduce waste…" announced it was committing to an "industry-leading goal to significantly boost its use of reusable packaging," pledging to reach 25% reusable packaging (including for fountain and other dispensed products) by 2030 (up from 16% in 2020).[88] After reporting that the company had fallen to 14% reusable packaging in 2023,[89] in December 2024, Coca-Cola announced it was dropping this goal.[90] Concurrently, the company also dropped its goal to decrease its use of virgin plastic and seemingly its entire "World Without Waste" strategy, with details on this program erased from Coca-Cola's website. The company retained only weakened goals to increase recycled content in primary packaging and to help with efforts to increase beverage container collection rates. This decision was widely covered by the press, potentially resulting in reputational damage for the company.[91]

The Coca-Cola Company disclosed to the Ellen MacArthur Foundation that, in 2022, "the total rPET premium cost was $959 million."[92] Based on the current reported capital expenditures (CapEx) used to support the sale of refillable bottles by one of the company's top bottlers, the same amount of money — nearly $1 billion — could theoretically support the sale of refillable bottles roughly equivalent to 10% of the global volume of sales of Coca-Cola products in 2023.[93] This would be in addition to the 29 billion refillable bottles reported sold by the company in 2023, which represented 10.2% of its packaging mix.[94] Unfortunately, the company has not announced additional capital spending at this scale for the purposes of expanding the sale of reusable packaging. Despite this, increasing reusable packaging remains the best strategy for the company to decrease its single-use plastic packaging use, and the amount of this waste that enters the ocean and other environments.

To demonstrate the potential that reusable packaging has for reducing Coca-Cola's plastic packaging footprint and its contribution to aquatic plastic pollution, Oceana modeled future scenarios of packaging use by the company.[95] The modeled scenarios included Coca-Cola's original goal of reaching 25% reusable packaging by 2030, plus more ambitious targets to test what would be needed to reduce the company's plastic packaging use below current and historical levels.

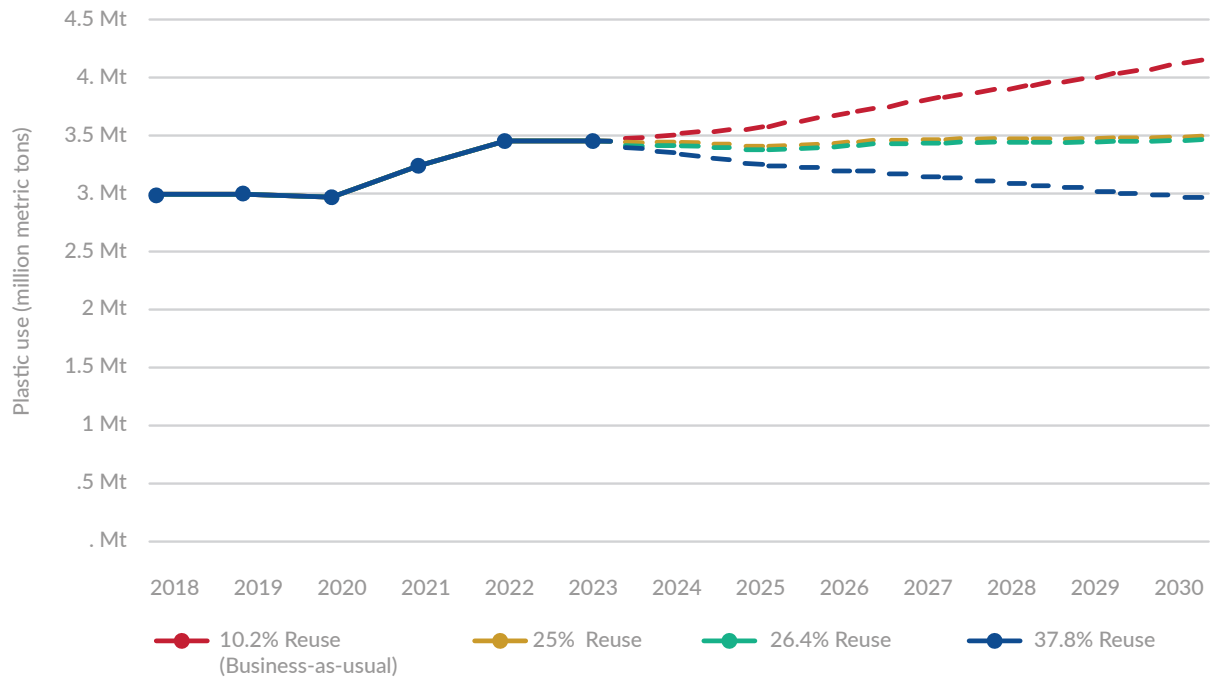
Oceana found that if Coca-Cola were to reach 25% reusable packaging by 2030, the company could reduce both the weight of plastic packaging that it uses annually and the weight of this plastic that pollutes aquatic systems each by 15% compared to a "business-as-usual" scenario, where reusable packaging does not increase above last reported levels (10.2% of the volume of packaged beverage sales). This strategy could enable Coca-Cola to avoid the production and use of a cumulative total of 2.49 million metric tons (5.49 billion pounds) of plastic packaging between 2024-2030 and prevent up to 350,000 metric tons (772 million pounds) of this plastic from getting into the world's rivers, lakes and oceans (See Table 1).

Oceana also found that if Coca-Cola were to increase reusable packaging to only 26.4% of the volume of its packaged beverage sales, the company could bend its plastic curve — reducing its plastic use below current levels, reaching 3.44 million metric tons (7.58 billion pounds) per year by 2030 (See Figure 2). If Coca-Cola were to reach 37.8% reusable packaging, this could achieve a reduction in plastic use by the company below 2018 levels (2.95 million metric tons (6.5 billion pounds) per year by 2030).

Table 1. Forecasted annual and total plastic packaging use and aquatic plastic pollution by The Coca-Cola Company under future scenarios of increasing reusable beverage packaging.

	10.2% Reuse (Business-as-usual)	25% Reuse	26.3% Reuse	37.8% Reuse
Annual plastic packaging use by 2030 (million mt)	4.13	3.50	3.44	2.95
Of which estimated to become aquatic pollution (million mt)	0.60	0.51	0.50	0.43
Total plastic use 2024-2030 (million mt)	26.69	24.19	23.97	21.91
Of which estimated to become aquatic pollution (million mt)	3.61	3.26	3.23	2.95

Figure 2. Forecasted annual plastic packaging use by The Coca-Cola Company under future scenarios of increasing reusable beverage packaging.



Reuse is a Winning Strategy to Reduce Coca-Cola's Carbon Emissions

Reusable packaging is also a winning strategy for reducing Coca-Cola's carbon emissions and thus the company's contribution to climate change. Coca-Cola itself stated in its 2022 Business and Sustainability report that "refillable packages, both glass and plastic, can have the lowest carbon footprints of [its] packaging options."[100] Coca-Cola's head of sustainability, Beatriz Perez, told investors at a conference in 2023 that refillable packaging has the "lower carbon footprint within the business" (as compared to other options).[101]

© Oceana/Addison Bauer

Coca-Cola FEMSA, the world's second largest Coca-Cola bottler, has reported that the greenhouse gas emissions of its Universal Bottle — a refillable PET bottle used for multiple brands — are up to 47% lower compared to single-use PET bottles.[102] Coca-Cola Andina, another major bottler in South America, reported a slightly better performance for the Universal Bottle at 48.2% lower emissions, citing Coca-Cola's "Decarbonization Guidebook" as the source for their emissions statistics.[103] Refillable glass bottles were reported as having 10.2% lower emissions than single-use PET bottles. Coca-Cola İçecek (CCI), a major bottler in Western and Central Asia, reported that their use of refillable glass bottles in Türkiye, Pakistan, and Uzbekistan prevented 373,324 tons of CO_2 emissions in 2022.[104]

In recent years, refillable bottling systems have become more efficient, with companies employing retreatment systems to recycle the water used for washing and using solar energy to heat it. In addition, some reusable packaging systems use modern supply chain logistics and software to increase the efficiency of the delivery and return of bottles and cups. Regardless, an often-missed point is that emissions relating to the return of refillable bottles are not as relevant as one may think given that all trucks need to return to the plant anyways. Coca-Cola Andina's CFO Andres Wainer in 2022 stated to investors that "the only difference is that we're putting empty bottles that don't weigh much. So, the carbon footprint of that is very, very low. It is nothing relevant because the truck [has] to return anyways back to the plant. So, there's no problem in using refillable bottles over long distances... We ship refillable bottles for hundreds of kilometers, and it's not an issue."[105] When Coca-Cola announced its goal in 2022, the company stated that "...refillable containers have high levels of collection and are low-carbon footprint beverage containers, because the container collection is built into the beverage delivery model."[106]

Recycling Won't Save the Oceans from Coca-Cola's Plastic Pollution

Coca-Cola's plastic problem won't be solved with recycling (or increasing recycled content). This is because Coca-Cola packaging made with recycled plastic is still single-use and, like those made with virgin plastic, designed to be thrown away after one use. Adding recycled plastic to a bottle does not make it more likely to be collected or reused. And these recycled plastic bottles can — just like bottles made of virgin plastic — become marine pollution as demonstrated by the "100% recycled plastic" Coca-Cola bottle photographed by Oceana in the sea in the Philippines (see opposite page). Even if the company achieves its recycling-related commitments, its overall plastic use is likely to continue to grow. More recycling and recycled content can't bend Coca-Cola's plastic growth curve.

In addition, the company can't easily address its plastic problem through increasing collection rates because it does not control the collection of single-use bottles and cans. As the company wrote in its 2023 Environmental Update:

> *"The key challenge for us is collection for recycling of beverage packaging"*

Coca-Cola reported in this update that the collection rate for its packaging was 62%.[107] It's important to note that the company's reported collection rate represents, according to the company,

> *"a weighted average of national collection rates or returnable bottle collection rates for select primary consumer packaging."*[108]

Coca-Cola is using national collection rates to estimate how many of its bottles might be collected because— for the most part — it does not collect the single-use plastic bottles it and its partners produce. Coca-Cola is a beverage company, not a waste management company.

The company's single-use plastic bottles — regardless of whether they are made of virgin plastic or recycled plastic — are waste items that are thrown away. Some of these bottles might go to garbage dumps, some might be recycled, and some might become pollution and end up in the ocean. The company has little control over what happens to its single-use bottles after they are used because it has designed its single-use plastic packaging to be used just once and then discarded. This is in contrast to reusable bottles, which the company owns and collects from its customers. Additionally, the majority of the plastic used in PET bottles collected for recycling will likely not become a bottle again. As the non-profit group Zero Waste Europe has stated "[t]he PET system is currently not very circular and has a high level of leakage" (approximately 75% of the PET placed on the market).[109]

Coca-Cola is now selling beverages packaged in 100% rPET bottles in the U.S., a country where Coca-Cola has reported that only 28% of PET bottles are collected for recycling.[110] A customer there might reasonably believe that the 20-ounce Coca-Cola they purchased in a 100% rPET single-use bottle was made from plastic coming from bottles discarded by fellow customers in the U.S. There is a very good chance that this belief would be misplaced. According to recent news reports, rPET in the U.S. is increasingly being supplied by imports from countries in Southeast Asia.[111]

The Coca-Cola Company disclosed to the Ellen MacArthur Foundation[112] that, in 2022, "the total rPET premium cost was $959 million." It appears, based on this note, that the company — and its bottling partners — spend nearly a billion dollars a year on purchasing rPET to make single-use plastic bottles and other packaging. The company needs to buy rPET to produce bottles made with recycled content because it is not a waste management or collection company. And the "circularity" of rPET purchased on the global market is uncertain.

A manager of "India's leading Plastic Recycler," Shakti Plastics Industries, said to Waste Recycling Magazine in 2024:

> *"There's a huge demand for recycled plastics from Europe, North America, and even Canada,"* adding, *"The quality of waste we get in India is very poor compared to Europe. The ecosystem here isn't designed to produce the high-quality recycled products that are in demand globally."* [113]

Issues with collected PET plastic are also apparent from available data from Coca-Cola-affiliated PET plants, which the company highlights in its sustainability report. For example, the Coca-Cola-affiliated PETCo plant in South Africa reported collecting 68,413 metric tons (151 million pounds) of beverage bottles in 2023 and producing 27,625 metric tons (60.9 million pounds) of food grade PET (beverage companies need food grade rPET to make new bottles), which means that nearly 60% of the plastic in bottles that were received by this plant did not become bottles again.[114] Similarly, a 2022 press release from Coca-Cola Philippines reported that the then new Coca-Cola PET Value plant would be able to process "30,000 MT / year or almost 2 billion pieces of plastic bottles, with an output of

© Oceana/Danny Ocampo

Journey of Your Bottle — Reuse vs. Recycling

What happens to your bottle when you finish your drink? With a reusable bottle, it's simple, the bottle you used will get reused again. When a consumer returns a bottle, that bottle will be washed, refilled, and sold again and again until the end of its usable life. Glass reusable bottles can be used up to 50 times. PET reusable bottles can be used up to 25 times. A single-use plastic bottle is only used once before a customer discards that bottle. If the bottle is recycled, it is unlikely that all of the plastic from that bottle will be made into new bottles over and over again. Even in Europe, where there are high PET collection rates, only 48% of the rPET supply in 2022 was used to make bottles. The remainder was used to make trays or in non-packaging applications.[122] Coca-Cola reported that just 17% of the PET it used globally in 2023 was rPET. This could mean that only 17% of this recycled content may be carried over from one manufacturing cycle to the next and so at cycle two, only 2.9% of the recycled content from the first cycle will remain.[123] The moral of this story? Recycling does not guarantee that your discarded plastic bottle will be made into a new one. If you want to have your bottle — and what it is made of — used again as another bottle, the best way to make sure that happens is through reuse systems.

