



**An Economic and Environmental Case
for Acting Against Bottled Water Packaging,
Labelling and Marketing in the UK**



Executive Summary

It's time for bottled water to come clean.

The environmental case against bottled water is not new, but mounting pressure has elevated its importance as a national (and international) issue to solve in the context of combatting climate change and striving for environmental sustainability.

The rapid growth of the bottled water market has brought attention to the impact of plastic PET bottles, longer physical supply chains, and modern marketing practices. To address the environmental concerns about the industry, efforts will likely focus on: (1) increasing bottle recycling, reducing plastic waste, and promoting personal reuse; and (2) implementing restrictions on marketing and labelling.

Our calculations suggest 90% of all bottled water on supermarket shelves is being offered in a multi-pack format, with 80% of the bottles being single-serve portions of 500ml or even less. Currently in the UK, annual industry sales tip £1.6bn or 2.5 billion litres. This means 10 million PET bottles of plastic water are being sold per day, using 1 million pieces of flexible plastic wrap – almost none of the latter being recycled. Laid end-to-end, this would circle the world at the equator ten times every year.

Our research showed that consumers buy bottled water just as much for the convenience and availability (if not slightly more), as for the taste and the quality of the water itself. In general, consumers don't have much brand affinity; and when it comes to making informed choices, most consumers admit they don't really know what mineral water is compared spring water.

Existing Advertising Standards Authority guidance allows for advertising restrictions where there is clear potential for harm to society, or where environmental claims are unreasonably one-sided. Today's advertising messaging has evolved to focus on environmental credentials, and it follows

decades of expansionary advertising spend which established bottled water as a major category. Our analysis shows that advertising still has a direct impact on sales of bottled water, accounting for at least 81 million bottles in 2022, and this excludes the further impact of promotions, marketing spent to promote product placement, sponsorship deals, influencers, and other harder to quantify factors.

Existing commitments to help reflect the cost of plastic bottles and packaging in society such as the deposit return and extended producer responsibility schemes have been delayed multiple times. These schemes, while not the solution to the plastic waste problem would go some way to re-balance the environmental costs on the producers and consumers of these products. Co-ordinated public policy action on this topic has also been held back by the lack of progress on the Resources & Waste strategy announced first in 2018.

Recommendations

The plastic wrap encasing multi-pack bottled water is tantamount to a plastic bag whose only function is to aid transportation. Henceforth, we propose it is either taxed by the government at 10p per item under the existing Single Use Carrier Bag Charges (England) Order, or its use is banned altogether under the Environmental Protection (Plastic Straws, Cotton Buds and Stirrers) Regulations 2020. We believe government action is warranted regarding the labelling of bottled water and its advertising practices, and that regulators should be reviewing the relevant activities of the bottled water industry as a matter of priority.

We believe that appropriate carbon labelling should be used to inform consumers about the relative carbon footprint associated with bottled water versus tap water to allow them to make a more informed decision between the two alternatives.

Our research found over three quarters of consumers (77%) thought that bottled water companies should do more to raise awareness about plastic pollution when advertising, and two thirds also agree that labelling on bottles should draw attention to the carbon cost of consumption.

Finally, we believe it is high time for the government to review the necessary legislation on bottled mineral and spring water (some of which dates back more than a century) which we feel is no longer fit for purpose in a country with a safe and secure potable water supply, and where general environmental protection is now imperative.

SECTION 1

The world is losing the war on climate change

Humanity's battle against climate change has reached a critical juncture. In March 2023, the UN Intergovernmental Panel on Climate Change (IPCC) warned of a rapidly closing window of opportunity to 'secure a liveable and sustainable future for all' that would depend on 'choices and actions implemented in this decade' and which would have 'impacts now and for thousands of years.'

UN scientists also noted that climate change is 'already affecting many weather and climate extremes', and that 'global warming will continue to increase in the near term', with 'roughly half of the world's population currently experiencing severe water scarcity of at least part of the year'.

“ Adverse impacts from human-caused change will intensify.

UN International Panel on Climate Change 2023 ”

Indeed, the true scale of the world's carbon challenge becomes clear when looking at what has happened to CO2 emissions in recent years in the countries which are currently the world's top-ten emitters. Since 1990, these ten countries haven't reduced their emissions – they have increased them, and by a staggering 84% (Fig 1).