16,000 MT / year of recycled PET resin," meaning that more than 46% of the plastic from bottles collected again would not become recycled PET resin.[115] Oceana found similar numbers for the Coca-Cola linked PETStar plant in Mexico.[116]

Recent rPET imports into the U.S. are happening while there is an oversupply of virgin plastic resin in the global market reportedly due to high production in certain regions of the world, particularly China.[117] Coca-Cola needs to use less single-use plastic (no matter what the source of the material) if it wants to bend its plastic curve. More recycled content — if still used to make single-use packaging — will still increase the company's overall plastic footprint.

The largest soft-drink companies Coca-Cola, Pepsi, Nestlé, Danone, and Keurig Dr Pepper have pledged to increase post-consumer recycled content in their plastic packaging by targets ranging mostly from 25% to 50% by 2025. A study commissioned by Oceana, conducted by Eunomia, found that even if the top five beverage companies meet their pledges, they will only reduce aquatic pollution from single-use plastic bottles by 7%.[118] This is largely because bottles used for recycling are expected to predominantly be derived from already collected and managed waste streams rather than from mismanaged waste or littering.

Does more recycled plastic mean that less plastic will be used globally? It's not clear. The problem is that recycled plastic is being used — more and more — to make new products or products that weren't previously made with plastic. The fashion industry, for example, is using more plastic in place of natural materials like cotton. As Changing Market Foundation's 2024 Report "Fashion's Plastic Paralysis" writes:

> *"Since the early 2000s, the rise of polyester has led to a doubling in production within the fashion industry. Polyester represents a large majority of current and future growth in fibre production and now accounts for over half (56%) of all textiles."*[119]

The bad news is that this new plastic clothing is not recycled. As the publication "Plastics Engineering" reported:

> *"The fashion industry is disrupting the PET circular economy. They are taking recycled plastic from a closed loop with high recycling rates, like food and beverage, into an application that recycles less than 1% of its products."*[120]

This is what happens in a free market system — new material can lead to new products being created and sold. And the reality is that all the efforts to create and sell more recycled PET could just lead to more plastic being produced and discarded. A recent peer reviewed study that reviewed the impact of Coca-Cola and other companies' recycling commitments to circularity wrote that:

> *"The results, thus, demonstrate that although the analyzed statements are intended to tell the world about the companies' efforts to implement a circular economy, the evidence suggests that companies are apparently working on implementing a recycling economy."* [121]

It's time for Coca-Cola to prioritize efforts — like increasing its share of beverages sold in reusable packaging — that can reduce its overall use of plastic, and to deprioritize efforts — like more recycling and recycled content — that do not.

© Shutterstock/NeydtStock

Coca-Cola is Fueling the Plastics-Health Crisis

What should be the safest place in the world — a mother's womb — is now polluted with plastic. In 2024, researchers found plastic particles in every human placenta of the 62 examined in a single study.[124] PET and polyethylene (PE) — types of plastic used in Coca-Cola's packaging — were among the most prevalent plastic polymers found, identified in 92% and 96% of all samples, respectively. Babies are being exposed to plastic before they take their first breath. These recent findings are extremely concerning given scientific evidence is mounting that plastics and the chemicals added to plastics pose potentially serious health risks to humans.[125]

Babies aren't the only ones at risk. In a study published in 2019, scientists estimated that between 74,000 and 121,000 microplastics enter the bodies of humans each year, depending on age and sex.[126] The study also estimated that if a person is meeting their recommended water intake only through bottled sources (or is drinking the equivalent volume of soft drinks from plastic bottles), they may be ingesting an additional 90,000 microplastics annually.[127] Worryingly, we now know these values underestimate total exposure because only microplastics were estimated, which measure from 1 micrometer to 5 millimeters in length (roughly the length of a grain of rice[128]). Scientists are now able to identify and measure nanoplastics (<1 micrometer, for reference, the diameter of a human hair is about 70 micrometers [129]), which present an even greater health risk as their small size allows them to more easily enter living organisms and tissues.[130] In 2024, scientists estimated that a liter of bottled water contains approximately 240,000 particles of plastic, about 90% of which are nanoplastics and 10% microplastics.[131]

In 2024, the French NGO Agir pour l'Environnement coordinated an investigation — following plastic-free protocols with control blanks — which found 46 microplastic particles in a single one-liter bottle of Coca-Cola after approximately 20 openings.[132] The number of microplastics found in the soda increased with more bottle openings, suggesting that friction and degradation of the bottle cap and mouth of the bottle were responsible for some of the identified microplastics. After a single opening, four microplastics were found, which represented the minimum amount of microplastics that would be ingested if one were to drink the entire contents of the tested bottle. Six different polymers were identified in the soda, predominantly polyvinyl chloride (PVC), followed by PE and PET, with lesser quantities of polyamide (PA), polypropylene (PP), and polyurethane (PU). Agir pour l'Environnement noted that manufacturers only declare two polymers in contact with the beverage: PE for the cap and PET for the bottle. The values reported in this study are again an underestimation of total plastic exposure because the laboratory techniques used were only able to quantify microplastic particles greater than 10 micrometers, and, while nanoplastics were detected, they weren't quantified. Regardless, this study provides important evidence that Coca-Cola's single-use plastic bottles are a source of nano- and microplastic exposure for people who drink from them.

Scientists believe that most nano- and microplastics enter the human body through the consumption of food and beverages, though exposure can also be through inhalation, and potentially through the skin via cosmetics and clothing.[133] Plastic used in Coca-Cola's packaging can directly enter peoples' bodies if

they drink Coca-Cola beverages from plastic bottles. Additionally, people can be exposed to it when microplastic pollution from Coca-Cola's packaging becomes airborne and inhaled, or as it enters the environment or food web and is consumed by humans (e.g., as sea salt or seafood). In 2015, scientists first detected microplastics in sea salts, purchased in China,[134] and in 2022, scientists found microplastics in canned tuna purchased in Ecuador.[135] In both studies, PET and PE were the most commonly identified polymers.

Once plastic gains access into the human body, it can enter the tissues, organs, and fluids. In recent years, researchers have discovered microplastics (including PE and/or PET) in the human heart,[136] brain,[137] lungs,[138] kidney,[139] liver,[140] placenta,[141] testis,[142] penis,[143] urine,[144] breast milk,[145] and blood.[146] In 2022, when microplastics were detected in human blood for the first time, PET was the most widely encountered polymer, found in 50% of the 22 samples tested.[147] Microplastic that enters the bloodstream can potentially reach and accumulate in any organ in the body.

While research on the impacts of microplastic on human health is still in its infancy, scientific focus on this topic is accelerating, and several important and alarming studies have made headlines within the last few years. Notably, in 2025, scientists examining brain tissue from human autopsy specimens reported finding a greater accumulation of microplastics and

In 2022, when microplastics were detected in human blood for the first time, PET was the most widely encountered polymer.

nanoplastics in tissue from individuals diagnosed with dementia.[148] Additionally, the researchers found significantly more micro and nanoplastics in brain tissue collected from specimens from 2024 vs. 2016, and PE was the most dominant polymer identified, with PET also present. In 2024, scientists reported finding microplastics, most commonly PE, in the fatty plaque removed from the arteries of patients with heart disease.[149] These patients were found to have a higher risk of heart attack, stroke, or death compared to those in whom microplastics were not detected. A study from 2021 found that people with inflammatory bowel disease have 50% more microplastics in their stools and people who tended to drink bottled water have even more.[150] PET was one of the most common polymers identified in the study. Research in mice has indicated potential links between prenatal exposure to PE and autism.[151]

Also concerning are the links that have been made between exposure to the chemicals used in plastic and infertility. As of 2021, it was estimated that approximately 17.5% of the adult population — roughly 1 in 6 worldwide — experience infertility.[152] Semen quality in men has declined significantly over the last 80 years, with the timing of this decline coinciding with the development of plastics.[153] Chemicals are added to plastics during manufacturing to give them certain qualities (e.g., to make the plastic flexible), and some are known to interfere with the body's hormones by mimicking or blocking them, which can disrupt important processes — including those vital for human reproduction and early childhood development. Some of these chemicals have been linked to lower semen quality,[154] decreased testosterone,[155] reproductive disorders,[156] preterm birth,[157] and higher rates of miscarriage.[158] Additionally, these chemicals have been linked to autism,[159] attention deficit hyperactivity disorder (ADHD),[160] type 2 diabetes,[161] and cancer.[162]

Testing carried out in 2022 and 2023 by the nonprofit group Defend Our Health detected antimony in 10 out of 11 bottle samples from beverage products manufactured by Coca-Cola.[163] Antimony is used as a catalyst to make PET plastic but can cause cancer and is toxic to the liver, thyroid, and heart. Some harmful chemicals such as Bisphenol A (BPA) are not typically associated with PET. However, studies have detected BPA in PET bottles, and also migrating into the beverages these bottles contain.[164] Worryingly, a scientific review from 2022 concluded that not only can chemicals migrate from PET drink bottles to their content, but the recycling process may concentrate or introduce new chemicals to the PET value chain.[165] In 2019, scientists in Europe reported significantly higher levels of BPA in recycled PET compared to virgin PET.[166]

Recycling — Coca-Cola's primary solution to their plastic pollution problem — is potentially also exacerbating microplastic pollution and inadvertently fueling the plastics-health crisis currently facing humans and all life on Earth. In 2022 and 2023, researchers in China and the United Kingdom, respectively, detected microplastics in production wastewater at PET recycling facilities.[167] In the study conducted in the U.K., even after a filter was installed, the researchers found that particles <5 micrometers were still being released, and estimated that the single facility discharges 59-1,184 metric tons (130,000-2.61 million pounds) of microplastics annually (6% of the plastic processed). Prior to filter installation, the researchers estimated that the facility was releasing microplastics that amounted to 13% of the plastic processed. The study also revealed high levels of microplastics in the air around the recycling facility.

Risk Factors of Plastic for Coca-Cola

Coca-Cola's insufficient response to addressing its contribution to plastic pollution through failing to grow reusable packaging is increasing the company's exposure to materially impactful risk factors as detailed by the company in its filings to the United States Securities and Exchange Commission (SEC).[168]

Risk #1: Regulatory Risk

The Coca-Cola Company — in its 2024 10-K filing to the SEC — notes that "[c]hanges in laws and regulations relating to beverage containers and packaging could increase our costs and reduce demand for our products."[169] Governments around the world are increasingly implementing strict regulations on single-use plastics and requiring companies to cover the waste management costs of the packaging they produce. A new global agreement on plastic pollution is currently being negotiated. This treaty — if finalized — would be legally binding and would result in a continuation and acceleration of this trend.[170] A change in laws and regulations that mandate a reduction in plastic use and/or an increase in reusable packaging can materially impact Coca-Cola. If the company focuses investments on prioritizing disposable packaging with recycled content over reuse, this could make it less prepared and financially adaptable to comply with new regulations or to take advantage of the new competitive landscape legislative changes may bring about. In Europe, this situation may already be happening. A new European Union regulation came into force in January 2025, which includes legal obligations to reduce packaging waste, and mandates that at least 10% of beverages on store shelves will need to be in reusable packaging by 2030.[171] Countries will then be encouraged to reach 40% by 2040. This new EU law could allow Coca-Cola and its European bottling partners to secure 40% of the market by prioritizing reuse — or it presents a risk of losing market share if they do not. Coca-Cola's bottlers in Europe, Coca-Cola Europacific Partners (CCEP) and Coca-Cola Hellenic Bottling Company (Coca-Cola HBC) both already have experience operating large-scale refillable bottling systems in Germany, Nigeria, and the Philippines.

Risk #2: Litigation Risk

The Coca-Cola Company — in its 10-K filing to the SEC — notes that "[l]itigation or legal proceedings could expose us to significant liabilities and damage our reputation."[172] Several lawsuits are currently targeting Coca-Cola and other companies over their contributions to plastic pollution and alleged misrepresentations regarding recycling. The frequency of these legal challenges may increase as the impacts of plastic pollution on our environment and human health worsen and increasingly get measured and recognized by scientists and governments.[173] Coca-Cola's plastic bottles are the most frequently identified branded plastic items found polluting the environment in surveys conducted globally.[174] The company may be significantly exposed to these types of legal challenges, which could result in costly legal fees and settlements. Even if the challenges are not successful, Coca-Cola's reputation among its customers, investors, and business partners could be damaged, which could have financial consequences for the company.

Examples of recent legal challenges include a lawsuit filed in October 2024 by Los Angeles County against Coca-Cola and PepsiCo over their contribution to plastic beverage pollution and for deceiving the public on plastic recycling.[175] In June 2024, Baltimore City

filed a lawsuit against Coca-Cola, PepsiCo, and other corporations for their significant roles in creating a plastic pollution crisis.[176] In November 2024 in France, the environmental group France Nature Environnement filed a legal complaint against Coca-Cola's bottler CCEP.[177] The group accused the company of greenwashing and misleading commercial practices during the 2024 Paris Olympics, where single-use plastic bottles were poured into reusable cups. Coca-Cola was also accused of greenwashing in a lawsuit brought by the Earth Island Institute in August 2024, and through an EU-wide complaint by consumer groups to EU authorities in November 2023.[178] Following the EU-wide complaint, in August 2024, the Hungarian Competition authority opened an investigation, which led to proceedings against Coca-Cola and its bottler in Hungary, Coca-Cola HBC.[179] The claims under scrutiny included, among others, advertising slogans such as "I am a 100% recyclable PET bottle," "from bottle to bottle," and "get into the circulation." According to the Global Advertising Lawyers Alliance, the aforementioned advertising claims are likely to be unsubstantiated and their factual correctness cannot be backed up by the companies.

Risk #3: Compliance Risk

The Coca-Cola Company — in its 10-K filing to the SEC — writes that:

> *"…allegations, even if untrue, that we are not respecting internationally recognized human rights; actual or perceived failure by our suppliers or other business partners to comply with applicable workplace and labor laws, including child labor laws, or their actual or perceived abuse or misuse of migrant workers… could present potential legal risks and negatively affect our Company's overall reputation and brand image, and could result in product boycotts or have a negative impact on our products' acceptance by consumers."*[180]

Coca-Cola's manufacturing and use of single-use plastic bottles with recycled content relies on a supply of discarded plastic bottles that are in some countries, collected by waste pickers working in the informal sector.[181] The company's continued focus on increasing recycled content in its plastic bottles and its sourcing of recycled plastic from some of these countries exposes the company to compliance risk, particularly in relation to human rights issues. Child labor has been recognized by the International Labor Organization (ILO) to be present in the recycling supply chain.[182] In Mexico for example, reports from 2017 claim that Coca-Cola was aware of child labor in the collection chain for its recycling facility.[183] If criminal practices like child labor are detected within the supply chain of Coca-Cola's single-use plastic bottles, this could implicate the company and expose them to legal penalties and reputational damage. In the U.S. if child labor is categorized as forced labor, it could lead to impoundment of imported products suspected to have been produced with said labor.[184]

Risk #4: Reputational Risk — Environmental Issues

The Coca-Cola Company — in its 10-K filing to the SEC — writes that "[t]here are increasing concerns among consumers, governments, and other stakeholders about the damaging impact of the accumulation of plastic bottles and other packaging materials in the environment, particularly in the world's waterways, lakes, and oceans…"[185] As the company's plastic packaging footprint continues to grow and Coca-Cola's plastic bottles (including those made with recycled content) continue to show up on beaches around the world, Coca-Cola's corporate image and brand reputation will be damaged further. This could lead to some consumers reducing or discontinuing consumption of Coca-Cola products which could adversely affect the company's profitability.

Risk #5: Reputational Risk — Health Issues

The Coca-Cola Company — in its 10-K filing to the SEC — writes that "[p]ublic debate and concern about perceived negative health consequences of processing and of certain ingredients… and of other substances present in our beverage products or packaging materials, may reduce demand for our beverage products or result in additional governmental regulation."[186] More and more scientific studies are linking plastic packaging and the chemicals used to make plastic (including PET, BPA, and others) to serious health issues. And concern over the health

risks of plastic and chemicals used in plastic have now become mainstream — this is no longer a topic that only niche communities of environmentalists and scientists are talking about. Recently, both mainstream media and popular podcast hosts with a diverse range of audiences have highlighted this issue and also encouraged avoiding drinking beverages from single-use plastic bottles as a strategy for mitigating health risks.[187]

Oceana encourages investors, insurers, business partners, and other financial actors with ties to Coca-Cola to ask questions to the company in relation to how it is mitigating the risks listed.

Conclusion and Recommendations

The Coca-Cola Company's plastic problem is a major issue for the company and the planet (including the world's oceans) and is likely to get significantly worse unless the company commits to real solutions. Oceana estimates that without corporate action or government intervention, future plastic usage from sales of Coca-Cola products will increase by 20%, surpassing 4.13 million metric tons (9.12 billion pounds) of plastic per year by 2030. Oceana also estimates, based on data from a peer-reviewed study on plastic pollution published in the journal Science in 2020, that up to 602,000 metric tons (1.33 billion pounds) of this plastic waste will enter the world's waterways and seas. To stop inundating the world and the oceans with plastic, Coca-Cola must focus on reduction and increasing reusable packaging, and stop prioritizing ineffective solutions including recycling.

The risks associated with plastics, for Coca-Cola, human beings, and the oceans, are growing. The impact of plastic on the oceans and the animals that live in it is well documented. Scientific research published in 2024 in the journal Science using five years of data collected by Break Free from Plastic found that Coca-Cola products represented 11% of the 909,771 branded waste items found polluting the oceans and environment across 84 countries over a five-year period.[188] Coca-Cola was the number one polluter of branded plastic found in the environment, according to the study. Plastic is also negatively impacting human beings. Studies are finding nano and microplastics throughout the human body and both plastic and the chemicals used in plastic have been linked to human health issues including cancer, infertility, and more.

The company is seemingly ignoring these major trends in scientific research and instead doubling down on single-use plastic and false solutions like recycling. It's clear that investors, regulators, and customers need to take action to push The Coca-Cola Company to address its plastic problem. The good news is that Coca-Cola — as Oceana's analysis shows — has a solution to its problem in the form of reusable packaging. The company is a world leader in the sale of reusables and has the power to replace single-use plastic with reusable alternatives. Oceana found that if Coca-Cola were to reach 25% reusable packaging by 2030, the company could reduce both the weight of plastic packaging that it uses annually and the amount of this plastic that pollutes aquatic systems by 15% compared to a "business-as-usual" scenario. If Coca-Cola were to reach 26.4% reusable packaging, the company could "bend its plastic curve" — reducing its annual plastic use below current levels by 2030. More reuse is the way that Coca-Cola can solve its plastic problem, while still allowing the company to grow its sales and revenues.

Collecting plastic for recycling and selling some single-use packaging with recycled plastic content will not reduce the company's overall plastic use. Adding recycled plastic to a bottle does not make it more likely to be collected or reused. And these recycled plastic bottles can — just like bottles made of virgin plastic — become marine pollution. In addition, The Coca-Cola Company — for the most part — does not collect the single-use plastic bottles it and its partners produce. This is because Coca-Cola is a beverage company, not a waste management company and has a limited ability to impact how much plastic is collected.

Coca-Cola — thanks to its existing large reusables business — has the ability to move away from single-use plastic packaging worldwide. Plastic in the ocean is posing a serious threat to marine life, biodiversity, and the functioning of ocean ecosystems.[189] Unfortunately, recent analyses and scientific reports estimate an exponential increase in plastic packaging and a growth in plastic pollution. Large companies like Coca-Cola must take immediate steps to reduce their use of plastic and support governments to enact meaningful reduction measures.

The company's plastic use and status as one of the most famous plastic polluters in the world is increasingly a liability for the planet's and The Coca-Cola Company's future. The decision by the company to prioritize recycling and single-use plastic and move away from reuse should concern the company's regulators, investors, employees, and customers. Coca-Cola needs to take real action that can address its plastic problem now, namely replacing single-use packaging with reusable packaging.

To support this transition, policymakers should consider putting policy measures in place that will ensure that Coca-Cola's plastic problem — which is a global concern given the size of the company's single-use plastic footprint — is addressed. Governments around the world need to introduce laws that limit and restrict plastic use and mandate legally binding targets to increase reusable packaging.

Investors must understand that Coca-Cola's persistent reliance on plastic is exacerbating pollution, environmental degradation, and climate change. They should put pressure on the company to reduce its use of plastic through increasing reusable packaging.

To tackle its growing plastic problem, The Coca-Cola Company and its bottling partners must:

Commit to Plastic Reduction:

- Take action to reduce their plastic footprints and present concrete plans for how they will achieve this including by committing to reuse.

Move Away from Single-Use to Reuse:

- Provide the financial and market support needed to sell more reusable bottles.
- Grow the share of their products sold in reusable packaging and decrease the share sold in single-use plastic packaging.
- Offer reusable packaging at scale — in place of single-use — at events sponsored and serviced by The Coca-Cola Company and its partners including the Olympics, the FIFA World Cup, and more.

Be Transparent and Accountable:

- Continue to report on their plastic footprints, including reporting on absolute amounts of plastic used and the share of their products sold in reusable and single-use plastic containers.
- Disclose how they calculate environmental measures like "collection rate."
- Report on the impact of their products and packaging on their customers' health.

© Greenpeace

© Greenpeace

Appendix: Coca-Cola's Response

The following is an emailed response from The Coca-Cola Company received after Oceana shared a draft version of the report for comment in advance of publication. Oceana is a science-based group and seeks to be factual in our statements and reports. In response to Coca-Cola's comments, Oceana reviewed and, where greater clarity was needed to ensure accuracy, revised the final version of the report.

In addition to a number of incorrect statements, the report and press release ignores and mischaracterizes the complex challenges related to the plastic waste issue. Real solutions require the implementation of policies, continued investments in infrastructure and collaboration across industries. TCCC has advocated for well-designed policies that aim to support collection and recycling infrastructure, including well-designed Extended Producer Responsibility (EPR) schemes and government mandates that require producers of plastic packaging to financially support these systems.

Meanwhile, we are taking meaningful steps to limit our use of single-use plastics. As you know we have greatly increased the use of recycled content in our packaging. We also continue to work on and invest in our packaging strategy, focusing on investing in innovations such as lightweighting, and continuing work to support collection and recycling of packaging waste. Along with our bottling partners and suppliers, we have invested in the establishment of many new producers of recycled plastic using empty packages to create new ones, including establishing the first or largest bottle-to-bottle facilities in many markets.

As you point out in the report, we also continue to invest in refillable packaging, but you then argue that we are not doing enough in this space. That conclusory view fails to provide context around the challenges associated with refillable implementation (infrastructure, adoption, consumer behavior) and devalues the efforts that The Coca-Cola Company continues to invest in. We know more must be done and we continue to work on and invest in the advancement of our ambitions.

In addition to ignoring these important realities, Oceana's report contains numerous inaccuracies. It is irresponsible for Oceana to say that the company's growth is directly correlated to an increase in plastic use (it is not). The cited brand audit utilizes questionable methodology in measuring global waste, relying mostly on beach clean-ups. The Report also makes misleading statements about the health impact of microplastics yet glaringly omits critical information about the largest contributors to microplastics (which studies have shown to be paint, fiber from clothes and tires).

Endnotes

1 The Coca-Cola Company (2025) Form 10-K For the fiscal year ended December 31, 2024, pg. 12. Available: https://investors.coca-colacompany.com/filings-reports/annual-filings-10-k Accessed March 5, 2025.

2 Ellen MacArthur Foundation (2024) Global Commitment 2024 Progress Report Data Sheet, "Packaged Goods, Retailers & Pro" tab, cells R88-X88. Available: https://gc-data.emf.org/ Accessed Jan. 29, 2025.

3 For years 2018-2022, see The Coca-Cola Company (2023) 2022 Business and Sustainability Report, pg. 76. Available: https://www.coca-colacompany.com/content/dam/company/us/en/reports/coca-cola-business-sustainability-report-2022.pdf Accessed Jan. 29, 2025; for 2023, see The Coca-Cola Company (2024) 2023 Environmental Update, pg. 9. Available: https://www.coca-colacompany.com/content/dam/company/us/en/reports/2023-environmental-update/2023-environmental-update.pdf Accessed Jan. 29, 2025.

4 The circumference of the Earth is 40,075,000,000 cm (see: https://nssdc.gsfc.nasa.gov/planetary/factsheet/earthfact.html Accessed March 12, 2025). The weight of a 500 ml PET Coca-Cola bottle is 18.9 grams (see CCEP (2022) We're saving 6,800 tonnes of plastic per year by introducing new lighter weight necks for carbonated soft drink bottles. Available: https://www.cocacolaep.com/news-and-stories/were-saving-6800-tonnes-of-plastic-per-year-by-introducing-new-lighter-weight-necks-for-carbonated-soft-drinks-bottles/ Accessed March 12, 2025). The height of a 500 ml PET Coca-Cola bottle is 23.5 cm (see: https://www.royalvendors.com/coca-cola-europe-500-ml-bottles/ Accessed March 12, 2025). Translating Coca-Cola's total plastic packaging use in 2023 of 3.45 million metric tons into 500ml bottles totals 182,540,000,000 bottles or enough to form a tower 4,289,680,000,000 cm high, enough to circle around the Earth 107 times.