Needless to say, this state of affairs is a far cry from the deep reductions needed to meet the UNFCCC Paris Agreement climate goals (Friedlingstein 2022). Indeed, in a mid-May update, the World Meteorological Office suggested that the probability of global surface temperature breaching the world's self-imposed limit of 1.5 degrees of warming in just the coming five years is already as high as two chances in three.

Of course, there has been significant progress with respect to decarbonisation in some areas and in some countries, including the UK. Indeed, since 1990, UK carbon emissions have fallen by 42%, the largest decrease of any major economy (better even than Germany's 36% reduction over the same period, and a world apart from the 2% reduction seen in the US and the 350%+ increases in India and China). Last year, the UK opened the world's largest wind farm (Hornsea 2) while, for 2022 as a whole, renewable energy accounted for 40% of the UK's energy generation mix.

Other important responses to the worsening climate crisis are underway. A year ago, national negotiators working through the United Nations Environment Programme announced their intention to conclude a Treaty on Global Plastics by the end of 2024, including legally binding elements and supra-national monitoring, reporting and assessment mechanisms. But time is short, and necessary progress

CO2 Emissions
(top ten emitters in 2021 v. 1990%)

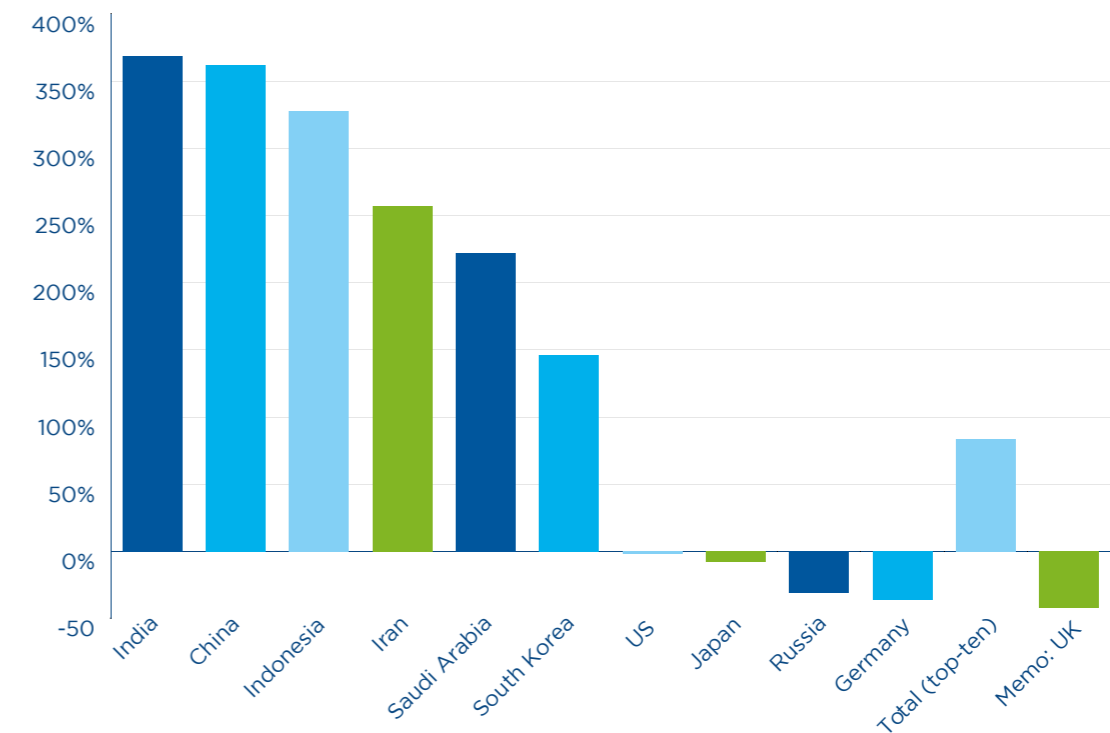


Figure 1: % change in CO2 emissions 1990-2021 from today's biggest national emitters
Source: Our World in Data

often unfolds too slowly. For example, advanced countries agreed as long ago as 2009 to finance an annual \$100bn transfer for the benefit of climate change initiatives in poorer countries, yet the final details of this initiative are still being ironed out, even as this report is published, fourteen years later. And in the UK, while the Environment Act (originally signed in 2019) made legal room for the introduction of a Deposit Return Scheme, it has no chance of being implemented for at least another two years, with significant apparent risks even to this slow rollout schedule.