5 The weight of a 500 ml PET Coca-Cola bottle is 18.9 grams (see CCEP (2022) We're saving 6,800 tonnes of plastic per year by introducing new lighter weight necks for carbonated soft drink bottles. Available: https://www.cocacolaep.com/news-and-stories/were-saving-6800-tonnes-of-plastic-per-year-by-introducing-new-lighter-weight-necks-for-carbonated-soft-drinks-bottles/ Accessed March 12, 2025). The total volume that a 500 ml PET bottle occupied including overfill and plastic packaging is approximately 536.7 ml (see: https://www.perplexity.ai/page/the-volume-of-a-0-5-liter-coca-SWoCbMvTS1CFvNiFabRXdQ Accessed March 12, 2025). A blue whale's stomach has multiple compartments and a blue whale eats approximately one ton (907 kg) of krill at a meal (see: Matthews LH (1987) The Natural History of a Whale; and WWF https://www.worldwildlife.org/species/blue-whale Accessed March 12, 2025). Since krill is mostly water, we assume its density is close to that of water (1 kg ≈ 1 L) and so 907 kg of krill filling a blue whale's stomach would then occupy a volume of approximately 907 L. Translating 601,873 metric tons of Coca-Cola's plastic packaging into volume occupied totals 17,091,300,000,000 L or enough to fill 18.8 million blue whale stomachs.

6 Calculated assuming each 500 ml bottle weighs approximately 18.9g, a weight reported by Coca-Cola Europacific Partners in CCEP (2022) We're saving 6,800 tonnes of plastic per year by introducing lighter weight necks for carbonated soft drinks bottles. Available: https://www.cocacolaep.com/news-and-stories/were-saving-6800-tonnes-of-plastic-per-year-by-introducing-new-lighter-weight-necks-for-carbonated-soft-drinks-bottles/ Accessed Jan. 29, 2025.

7 In Coca-Cola's 2023 Environmental Update, the company reported that in 2023, 8.8% of the company's packaging mix was refillable glass bottles and 1.4% was refillable (primarily PET) plastic bottles. See The Coca-Cola Company (2024) 2023 Environmental Update, pg. 9. Available: https://www.coca-colacompany.com/content/dam/company/us/en/reports/2023-environmental-update/2023-environmental-update.pdf Accessed Jan. 29, 2025

8 The Coca-Cola Company (2022) 2021 World Without Waste Report, pgs. 7 and 13. Available: https://www.coca-colacompany.com/content/dam/company/us/en/reports/pdf/coca-cola-world-without-waste-report-2021.pdf Accessed Jan. 30, 2025.

9 The Coca-Cola Company (2022) The Coca-Cola Company Announces Industry-Leading Target for Reusable Packaging. Available: https://web.archive.org/web/20230722134211/https://www.coca-colacompany.com/media-center/coca-cola-announces-industry-leading-target-for-reusable-packaging Accessed Dec. 16, 2024.

10 The Coca Cola Company (2025) Coca-Cola Reports Fourth Quarter and Full Year 2024 Results. Available: https://investors.coca-colacompany.com/news-events/press-releases/detail/1128/coca-cola-reports-fourth-quarter-and-full-year-2024-results Accessed March 4, 2025.

11 For plastic, see The Ellen MacArthur Foundation (2021) A reusable drinks bottle design for multiple brands: Universal Bottle. Available: https://www.ellenmacarthurfoundation.org/circular-examples/a-reusable-drinks-bottle-design-for-multiple-brands-universal-bottle Accessed March 5, 2025; for glass, see Albrecht P, Brodersen J, Horst, DW, et al. (2023) Reuse and Recycling Systems for Selected Beverage Packaging from a Sustainability Perspective, pg. IX. Available: https://www.retorna.org/mm/file/PwC-Study_reading_version.pdf Accessed March 5, 2025.

12 The Coca-Cola Company (2023) 2022 Business and Sustainability Report, pg. 40. Available: https://www.coca-colacompany.com/content/dam/company/us/en/reports/coca-cola-business-sustainability-report-2022.pdf Accessed Jan. 10, 2025.

13 The Coca-Cola Company (2023) 2022 Business and Sustainability Report, pg. 41. Available: https://www.coca-colacompany.com/content/dam/company/us/en/reports/coca-cola-business-sustainability-report-2022.pdf Accessed Jan. 10, 2025.

14 The Coca-Cola Company (2023) 2022 Business and Sustainability Report, pg. 40. Available: https://www.coca-colacompany.com/content/dam/company/us/en/reports/coca-cola-business-sustainability-report-2022.pdf Accessed Jan. 10, 2025.

15 The Coca-Cola Company (2024) The Coca-Cola Company Evolves Voluntary Environmental Goals. Available: https://investors.coca-colacompany.com/news-events/press-releases/detail/1124/the-coca-cola-company-evolves-voluntary-environmental-goals Accessed Jan. 30, 2025.

16 The Coca-Cola Company (2024) The Coca-Cola Company Evolves Voluntary Environmental Goals. Available: https://investors.coca-colacompany.com/news-events/press-releases/detail/1124/the-coca-cola-company-evolves-voluntary-environmental-goals Jan. 30, 2025.

17 Packaging Dive (2024) Coca-Cola lowers ambition with new 2035 packaging sustainability targets. Available: https://www.packagingdive.com/news/coca-cola-new-packaging-sustainability-goals-2035/734379/ Accessed Jan. 30, 2025.

18 The Coca-Cola Company (2024) 2023 Environmental Update, footnote 2 on pg. 9. Available: https://www.coca-colacompany.com/content/dam/company/us/en/reports/2023-environmental-update/2023-environmental-update.pdf Accessed March 4, 2025.

19 Ellen MacArthur Foundation (2023) Global Commitment 2023 Progress Report Data Sheet, "Packaged Goods, Retailers & Pro" tab, cell VH86. Available: https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Femf.thirdlight.com%2Ffile%2F24%2FZEx-3p5ZESurDS7ZEGMzZH4S.OQZ%2FGlobal%2520Commitment%2520Progress%2520Report%25202023%2520-%2520Data%2520Sheet.xlsx&wdOrigin=BROWSELINK Accessed March 5, 2025.

20 Oceana's estimate was made using the reported CapEx investment rate for refillables in 2023 reported by Arca Continental. Arca Continental's Chief Commercial and Digital Officer Jose Borda reported in its 2Q 2023 earnings call "almost 20% of our CapEx is for refillables". Transcript Available: https://www.arcacontal.com/media/397428/ac_2q23_transcript.pdf Accessed Jan. 28, 2025. Arca Continental disclosed to Reuters that

it has "set its 2023 capital expenditure at more than 14.5 billion Mexican pesos ($801 million)." See Reuters (2022) Mexico's Arca Continental sees 2023 CapEx at over $800 million. Available: https://www.reuters.com/business/retail-consumer/mexicos-arca-continental-sees-2023-capex-over-800-mln-2023-03-30/ Accessed Jan. 29, 2024. Twenty percent of $801 million is $160 million and given that Arca Continental sold 561 million unit cases of refillable bottles in 2023 (the company reported that 22.7% of its sales of 2.472 billion unit cases were in refillable bottles, see: Arca Continental (2024) 2023 Integrated Annual Report. Available: https://www.arcacontal.com/media/403021/integrated_annual_report_2023.pdf Accessed Feb. 19, 2025), this equates to a CapEx of $0.286 per unit case. If, based on these figures, we were then to assume that the maintenance and/or growth of refillable bottles requires approximately $0.286 of CapEx per unit case, $959 million could theoretically fund approximately 3.35 billion unit cases of refillable bottles. 3.35 billion unit cases is approximately equivalent to 10% of the Coca-Cola Company's reported total volume of sales for 2023 of 33.3 billion unit cases, see: The Coca-Cola Company (2024) Form 10-K For the fiscal year ended December 31, 2023. Available: https://investors.coca-colacompany.com/filings-reports/all-sec-filings/content/0000021344-24-000009/0000021344-24-000009.pdf Accessed Jan. 29, 2025.

21 Tuuri EM and Leterme SC (2023) How plastic debris and associated chemicals impact the marine food web: A review. Environmental Pollution 321: 121156. https://doi.org/10.1016/j.envpol.2023.121156

22 Gall SC, Thompson RC (2015) The impact of debris on marine life. Marine Pollution Bulletin 92: 170-179. https://doi.org/10.1016/j.marpolbul.2014.12.041; Kühn S and van Franeker JA (2020) Quantitative overview of marine debris ingested by marine megafauna. Marine Pollution Bulletin 151: 110858. https://doi.org/10.1016/j.marpolbul.2019.110858

23 Cowger W, Willia KA, Bullock KA, et al. (2024) Global producer responsibility for plastic pollution. Science 10(17). DOI: 10.1126/sciadv.adj8275

24 The Coca-Cola Company (2025) Form 10-K For the fiscal year ended December 31, 2024, pg. 2. Available: https://investors.coca-colacompany.com/filings-reports/annual-filings-10-k Accessed March 5, 2025.

25 Nihart AJ, Garcia MA, Hayek EE, et al. (2025) Bioaccumulation of microplastics in decedent human brains. Nature Medicine. https://doi.org/10.1038/s41591-024-03453-1

26 Marfella R, Prattichizzo F, Sardu C, et al. (2024) Microplastics and nanoplastics in atheromas and cardiovascular events. The New England Journal of Medicine 390:900-910. https://doi.org/10.1056/NEJMoa2309822

27 Yan Z, Liu Y, Zhang T, et al. (2021) Analysis of microplastics in human feces reveals a correlation between fecal microplastics and inflammatory bowel disease status. Ecotoxicology and Public Health 56(1): 414-421. https://doi.org/10.1021/acs.est.1c03924

28 Zaheer J, Kim H, Ko IO, et al. (2022) Pre/post-natal exposure to microplastic as a potential risk factor for autism spectrum disorder. Environment International 161: 107121. https://doi.org/10.1016/j.envint.2022.107121; Moosa A, Shu H, Sarachana T, et al. (2017) Are endocrine disrupting compounds environmental risk factors for autism spectrum disorder? Hormone Behaviours 191:13-21. https://doi.org/10.1016/j.yhbeh.2017.10.003

29 Zhang C, Chen J, Sicheng M, et al. (2022) Microplastics may be a significant cause of male infertility. American Journal of Mens Health 16(3): 15579883221096549. https://doi.org/10.1177/15579883221096549

30 Moore S, Paalanen L, Melymuk L, et al. (2022) The association between ADHD and environmental chemicals – a scoping review. International Journal of Environmental Research and Public Health. 19(5): 2849. https://doi.org/10.3390/ijerph19052849; Stein TP, Schluter MD, Steer RA, et al. (2023) Bisphenol-A and phthalate metabolism in children with neurodevelopmental disorders. PLOS One. https://doi.org/10.1371/journal.pone.0289841

31 Rancière F, Botton J, Slama R, et al. (2019) Exposure to Bisphenol A and Bisphenol S and incident type 2 diabetes: a case-cohort study in the French cohort D.E.S.I.R. Environmental Health Perspectives 127(10). https://doi.org/10.1289/EHP5159

32 Gao H, Yang BJ, Li N, et al. (2015) Bisphenol A and hormone-associated cancers: current progress and perspectives. Medicine 94(1): e211. https://doi.org/10.1097/MD.0000000000000211; Ahern TP, Spector LG, Damkier P, et al. (2022) Medication-associated phthalate exposure and childhood cancer incidence. Journal of the National Cancer Institute 114(6): 885-894. https://doi.org/10.1093/jnci/djac045; Hafezi SA and Abdel-Rahman WM (2019) The endocrine disruptor Bisphenol A (BPA) exerts a wide range of effects in carcinogenesis and response to therapy. Current Molecular Pharmacology 12(3): 230-238. https://doi.org/10.2174/1874467212666190306164507

33 Winiarska E, Jutel M and Zemelka-Wiacek M (2024) The potential impact of nano- and microplastics on human health: Understanding human health risks. Environmental Research 251(2): 118535. https://doi.org/10.1016/j.envres.2024.118535; Yang D, Huahong S, Li L, et al. (2015) Microplastic pollution in table salts from China. Environmental Science & Technology 49(22): 13622-13627. https://doi.org/10.1021/acs.est.5b03163; Diaz-Basantes MF, Nacimba-Aguirre D, Conesa JA, et al. (2022) Presence of microplastics in commercial canned tuna. Food Chemistry 385: 132721. https://doi.org/10.1016/j.foodchem.2022.132721

34 Leslie HA, van Velzen MJM, Brandsma SH, et al. (2022) Discovery and quantification of plastic particle pollution in human blood. Environment International 163:107199. https://doi.org/10.1016/j.envint.2022.107199

35 The Coca-Cola Company (2025) History of Coca-Cola Advertising Slogans. Available: https://www.coca-colacompany.com/about-us/history/history-of-coca-cola-advertising-slogans Accessed March 5, 2025.

36 The Coca-Cola Company (2025) Our Company. Available: https://www.coca-colacompany.com/about-us Accessed March 5, 2025.

37 Coca-Cola reported that 2.2 billion servings of its beverages are consumed worldwide every day, and that 33.7 billion unit cases of its product were sold in 2024. Unit cases are equal to 192 U.S. fluid ounces of finished beverage (24 eight-ounce servings). See The Coca-Cola Company (2025) Form 10-K For the fiscal year ended December 31, 2024, pgs. 2 and 5, respectively: https://investors.coca-colacompany.com/filings-reports/annual-filings-10-k Accessed March 5, 2025.

38 The Coca-Cola Company (2024). 2023 Environmental Update, pg. 9. Available: https://www.coca-colacompany.com/content/dam/company/us/en/reports/2023-environmental-update/2023-environmental-update.pdf Accessed Jan. 29, 2025.

39 Calculated through dividing the 2022 value for number of non-refillable PET bottles sold in the global non-alcoholic ready-to-drink market (excluding bulk water), obtained through data analytics and consulting company Global Data (621,846.46 million units) by the 2022 value for the number of single-use plastic bottles sold by the Coke System (134 billion packages), as reported in The Coca-Cola Company (2024) 2023 Environmental Update. Available: https://www.coca-colacompany.com/content/dam/company/us/en/reports/2023-environmental-update/2023-environmental-update.pdf Accessed Feb. 14, 2025.

40 Break Free From Plastic (2024) 2023 Global Brand Audit: The Coca-Cola Company is once again the top global plastic polluter. Available: https://www.breakfreefromplastic.org/2024/02/07/bffp-movement-unveils-2023-global-brand-audit-results/ Accessed March 5, 2025.

41 Cowger W, Willis KA, Bullock S, et al. (2024) Global producer responsibility for plastic pollution. Science 10(17). DOI: 10.1126/sciadv.adj8275

42 Reported revenue for The Coca-Cola Company for years 2018 to 2020 were obtained from The Coca-Cola Company (2021) Form 10-K For the fiscal year ended December 31, 2020, pg. 64. Available: https://investors.coca-colacompany.com/filings-reports/annual-filings-10-k/content/0000021344-21-000008/0000021344-21-000008.pdf Accessed Jan. 17, 2025; and for years 2021 to 2023 from The Coca-Cola Company (2024) Form 10-K For the fiscal year ended December 31, 2023, pg. 64. Available: https://investors.coca-colacompany.com/filings-reports/all-sec-filings/content/0000021344-24-000009/0000021344-24-000009.pdf Accessed Jan. 17, 2025. Note that the reported revenue is only for The Coca-Cola Company, and not for the Coca-Cola system as a whole, including revenue from independent bottlers.

43 Future revenue growth for the Coca-Cola Company for the years 2024-2030 was forecasted through applying an annual growth rate of 3.48%, which was the average of 19 financial analysts' forecasted revenue growth rates between 2024 and 2025 as reported on Yahoo! Finance on Jan. 15, 2025. Available: https://finance.yahoo.com/quote/KO/analysis/?guccounter=2 Accessed Jan. 15, 2025. This modeling approach was originally designed by a team of students at Cornell University, led by Aaron Zhu, with guidance from Oceana.

44 Ellen MacArthur Foundation (2024) Global Commitment 2024 Progress Report Data Sheet, "Packaged Goods, Retailers & Pro" tab, cells R88-X88. Available: https://gc-data.emf.org/ Accessed Jan. 29, 2025.

45 The circumference of the Earth is 40,075,000,000 cm (see: https://nssdc.gsfc.nasa.gov/planetary/factsheet/earthfact.html Accessed March 12, 2025). The weight of a 500 ml PET Coca-Cola bottle is 18.9 grams (see CCEP (2022) We're saving 6,800 tonnes of plastic per year by introducing new lighter weight necks for carbonated soft drink bottles. Available: https://www.cocacolaep.com/news-and-stories/were-saving-6800-tonnes-of-plastic-per-year-by-introducing-new-lighter-weight-necks-for-carbonated-soft-drinks-bottles/ Accessed March 12, 2025). The height of a 500 ml PET Coca-Cola bottle is 23.5 cm (see: https://www.royalvendors.com/coca-cola-europe-500-ml-bottles/ Accessed March 12, 2025). Translating Coca-Cola's total plastic packaging use in 2023 of 3.45 million metric tons into 500ml bottles totals 182,540,000,000 bottles or enough to form a tower 4,289,680,000,000 cm high, enough to circle around the Earth 107 times.

46 The model used data for the years 2018-2023 reported by Coca-Cola on the total weight of plastic packaging used annually by the company, the number of different packages sold annually, and the percentage of the total packaging mix (by units) that each packaging type represented, to model future plastic packaging use by the company. The model assumed future year-over-year growth of the total number of packages sold of Coca-Cola products to be represented by the average growth of the previous five years, and it assumed that both the percentage of the total packaging mix represented by each packaging type and the calculated weight of plastic per packaging unit in 2023 (the latest year of reporting) stays the same until 2030. Oceana's analysis does not assume future lightweighting of packaging, though it should be acknowledged that Coca-Cola has reportedly changed the design of its plastic bottles in some markets which has decreased the weight of this packaging (though not the total number of bottles). The modeling approach was originally designed by a team of students at Cornell University, led by Aaron Zhu, with guidance from Oceana. Data reported by Coca-Cola on the company's annual plastic packaging use for the years 2018-2023 has been extracted from Ellen MacArthur Foundation (2024) Global Commitment 2024 Progress Report Data Sheet, "Packaged Goods, Retailers & Pro" tab, cells R88-X88. Available: https://gc-data.emf.org/ Accessed Jan. 29, 2025; data reported by Coca-Cola on the total number of packages sold and percentage of packaging mix (by units) for the years 2018-2022 was reported in The Coca-Cola Company (2023) 2022 Business and Sustainability Report, pg. 76. Available: https://www.coca-colacompany.com/content/dam/company/us/en/reports/coca-cola-business-sustainability-report-2022.pdf Accessed Jan. 29, 2025; and for 2023 in The Coca-Cola Company (2024) 2023 Environmental Update, pg. 9. Available: https://www.coca-colacompany.com/content/dam/company/us/en/reports/2023-environmental-update/2023-environmental-update.pdf Accessed Jan. 29, 2025.

47 The Coca-Cola Company (2023) 2022 Business and Sustainability Report, pg. 76. Available: https://www.coca-colacompany.com/content/dam/company/us/en/reports/coca-cola-business-sustainability-report-2022.pdf Accessed Jan. 29, 2025.

48 The Coca-Cola Company (2024) 2023 Environmental Update, pg. 9. Available: https://www.coca-colacompany.com/content/dam/company/us/en/reports/2023-environmental-update/2023-environmental-update.pdf Accessed Jan. 29, 2025.

49 Refer to Coca-Cola's comments on the scope of its data reporting in Ellen MacArthur Foundation (2024) Global Commitment 2024 Progress Report Data Sheet, "Packaged Goods, Retailers & Pro" tab, cell KN88. Available: https://gc-data.emf.org/ Accessed Jan. 29, 2025.

50 The regression analysis was carried out in Microsoft Excel using the CORREL function.

51 Borrelle SB, Ringma J, Law KL, et al. (2020) Predicted growth in plastic waste exceeds efforts to mitigate plastic pollution. Science 369(6510): 1515-1518. https://doi.org/10.1126/science.aba3656

52 The weight of a 500 ml PET Coca-Cola bottle is 18.9 grams (see CCEP (2022) We're saving 6,800 tonnes of

plastic per year by introducing new lighter weight necks for carbonated soft drink bottles. Available: https://www.cocacolaep.com/news-and-stories/were-saving-6800-tonnes-of-plastic-per-year-by-introducing-new-lighter-weight-necks-for-carbonated-soft-drinks-bottles/ Accessed March 12, 2025). The total volume that a 500 ml PET bottle occupied including overfill and plastic packaging is approximately 536.7 ml (see: https://www.perplexity.ai/page/the-volume-of-a-0-5-liter-coca-SWoCbMvTS1CFvNiFabRXdQ Accessed March 12, 2025). A blue whale's stomach has multiple compartments and a blue whale eats approximately one ton (907 kg) of krill at a meal (see: Matthews LH (1987) The Natural History of a Whale; and WWF https://www.worldwildlife.org/species/blue-whale Accessed March 12, 2025). Since krill is mostly water, we assume its density is close to that of water (1 kg ≈ 1 L) and so 907 kg of krill filling a blue whale's stomach would then occupy a volume of approximately 907 L. Translating 601,873 metric tons of Coca-Cola's plastic packaging into volume occupied totals 17,091,300,000,000 L or enough to fill 18.8 million blue whale stomachs.

53 Calculated assuming each 500 ml bottle weighs approximately 18.9g, a weight reported by Coca-Cola Europacific Partners in CCEP (2022) We're saving 6,800 tonnes of plastic per year by introducing lighter weight necks for carbonated soft drinks bottles. Available: https://www.cocacolaep.com/news-and-stories/were-saving-6800-tonnes-of-plastic-per-year-by-introducing-new-lighter-weight-necks-for-carbonated-soft-drinks-bottles/ Accessed Jan. 29, 2025.

54 Kenyon KW and Kridler E (1969) Laysan albatrosses swallow indigestible matter. Auk 86: 339-343. https://doi.org/10.2307/4083505

55 Walker WA and Coe JM (1989) Survey of marine debris ingestion by odontocete cetaceans. In Proceedings of the second international conference on marine debris 154: 2-7.

56 Eriksen M, Cowger W, Erdle LM, et al. (2023) A growing plastic smog, not estimated to be over 170 trillion plastic particles afloat in the world's oceans—Urgent solutions required. PLOS ONE https://doi.org/10.1371/journal.pone.0281596; Peng G, Chen M, Chen S, et al. (2018) Microplastics contaminate the deepest part of the world's ocean. Geochemical Perspectives Letters v9. doi:10.7185/geochemlet.1829; Lavers JL, Rivers-Auty J and Bond AL et al. (2021) Plastic debris increases circadian temperature extrêmes in beach sediments. Journal of Hazardous Materials 416: 126140. https://doi.org/10.1016/j.jhazmat.2021.126140; Peeken I, Primpke S, Beyer B, et al. (2018) Arctic sea ice is an important temporal sink and means of transport for microplastic. Nature Communications 9(1505). https://doi.org/10.1038/s41467-018-03825-5

57 Goßmann I, Herzke D, Held A et al. (2023) Occurrence and backtracking of microplastic mass loads including tire wear particles in northern Atlantic air. Nature Communications 14(3707). https://doi.org/10.1038/s41467-023-39340-5

58 Tuuri EM and Leterme SC (2023) How plastic debris and associated chemicals impact the marine food web: A review. Environmental Pollution 321: 121156. https://doi.org/10.1016/j.envpol.2023.121156

59 Tuuri EM and Leterme SC (2023) How plastic debris and associated chemicals impact the marine food web: A review. Environmental Pollution 321: 121156. https://doi.org/10.1016/j.envpol.2023.121156

60 Gall SC and Thompson RC (2015) The impact of debris on marine life. Marine Pollution Bulletin 92: 170-179. https://doi.org/10.1016/j.marpolbul.2014.12.041; Kühn S and van Franeker JA (2020) Quantitative overview of marine debris ingested by marine megafauna. Marine Pollution Bulletin 151: 110858. https://doi.org/10.1016/j.marpolbul.2019.110858

61 Lavers JL, Sharp PB, Stuckenbrock S, et al. (2020) Entrapment in plastic debris endangers hermit crabs. Journal of Hazardous Materials 387:121703. https://doi.org/10.1016/j.jhazmat.2019.121703

62 Wilcox C, Puckridge M, Schuyler QA, et al. (2018) A quantitative analysis linking sea turtle mortality and plastic debris ingestion. Scientific Reports 8(12536). https://doi.org/10.1038/s41598-018-30038-z

63 Tuuri EM and Leterme SC (2023) How plastic debris and associated chemicals impact the marine food web: A review. Environmental Pollution 321: 121156. https://doi.org/10.1016/j.envpol.2023.121156

64 Tuuri EM and Leterme SC (2023) How plastic debris and associated chemicals impact the marine food web: A

review. Environmental Pollution 321: 121156. https://doi.org/10.1016/j.envpol.2023.121156

65 The Irish Times (2018) Dead whale had 1,000 plastic pieces in stomach. Available: https://www.irishtimes.com/news/environment/dead-whale-had-1-000-plastic-pieces-in-stomach-1.3704157 Accessed March 5, 2025.

66 Hawkes Bay Today (2020) Albatross dies after being found on Hawke's Bay beach with plastic water bottle in its stomach. Available: https://www.nzherald.co.nz/hawkes-bay-today/news/albatross-dies-after-being-found-on-hawkes-bay-beach-with-plastic-water-bottle-in-its-stomach/KU5NGIATGNL5F7DIF4UVGIIMAU/#:~:text=A%20500ml%20plastic%20bottle%2C%20as,autopsy%20conducted%20by%20Massey%20University.&text=The%20results%20of%20the%20autopsy,stomach%20and%20likely%20causing%20pain. Accessed March 5, 2025.

67 Nelms SE, Duncan EM, Broderick AC, et al. (2016) Plastic and marine turtles: a review and call for research. ICES Journal of Marine Science: Journal du Conseil 73: 165–181. doi: 10.1093/icesjms/fsv165

68 The Sun (2018) Sea Sick: Fisherman's horror video shows plastic being pulled from inside a fish's stomach. Available: https://www.thesun.ie/tech/2081722/fishermans-horror-video-shows-plastic-being-pulled-frominside-a-fishs-stomach/ Accessed March 5, 2025.

69 Nelms SE, Duncan EM, Broderick AC, et al. (2016) Plastic and marine turtles: a review and call for research. ICES Journal of Marine Science: Journal du Conseil 73: 165–181. doi: 10.1093/icesjms/fsv165

70 News.com.au (2011) Dead turtle swallowed 317 plastic pieces. Available: https://www.news.com.au/breakingnews/dead-turtle-swallowed-317-plastic-pieces/news-story/703faca815bc5ab19a9aac14617342d9 Accessed March 5, 2025.

71 Tuuri EM and Leterme SC (2023) How plastic debris and associated chemicals impact the marine food web: A review. Environmental Pollution 321: 121156 https://doi.org/10.1016/j.envpol.2023.121156

72 Delaeter C, Spilmont N, Bouchet VMP, et al. (2022) Plastic leachates: Bridging the gap between a conspicuous pollution and its pernicious effects on marine life. Science of the Total Environment 826: 154091. https://doi.org/10.1016/j.scitotenv.2022.154091

73 Verla AW, Enyoh CE, Verla EN et al. (2019) Microplastic-toxic chemical interaction: a review study on quantified levels, mechanism and implication. SN Applied Sciences 1: 1400. https://doi.org/10.1007/s42452-019-1352-0

74 Salazar-Beltrán D, Hinojosa-Reyes L, Palomino-Cabello C et al. (2018) Determination of phthalate acid esters plasticizers in polyethylene terephthalate bottles and its correlation with some physicochemical properties. Polymer Testing 69: 87-94. https://doi.org/10.1016/j.polymertesting.2018.04.002

75 Green-Ojo B, Botelho MT, Umbuzeiro GDA et al. (2024) Evaluation of precopulatory pairing behaviour and male fertility in a marine amphipod exposed to plastic additives. Environmental Pollution 341: 122946. https://doi.org/10.1016/j.envpol.2023.122946

76 AB InBev (2024) Annual Report 2023, pg. 38. Available: https://cdn.builder.io/o/assets%2F2e5c7fb020194c1a8ee80f743d0b923e%2Fc45d833164dc4e0a849c890cae931f4c?alt=media&token=5fe510b1-692d-4bc8-95f4-8a4ceb847bbc&apiKey=2e5c7fb020194c1a8ee80f743d0b923e Accessed Jan. 10, 2025.

77 Heineken (2024) Annual Report 2023, pg. 20. Available: https://www.theheinekencompany.com/sites/heineken-corp/files/heineken-corp/investors/our-2022-annual-report/heineken-n-v-annual-report-2023-final-22feb24.pdf Accessed Jan. 10, 2025.

78 Heineken (2024) Annual Report 2023, pg. 20. Available: https://www.theheinekencompany.com/sites/heineken-corp/files/heineken-corp/investors/our-2022-annual-report/heineken-n-v-annual-report-2023-final-22feb24.pdf Accessed Jan. 10, 2025.

79 The Coca-Cola Company (2022) 2021 World Without Waste Report, pgs. 7 and 13. Available: https://

www.coca-colacompany.com/content/dam/company/us/en/reports/pdf/coca-cola-world-without-waste-report-2021.pdf Accessed Jan. 30, 2025.

80 The Coca-Cola Company (2022) The Coca-Cola Company Announces Industry-Leading Target for Reusable Packaging. Available: https://web.archive.org/web/20230722134211/https://www.coca-colacompany.com/media-center/coca-cola-announces-industry-leading-target-for-reusable-packaging Accessed Dec. 16, 2024.

81 Coca-Cola reported that in 2022, 9% of the company's packaging mix was refillable glass bottles and 1.4% was refillable (primarily PET) plastic bottles in The Coca-Cola Company (2023) 2022 Business and Sustainability Report, pg. 76. Available: https://www.coca-colacompany.com/content/dam/company/us/en/reports/coca-cola-business-sustainability-report-2022.pdf Accessed Jan. 30, 2025.

82 The Coca-Cola Company (2022) The Coca-Cola Company Announces Industry-Leading Target for Reusable Packaging. Available: https://web.archive.org/web/20230722134211/https://www.coca-colacompany.com/media-center/coca-cola-announces-industry-leading-target-for-reusable-packaging Accessed Dec. 16, 2024.

83 The Coca Cola Company (2025) Coca-Cola Reports Fourth Quarter and Full Year 2024 Results. Available: https://investors.coca-colacompany.com/news-events/press-releases/detail/1128/coca-cola-reports-fourth-quarter-and-full-year-2024-results Accessed March 5, 2025.

84 For plastic, see Ellen MacArthur Foundation (2021) A reusable drinks bottle design for multiple brands: Universal Bottle. Available: https://www.ellenmacarthurfoundation.org/circular-examples/a-reusable-drinks-bottle-design-for-multiple-brands-universal-bottle Accessed March 5, 2025; for glass, see Albrecht P, Brodersen J, Horst, DW, et al. (2023) Reuse and Recycling Systems for Selected Beverage Packaging from a Sustainability Perspective, pg. IX. Available: https://www.retorna.org/mm/file/PwC-Study_reading_version.pdf Accessed March 5, 2025.

85 The Coca-Cola Company (2023) 2022 Business and Sustainability Report, pg. 40. Available: https://www.coca-colacompany.com/content/dam/company/us/en/reports/coca-cola-business-sustainability-report-2022.pdf Accessed Jan. 10, 2025.

86 The Coca-Cola Company (2023) 2022 Business and Sustainability Report, pg. 41. Available: https://www.coca-colacompany.com/content/dam/company/us/en/reports/coca-cola-business-sustainability-report-2022.pdf Accessed Jan. 10, 2025.

87 The Coca-Cola Company (2023) 2022 Business and Sustainability Report, pg. 40. Available: https://www.coca-colacompany.com/content/dam/company/us/en/reports/coca-cola-business-sustainability-report-2022.pdf Accessed Jan. 10, 2025.

88 Oceana (2022) Oceana: Coca-Cola Pledges to Increase Refillable Bottles, but Commitment Lacks Transparency. Available: https://oceana.org/press-releases/oceana-coca-cola-pledges-to-increase-refillable-bottles-but-commitment-lacks-transparency/ Accessed March 5, 2025.

89 The Coca-Cola Company (2023) 2022 Business and Sustainability Report, pg. 9. Available: https://www.coca-colacompany.com/content/dam/company/us/en/reports/coca-cola-business-sustainability-report-2022.pdf Accessed Jan. 10, 2025.

90 The Coca-Cola Company (2024) The Coca-Cola Company Evolves Voluntary Environmental Goals. Available: https://www.coca-colacompany.com/media-center/the-coca-cola-company-evolves-voluntary-environmental-goals Accessed Jan. 10, 2025.

91 For example, the decision was covered by the Guardian (2024) Coca-Cola accused of quetly dropping its 25% reusable packaging target. Available: https://www.theguardian.com/environment/2024/dec/03/coca-cola-accused-dropping-reusable-packaging-target Accessed March 5, 2025.

92 Ellen MacArthur Foundation (2023) Global Commitment 2023 Progress Report Data Sheet,

'Packaged Goods, Retailers & Pro' tab, cell VH86. Available: https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Femf.thirdlight.com%2Ffile%2F24%2FZEx-3p5ZESurDS7ZEGMzZH4S.OQZ%2FGlobal%2520Commitment%2520Progress%2520Report%25202023%2520-%2520Data%2520Sheet.xlsx&wdOrigin=BROWSELINK Accessed March 5, 2025. Note the 2023 report reports on 2022 data.

93 Oceana's estimate was made using the reported CapEx investment rate for refillables in 2023 reported by Arca Continental. Arca Continental's Chief Commercial and Digital Officer Jose Borda reported in its Q2 2023 earnings call "almost 20% of our CapEx is for refillables". Transcript Available: https://www.arcacontal.com/media/397428/ac_2q23_transcript.pdf Accessed Jan. 28, 2025. Arca Continental disclosed to Reuters that it has "set its 2023 capital expenditure at more than 14.5 billion Mexican pesos ($801 million)." See Reuters (2022) Mexico's Arca Continental sees 2023 capex at over $800 mln. Available: https://www.reuters.com/business/retail-consumer/mexicos-arca-continental-sees-2023-capex-over-800-mln-2023-03-30/ Accessed Jan. 29, 2024. Twenty percent of $801 million is $160 million and given that Arca Continental sold 561 million unit cases of refillable bottles in 2023 (the company reported that 22.7% of its sales of 2.472 billion unit cases were in refillable bottles, see: Arca Continental (2024) 2023 Integrated Annual Report. Available: https://www.arcacontal.com/media/403021/integrated_annual_report_2023.pdf Accessed Feb. 19, 2025), this equates to a CapEx of $0.286 per unit case. If, based on these figures, we were then to assume that the maintenance and/or growth of refillable bottles requires approximately $0.286 of CapEx per unit case, $959 million could theoretically fund approximately 3.35 billion unit cases of refillable bottles. 3.35 billion unit cases is approximately equivalent to 10% of the Coca-Cola Company's reported total volume of sales for 2023 of 33.3 billion unit cases, see: The Coca-Cola Company (2024) Form 10-K For the fiscal year ended December 31, 2023. Available: https://investors.coca-colacompany.com/filings-reports/all-sec-filings/content/0000021344-24-000009/0000021344-24-000009.pdf Accessed Jan. 29, 2025.

94 In Coca-Cola's 2023 Environmental Update, the company reported that in 2023, 8.8% of the company's packaging mix was refillable glass bottles and 1.4% was refillable (primarily PET) plastic bottles. See The Coca-Cola Company (2024) 2023 Environmental Update, pg. 9. Available: https://www.coca-colacompany.com/content/dam/company/us/en/reports/2023-environmental-update/2023-environmental-update.pdf Accessed Jan. 29, 2025

95 The model used data for the years 2018-2023 reported by Coca-Cola on the total weight of plastic packaging used annually by the company, the number of different packages sold annually, and the percentage of the total packaging mix (by units) that each packaging type represented, to forecast future plastic packaging use by the company. The model assumed future year-over-year growth of the total number of packages sold of Coca-Cola products to be represented by the average growth of the previous five years, and it assumed that the calculated weight of plastic per packaging unit in 2023 (the latest year of reporting) stays the same until 2030. The modeled scenarios included Coca-Cola's original goal of reaching 25% reusable packaging by 2030, plus testing higher targets to identify how much reusable packaging relative to other packaging types is required to reduce the company's plastic packaging use below current levels (most recently reported for 2023), and lowest historically reported levels (in 2018). Published forecasted rates of plastic pollution emissions were then applied to the forecasted plastic usage under each modeled scenario to estimate how much of this plastic may pollute aquatic systems. The modeling approach was originally designed by a team of students at Cornell University, led by Aaron Zhu, with guidance from Oceana. Data reported by Coca-Cola on the company's annual plastic packaging use for the years 2018-2023 has been extracted from Ellen MacArthur Foundation (2024) Global Commitment 2024 Progress Report Data Sheet, "Packaged Goods, Retailers & Pro" tab, cells R88-X88. Available: https://gc-data.emf.org/ Accessed Jan. 29, 2025; data reported by Coca-Cola on the total number of packages sold and percentage of packaging mix (by units) for the years 2018-2022 was reported in The Coca-Cola Company (2023) 2022 Business and Sustainability Report, pg. 76. Available: https://www.coca-colacompany.com/content/dam/company/us/en/reports/coca-cola-business-sustainability-report-2022.pdf Accessed Jan. 29, 2025; and for 2023 in The Coca-Cola Company (2024) 2023 Environmental Update, pg. 9. Available: https://www.coca-colacompany.com/content/dam/company/us/en/reports/2023-environmental-update/2023-environmental-update.pdf Accessed Jan. 29, 2025. Published rates of plastic pollution emissions were obtained from Borrelle SB, Ringma J, Law KL, et al. (2020) Predicted growth in plastic waste exceeds efforts to mitigate plastic pollution. Science 369(6510): 1515-1518. https://doi.org/10.1126/science.aba3656

96 Live Nation has stated that "we've seen over a 90% return rates of cups" when trialing TURN's reusable

cup system at their events, see TechCrunch (2022) Live Nation bets millions on high-tech reusable cups to combat plastic waste. Available: https://techcrunch.com/2022/09/01/live-nation-turn-systems-sustainability-reusable-cups-plastic Accessed March 5, 2025; R.World has stated that their return rates are well over 90%, see https://rworldreuse.com/how-it-works/

97 Oceana (2024) Reusable Packaging at Paris Olympics Dramatically Reduced Single-Use Plastic. Available: https://oceana.org/press-releases/reusable-packaging-at-paris-olympics-dramatically-reduced-single-use-plastic/ Accessed March 5, 2025.

98 Paris 2024 (2024) Paris 2024 Sustainability and Legacy Post-Games Report Summary. Available: https://press.paris2024.org/news/paris-2024-presents-the-results-of-its-actions-to-make-the-games-more-sustainable-36aef-7578a.html Accessed Jan. 10, 2025.

99 Paris 2024 (2024) Paris 2024 Sustainability and Legacy Post-Games Report Summary. Available: https://press.paris2024.org/news/paris-2024-presents-the-results-of-its-actions-to-make-the-games-more-sustainable-36aef-7578a.html Accessed Jan. 10, 2025.

100 The Coca-Cola Company (2023) 2022 Business and Sustainability Report, pg. 37. Available: https://www.coca-colacompany.com/content/dam/company/us/en/reports/coca-cola-business-sustainability-report-2022.pdf Accessed Sept. 14, 2023.

101 Quote from Bea Perez, SVP and Chief Communications, Sustainability and Strategic Partnerships Officer, speaking at the Bernstein ESG Conference on September 14, 2023. Transcript available: https://seekingalpha.com/article/4635306-coca-cola-company-ko-bernstein-esg-conference-transcript Accessed Sept. 25, 2023.

102 Coca-Cola FEMSA (2022) 2021 Integrated Report, pg. 56. Available: https://coca-colafemsa.com/wp-content/uploads/2022/04/KOF-IR-2021-english-FS.pdf Accessed Sept. 14, 2023.

103 Coca-Cola Andina (2023) 2022 Integrated Annual Report, pg. 103. Available: https://www.koandina.com/uploads/Coca-Cola%20Andina%20Integrated%20Annual%20Report%202022.pdf Accessed Sept. 14, 2023.

104 Coca-Cola İçecek (2023) 2022 Integrated Annual Report, pg. 111. Available: https://www.cci.com.tr/Portals/3/CCI_Integrated_Report_2021.pdf Accessed Sept. 14, 2023

105 Quote from Andres Wainer, speaking at a Panel Discussion on plastic waste solutions hosted by Oceana and HSBC on November 15, 2022. Webcast available: https://kvgo.com/hsbc-one-offs/panel-discussion-on-plastic-waste-solution Accessed Jan. 10, 2025.

106 The Coca-Cola Company (2022) The Coca-Cola Company Announces Industry-Leading Target for Reusable Packaging. Available: https://web.archive.org/web/20230722134211/https://www.coca-colacompany.com/media-center/coca-cola-announces-industry-leading-target-for-reusable-packaging Accessed Dec. 16, 2024.

107 The Coca-Cola Company (2024) 2023 Environmental Update, pg.5. Available: https://www.coca-colacompany.com/content/dam/company/us/en/reports/2023-environmental-update/2023-environmental-update.pdf Accessed March 5, 2025.

108 The Coca-Cola Company (2024) 2023 Environmental Update, pg.5. Available: https://www.coca-colacompany.com/content/dam/company/us/en/reports/2023-environmental-update/2023-environmental-update.pdf Accessed March 5, 2025.

109 Zero Waste Europe (2022) How Circular is PET? pg. 27. Available: https://zerowasteeurope.eu/wp-content/uploads/2022/02/HCIP_V13-1-1.pdf Accessed Feb. 17, 2025.

110 The Coca-Cola Company (2023) 2022 Business and Sustainability Report, pg. 41. Available: https://www.coca-colacompany.com/content/dam/company/us/en/reports/coca-cola-business-sustainability-report-2022.pdf Accessed Jan. 10, 2025.

111 Resource Recycling (2024) rPET Imports Driving Perfect Storm for Reclaimers. Available: https://resource-

recycling.com/plastics/2024/03/26/rpet-imports-driving-perfect-storm-for-reclaimers/ Accessed Jan. 15, 2025.

112 Ellen MacArthur Foundation (2023) Global Commitment 2023 Progress Report Data Sheet, 'Packaged Goods, Retailers & Pro' tab, cell VH86. Available: https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Femf.thirdlight.com%2Ffile%2F24%2FZEx-3p5ZESurDS7ZEGMzZH4S.OQZ%2FGlobal%2520Commitment%2520Progress%2520Report%25202023%2520-%2520Data%2520Sheet.xlsx&wdOrigin=BROWSELINK Accessed March 5, 2025. Note the 2023 report reports on 2022 data.

113 Waste & Recycling (2024) Plastics Recycling Industry Riding the Circular Wave. Available: https://www.wasterecyclingmag.com/news/plastic-recycling/plastics-recycling-industry-riding-the-circular-wave Accessed March 10, 2025.

114 Petco (2023) Annual Review 2023, pg. 12. Available: https://petco.co.za/wp-content/uploads/2024/06/Petco-Review-2023-Digital.pdf Accessed March 10, 2025.

115 The press release did not indicate whether this was food grade resin.

116 PetStar (2023) Informe de Sustentabilidad. Available: https://www.petstar.mx/wp-content/uploads/2024/05/IS-PetStar-2023-V11-FINAL_HR.pdf Accessed March 10, 2025.

117 Waste Dive (2024) Domestic PCR-virgin resin battle faces global headwinds but finds local remedies. Available: https://www.wastedive.com/news/plastics-recycling-conference-pcr-markets-china-headwinds/712160/ Accessed March 10, 2025.

118 Sherrington C, Darrah C, Lahme V, et al. (2022) Plastic Pollution Prevention Final Report: The Impact of Beverage Brand Commitments for Recycled Content on the Flow of Plastic Bottles into Aquatic Environments. Prepared by Eunomia for Oceana. Available: https://oceana.org/reports/eunomia-report-the-impact-of-beverage-brandcommitments-for-recycled-content-on-the-flow-of-plastic-bottles-into-aquatic-environments/ Accessed March 5, 2025.

119 Changing Markets (2024) Fashion's Plastic Paralysis, pg. 11. Available: https://changingmarkets.org/wp-content/uploads/2024/09/English-Report-%E2%80%93-Fashion-Plastic-Paralysis.pdf Accessed March 10, 2025.

120 Plastics Engineering (2023) The Fashion Industry Needs an Alternative to Recycled PET. Available: https://www.plasticsengineering.org/2023/11/the-fashion-industry-needs-an-alternative-to-recycled-pet-002381/# Accessed March 10, 2025.

121 Cowger W, Willia KA, Bullock KA, et al. (2024) Global producer responsibility for plastic pollution. Science 10(17). DOI: 10.1126/sciadv.adj8275

122 Independent Commodity Intelligence Services (2023) PET Market in Europe State Of Play. Production, Collection & Recycling Data 2022, pg. 9. Available: https://www.unesda.eu/wp-content/uploads/2024/05/PET-plastic-Market-in-Europe-State-of-Play-Production-Collection-Recycling-Data_2022.pdf Accessed Feb. 17, 2024.

123 Zero Waste Europe (2022) How Circular is PET? pg. 27. Available: https://zerowasteeurope.eu/wp-content/uploads/2022/02/HCIP_V13-1-1.pdf Accessed March 10, 2025.

124 Garcia MA, Liu R, Nihart A, et al. (2024) Quantitation and identification of microplastics accumulation in human placental specimens using pyrolysis gas chromatography mass spectrometry. Toxicological Sciences 199(1): 81-88. https://doi.org/10.1093/toxsci/kfae021

125 Goswami S, Adhikary S, Bhattacharya, et al. (2024) The alarming link between environmental microplastics

and health hazards with special emphasis on cancer. Life Sciences 355(122937). https://doi.org/10.1016/j.lfs.2024.122937; Symeonide C, Aromataris E, Mulders Y, et al. (2024) An umbrella review of meta-analyses evaluating associations between human health and exposure to major classes of plastic-associated chemicals. Annals of Global Health 90(1): 52. https://doi.org/10.5334/aogh.4459

126 Cox KD, Covernton GA, Davies HL, et al. (2019) Human consumption of microplastics. Environmental Science & Technology 53(12): 7068-7074. https://doi.org/10.1021/acs.est.9b01517

127 Cox KD, Covernton GA, Davies HL, et al. (2019) Human consumption of microplastics. Environmental Science & Technology 53(12): 7068-7074. https://doi.org/10.1021/acs.est.9b01517

128 FAO (1993) Rice in human nutrition, ch. 3. Available: https://www.fao.org/4/t0567e/t0567e07.htm Accessed March 10, 2025.

129 FDA (2024) Microplastics and Nanoplastics in Foods. Available: https://www.fda.gov/food/environmental-contaminants-food/microplastics-and-nanoplastics-foods Accessed March 10, 2025.

130 Qian N, Gao X, Lang X, et al. (2024) Rapid single-particle chemical imaging of nanoplastics by SRS microscopy. Proceedings of the National Academy of Sciences USA 121(3): e2300582121. https://doi.org/10.1073/pnas.2300582121

131 Qian N, Gao X, Lang X, et al. (2024) Rapid single-particle chemical imaging of nanoplastics by SRS microscopy. Proceedings of the National Academy of Sciences USA 121(3): e2300582121. https://doi.org/10.1073/pnas.2300582121

132 Agir Pour L'Environnement (2024) Coca-Cola, Champion Olympique Des Microplastiques? Available: https://www.agirpourlenvironnement.org/blog/partagez-notre-enquete-du-plastique-dans-le-coca-cola/ Accessed Jan. 7, 2025.

133 Winiarska E, Jutel M and Zemelka-Wiacek, M. (2024) The potential impact of nano- and microplastics on human health: Understanding human health risks. Environmental Research 251(2): 118535. https://doi.org/10.1016/j.envres.2024.118535

134 Yang D, Huahong S, Li L, et al. (2015) Microplastic pollution in table salts from China. Environmental Science & Technology 49(22): 13622-13627. https://doi.org/10.1021/acs.est.5b03163

135 Diaz-Basantes MF, Nacimba-Aguirre D, Conesa JA, et al. (2022) Presence of microplastics in commercial canned tuna. Food Chemistry 385: 132721. https://doi.org/10.1016/j.foodchem.2022.132721

136 Yang X, Xie E, Du Z, et al. (2023) Detection of various microplastics in patients undergoing cardiac surgery. Ecotoxicology and Public Health 57(3): 10911-10918. https://doi.org/10.1021/acs.est.2c07179

137 Amato-Lourenço LF, Dantas KC, Júnior GR, et al. (2024) Microplastics in the olfactory bulb of the human brain. JAMA Network Open 7(9): e2440018. https://doi.org/10.1001/jamanetworkopen.2024.40018

138 Amato-Lourenco LF, Carvalho-Oliveira R, Júnior GR, et al. (2021) Presence of airborne microplastics in human lung tissue. Journal of Hazardous Materials 416: 126124. https://doi.org/10.1016/j.jhazmat.2021.126124

139 Massardo S, Verzola D, Alberti, S, et al. (2024) MicroRaman spectroscopy detects the presence of microplastics in human urine and kidney tissue. Environment International 184: 108444. https://doi.org/10.1016/j.envint.2024.108444

140 Horvatits T, Tamminga M, Liu B, et al. (2022) Microplastics detected in cirrhotic liver tissue. EBioMedicine 82: 104147. https://www.doi.org/10.1016/j.ebiom.2022.104147

141 Ragusa A, Svelato A, Santacroce C, et al. (2021) Plasticenta: First evidence of microplastics in human placenta.

Environment International 106274. https://doi.org/10.1016/j.envint.2020.106274; Garcia MA, Liu R, Nihart A, et al. 2024. Quantitation and identification of microplastics accumulation in human placental specimens using pyrolysis gas chromatography mass spectrometry. Toxicological Sciences 199(1): 81-88. https://doi.org/10.1093/toxsci/kfae021

142 Hu CJ, Garcia MA, Nihart A, et al. (2024) Microplastic presence in dog and human testis and its potential association with sperm count and weights of testis and epididymis. Toxicological Sciences 200(2): 235-240. https://doi.org/10.1093/toxsci/kfae060; Zhao Q, Zhu L, Weng J, et al. (2023) Detection and characterization of microplastics in the human testis and semen. Science of the Total Environment 877: 162713. https://doi.org/10.1016/j.scitotenv.2023.162713

143 Codrington J, Varnum AA, Hildebrandt L, et al. (2024) Detection of microplastics in the human penis. International Journal of Impotence Research. https://doi.org/10.1038/s41443-024-00930-6

144 Pironti C, Notarstefano V, Ricciardi M, et al. (2023) First evidence of microplastics in human urine, a preliminary study of intake in the human body Toxics 11(1): 40. https://doi.org/10.3390/toxics11010040

145 Ragusa A, Notarstefano V, Svelato A, et al. (2022) Raman microspectroscopy detection and characterisation of microplastics in human breastmilk. Polymers 14(13): 2700. https://doi.org/10.3390/polym14132700

146 Leslie HA, van Velzen MJM, Brandsma SH, et al. (2022) Discovery and quantification of plastic particle pollution in human blood. Environment International 163:107199. https://doi.org/10.1016/j.envint.2022.107199

147 Leslie HA, van Velzen MJM, Brandsma SH, et al. (2022) Discovery and quantification of plastic particle pollution in human blood. Environment International 163:107199. https://doi.org/10.1016/j.envint.2022.107199

148 Nihart AJ, Garcia MA, Hayek EE, et al. (2025) Bioaccumulation of microplastics in decedent human brains. Nature Medicine. https://doi.org/10.1038/s41591-024-03453-1

149 Marfella R, Prattichizzo F, Sardu C, et al. (2024) Microplastics and nanoplastics in atheromas and cardiovascular events. The New England Journal of Medicine 390:900-910. https://doi.org/10.1056/NEJMoa2309822

150 Yan Z, Liu Y, Zhang T, et al. (2021) Analysis of microplastics in human feces reveals a correlation between fecal microplastics and inflammatory bowel disease status. Ecotoxicology and Public Health 56(1): 414-421. https://doi.org/10.1021/acs.est.1c03924

151 Zaheer J, Kim H, Ko IO, et al. (2022) Pre/post-natal exposure to microplastic as a potential risk factor for autism spectrum disorder. Environment International 161: 107121. https://doi.org/10.1016/j.envint.2022.107121

152 WHO (2023) Infertility Prevalence Estimates, 1990–2021. Available: https://www.who.int/publications/i/item/978920068315 Accessed March 18, 2025.

153 Zhang C, Chen J, Sicheng M, et al. (2022) Microplastics may be a significant cause of male infertility. American Journal of Mens Health 16(3): 15579883221096549. https://doi.org/10.1177/15579883221096549

154 Eales J, Bethel A, Galloway T, et al. (2022) Human health impacts of exposure to phthalate plasticizers: An overview of reviews. Environment International 158: 106903. https://doi.org/10.1016/j.envint.2021.106903

155 Eales J, Bethel A, Galloway T, et al. (2022) Human health impacts of exposure to phthalate plasticizers: An overview of reviews. Environment International 158: 106903. https://doi.org/10.1016/j.envint.2021.106903

156 Gore AC, Chappell VA, Fenton SE, et al. (2015) EDC-2 : The Endocrine Society's second scientific statement

on endocrine-disrupting chemicals. Endocrine Review 36(6): e1-e150 https://doi.org/10.1210/er.2015-1010

157 Welch BM, Keil AP, Buckley JP, et al. (2022) Associations between prenatal urinary biomarkers of phthalate exposure and preterm birth: a pooled study of 16 US cohorts. JAMA Petriatrics 176(9): 895-905. https://doi.org/10.1001/jamapediatrics.2022.2252

158 Lathi RB, Liebert CA, Brookfield KF, et al. (2016) Conjugated Bisphenol A (BPA) in maternal serum in relation to miscarriage risk. Fertility and Sterility 102(1): 123-128. https://doi.org/10.1016/j.fertnstert.2014.03.024

159 Moosa A, Shu H, Sarachana T, et al. (2017) Are endocrine disrupting compounds environmental risk factors for autism spectrum disorder? Hormone Behaviours 191:13-21. https://doi.org/10.1016/j.yhbeh.2017.10.003

160 Moore S, Paalanen L, Melymuk L, et al. (2022) The association between ADHD and environmental chemicals – a scoping review. International Journal of Environmental Research and Public Health. 19(5): 2849. https://doi.org/10.3390/ijerph19052849; Stein TP, Schluter MD, Steer RA, et al. (2023) Bisphenol-A and phthalate metabolism in children with neurodevelopmental disorders. PLOS One. https://doi.org/10.1371/journal.pone.0289841

161 Rancière F, Botton J, Slama R, et al. (2019) Exposure to Bisphenol A and Bisphenol S and incident type 2 diabetes: a case-cohort study in the French cohort D.E.S.I.R. Environmental Health Perspectives 127(10). https://doi.org/10.1289/EHP5159

162 Gao H, Yang BJ, Li N, et al. (2015) Bisphenol A and hormone-associated cancers: current progress and perspectives. Medicine 94(1): e211. https://doi.org/10.1097/MD.0000000000000211; Ahern TP, Spector LG, Damkier P, et al. (2022) Medication-associated phthalate exposure and childhood cancer incidence. Journal of the National Cancer Institute 114(6): 885-894. https://doi.org/10.1093/jnci/djac045; Hafezi SA and Abdel-Rahman WM (2019) The endocrine disruptor Bisphenol A (BPA) exerts a wide range of effects in carcinogenesis and response to therapy. Current Molecular Pharmacology 12(3): 230-238. https://doi.org/10.2174/1874467212666190306164507

163 Defend Our Health (2023) Hidden Hazards: The Chemical Footprint of a Plastic Bottle. Available: https://defendourhealth.org/wp-content/uploads/2023/07/FINAL-DOH-PlasticBottles-Report_7.11.2023.pdf Accessed Jan. 8, 2025.

164 Gerassimidou S, Lanska P, Hahladakis JN, et al. (2022) Unpacking the complexity of the PET drink bottles value chain: a chemicals perspective. Journal of Hazardous Materials 430: 128410. https://doi.org/10.1016/j.jhazmat.2022.128410

165 Gerassimidou S, Lanska P, Hahladakis JN, et al. (2022) Unpacking the complexity of the PET drink bottles value chain: a chemicals perspective. Journal of Hazardous Materials 430: 128410. https://doi.org/10.1016/j.jhazmat.2022.128410

166 Dreolin N, Aznar M, Moret S, et al. (2019) Development and validation of a LC-MS/MS method for the analysis of bisphenol a in polyethylene terephthalate. Food Chemistry 274: 246-253. https://doi.org/10.1016/j.foodchem.2018.08.109

167 Guo Y, Xia X, Ruan J, et al. (2022) Ignored microplastic sources from plastic bottle recycling. Science of the Total Environment. 838(2): 156038. https://doi.org/10.1016/j.scitotenv.2022.156038; Brown E, MacDonald A, Allen S, et al. (2023) The potential for a plastic recycling facility to release microplastic pollution and possible filtration remediation effectiveness. Journal of Hazardous Materials Advances 10:100309. https://doi.org/10.1016/j.hazadv.2023.100309

168 The Coca-Cola Company (2025) Form 10-K For the fiscal year ended December 31, 2024, pg. 12. Available: https://investors.coca-colacompany.com/filings-reports/annual-filings-10-k Accessed March 5, 2025.

169 The Coca-Cola Company (2025) Form 10-K For the fiscal year ended December 31, 2024, pg. 20. Available:

https://investors.coca-colacompany.com/filings-reports/annual-filings-10-k Accessed March 5, 2025.

170 For more information, see: https://www.unep.org/inc-plastic-pollution Accessed March 5, 2025.

171 For more information, see Oceana (2024) Mandatory Reuse Systems are Coming to Europe, While Coca-Cola Perplexingly Abandons Goal. Available : https://oceana.org/press-releases/mandatory-reuse-systems-are-coming-to-europe/#:~:text=Oceana%20is%20calling%20on%20these,%2C%20and%2015%25%20by%202040. Accessed March 5, 2025.

172 The Coca-Cola Company (2025) Form 10-K For the fiscal year ended December 31, 2024, pg. 20. Available: https://investors.coca-colacompany.com/filings-reports/annual-filings-10-k Accessed March 5, 2025.

173 Canada's National Observer (2024) Plastic lawsuits on the rise as people seek waste solutions. Available: https://www.nationalobserver.com/2024/06/14/news/single-use-plastic-pollution-lawsuits Accessed March 5, 2025; The New York Times (2024) Lawyers to Plastics Makers: Prepare for "Astronomical" PFAS Lawsuits. Available: https://www.nytimes.com/2024/05/28/climate/pfas-forever-chemicals-industry-lawsuits.html Accessed March 5, 2025.

174 Cowger W, Willia KA, Bullock KA, et al. (2024) Global producer responsibility for plastic pollution. Science 10(17). DOI: 10.1126/sciadv.adj8275

175 County of Los Angeles (2024) LA County Sues Pepsi and Coca-Cola over Plastic Beverage Pollution and Deceiving Public on Plastic Recycling. Available: https://lacounty.gov/2024/10/30/la-county-sues-pepsi-and-coca-cola-over-plastic-beverage-pollution-and-deceiving-public-on-plastic-recycling/ Accessed March 11, 2025.

176 City of Baltimore (2024) City of Baltimore Announces Lawsuit Filed Against Plastic Manufacturing Companies for Role in Pollution. Available: https://mayor.baltimorecity.gov/news/press-releases/2024-06-20-city-baltimore-announces-lawsuit-filed-against-plastic-manufacturing Accessed March 11, 2025.

177 France Nature Environnement (2024) Fance Nature Environnement Porte Plainte Contre Coca-Cola Pour Greenwashing. Available: https://fne.asso.fr/communique-presse/france-nature-environnement-porte-plainte-contre-coca-cola-pour-greenwashing Accessed March 11, 2025.

178 The European Consumer Organisation (2023) Consumer groups launch EU-wide complaint against major water bottle producers for greenwashing. Available: https://www.beuc.eu/press-releases/consumer-groups-launch-eu-wide-complaint-against-major-water-bottle-producers Accessed March 11, 2025.

179 Gala (2024) Greenwashing Under Fire: Claims Regarding PET Bottles Investigated by Hungarian Authority. Available: https://blog.galalaw.com/post/102jiwc/greenwashing-under-fire-claims-regarding-pet-bottles-investigated-by-hungarian-a#:~:text=The%20Hungarian%20authorities%20are%20currently,caution%20when%20making%20green%20claims. Accessed March 11, 2025.

180 The Coca-Cola Company (2025) Form 10-K For the fiscal year ended December 31, 2024, pg. 17. Available: https://investors.coca-colacompany.com/filings-reports/annual-filings-10-k Accessed March 5, 2025.

181 GA Circular (2019) Full Circle: Accelerating the circular economy for post-consumer PET bottles in Southeast Asia. Prepared for Coca-Cola. Available: https://www.gacircular.com/_files/ugd/d424f7_d612161763824d3b9fbbf00affea9a9f.pdf Accessed Jan. 10, 2025.

182 ILO (2019) The recycling industry addressing child labour and other decent work challenges. Available: https://respect.international/the-recycling-industry-addressing-child-labour-and-other-decent-work-challenges/ Accessed Jan. 10, 2025.

183 Univision News (2017) Recycling misery: How Coca-Cola profits from garbage collected by Mexican children.

Available: https://www.univision.com/univision-news/latin-america/recycling-misery-how-coca-cola-profits-from-garbage-collected-by-mexican-children Accessed Jan. 10, 2025.

184 U.S. Customs and Border Protection (2025) Forced Labor Frequently Asked Questions. Available: https://www.cbp.gov/trade/forced-labor/frequently-asked-questions Accessed March 11, 2025. Note, US Homeland Security considers "indentured child labor" as forced labor. The US Customer service can issue "Withhold Release Orders" to impound goods when information reasonably, but not conclusively, indicates that merchandise produced by forced labor, as defined under 19 U.S.C. 1307, is being, or is likely to be, imported into the United States. 19 CFR 12.42(e)." Also see: https://crsreports.congress.gov/product/pdf/IF/IF11360#:~:text=%E2%80%9CAll%20work%20or%20service%20which,29).

185 The Coca-Cola Company (2025) Form 10-K For the fiscal year ended December 31, 2024, pg. 24. Available: https://investors.coca-colacompany.com/filings-reports/annual-filings-10-k Accessed March 5, 2025.

186 The Coca-Cola Company (2025) Form 10-K For the fiscal year ended December 31, 2024, pg. 16. Available: https://investors.coca-colacompany.com/filings-reports/annual-filings-10-k Accessed March 5, 2025.

187 For example, in the Guardian (2024) "They're in the air, drinking water, dust, food…' How to reduce your exposure to microplastics. Available: https://www.theguardian.com/lifeandstyle/2023/jul/10/air-drinking-water-dust-food-how-to-reduce-exposure-microplastics Accessed March 5, 2025; In episode #1638 of the Joe Rogan Experience published on April 21, 2021, which features guest expert Dr. Shanna Swan who speaks about her research examining the impact of chemicals used in plastic on reproductive health and child development. Available: https://open.spotify.com/episode/6pLW2tMx4Kw5qaeAcxj0Lj?si=e1acc4d0ae494d6b&nd=1&dlsi=5753d5ded7c24303 Accessed March 5, 2025; In an episode of the Huberman Lab podcast published on Oct. 21, 2024, Andrew Huberman discussed the effects of microplastics on your health and how to reduce them. Available: https://www.hubermanlab.com/episode/the-effects-of-microplastics-on-your-health-how-to-reduce-them

188 Cowger W, Willia KA, Bullock KA, et al. (2024) Global producer responsibility for plastic pollution. Science 10(17). DOI: 10.1126/sciadv.adj8275

189 Landrigan PJ, Raps H, Cropper M, et al. (2023) The Minderoo-Monaco Commission on Plastics and Human Health. Annals of Global Health. https://annalsofglobalhealth.org/articles/10.5334/aogh.4056; Macleod M, Arp HPH, Tekman MB, et al. (2021) The global threat from plastic pollution. Science 373(6550): 61-65. https://doi.org/10.1126/science.abg5433

OCEANA Protecting the World's Oceans

Oceana is the largest international advocacy organization dedicated solely to ocean conservation. Oceana is rebuilding abundant and biodiverse oceans by winning science-based policies in countries that control one-quarter of the world's wild fish catch. With more than 325 victories that stop overfishing, habitat destruction, oil and plastic pollution, and the killing of threatened species like turtles, whales, and sharks, Oceana's campaigns are delivering results. A restored ocean means that 1 billion people can enjoy a healthy seafood meal every day, forever. Together, we can save the oceans and help feed the world. Visit Oceana.org to learn more.