Economists are also realising that while taxing carbon emissions (carbon pricing) is the preferred textbook solution, it is a huge challenge to efficiently implement in practice, given the demands for

compensation or even resistance from the parties losing out in the transition (Kriegler et al., 2018). In practice, the carbon pricing schemes enacted thus far have only appeared to have modest effects – 'generally between 0% and 2% per year' (Green 2021) – and therefore not enough to keep the world on track to meet its climate goals. In Europe, legislators have been setting ambitious goals for environmental taxes for more than twenty years. Yet, in 2021, the share of environmental taxes as a percentage of total taxes was lower than it had been in 2002.

Environment Ministers around the world tout the circular economy as a big part of the solution to our environmental challenges. Yet what repeatedly happens when the targets are missed (or deemed



insufficient) is the circle of blame: consumers blame industry, industry blames Central Government (Whitehall in the UK), Central Government blames Local Government, and Local Government blames consumers.

It is time not just for targets, but for limits, and action

The median age of the global population is presently around 30 years, and half of the world's carbon emissions have taken place in that time. For most adults alive today, most human-caused environmental damage has occurred in their lifetimes.

In the UK, everybody needs to take responsibility for their own journey towards net zero if decarbonisation is to be achieved by 2050.

The time to act is now, and addressing issues connected with the bottled water industry is just one of many steps that warrant renewed consideration as a matter of high priority. Furthermore, 'easy wins' via policy changes should be keenly pursued, whereby switching to tap water instead of consuming bottled water should be seriously considered.

SECTION 2

The creation of the Bottled Water Industry

Bottled water: a long-term case study on the effectiveness of marketing

The bottled water brands we see on supermarket shelves and in restaurants today are some of the oldest established companies and brands in the world. Pre-dating even the big French brands, Harrogate Spring in North Yorkshire traces its roots as far back as 1571, making it even older than the East India Company (1600). In France, Evian (established in 1829) pre-dates the world's oldest luxury brand, Hermès (established in 1837), while Perrier (1863) and Vittel (1854) both pre-date Ford (1903). A relative newcomer in comparison, even Volvic has been in existence now for more than a century (1922).

But what makes bottled water companies different to all others is that the underlying product – the water itself – has seen almost no innovation over the centuries, leaving producers reliant on innovations in advertising and marketing techniques to promote their product, a number of which were even pioneered using Bottled water brands. For example, Google cited Evian in 2010 as an early adopter of YouTube advertising where they say: “Evian enjoyed outstanding PR coverage and also saw a significant increase in market share in its top markets, including the US, UK, France & Germany”, and where the campaign itself won Gold in the Outdoor category at the 2013 Cannes Lions International Festival of Creativity.

Evian has also taken a leaf out of Chateau Mouton-Rothschild's book by inviting partners from the fashion and design world – such as Christian Lacroix, KENZO and Alexander Wang – to create limited edition bottles, emphasising desirability and scarcity. Meanwhile, Perrier was an early beneficiary of product placement, first getting a (probably unsponsored) mention in Agatha Christie's *Murder on the Orient Express* (1934), but later getting a sponsored role in James Bond's (1995) *Goldeneye* (featuring a truck of Perrier being smashed into by James Bond in a tank).

Evian or Perrier are prolific when it comes to advertising, many campaigns being award-winning. For its part, Perrier tended to focus on women, with *Perrier Girl* (1940s), *Sea, Sex & Perrier* (1970s), *Hep Garçon* (1990s) and *New Perrier Girl* (2011). Meanwhile, Evian has more recently focused much of its advertising on babies, with *Roller Babies* (2009), *Baby & Me* (2013) and *Baby Bare Necessities* (2019). When launched, *Roller Babies* earned a place in the Guinness Book of World Records for being the most viral video of all time.

Advertising and marketing within the industry has evolved. There is a wealth of literature that demonstrates the impact of advertising on purchasing decisions (Bagwell, 2007); and during the early years, millions of pounds were employed in expansionary tactics to establish

a market for consumption. Effective marketing and branding strategies employed by bottled water companies played a crucial role in emphasising the purity, quality, and refreshing attributes of bottled water, resonating with consumers and arousing desirability. While advertising spend may be more modest today, it remains a critical component to maintaining and growing demand, and its influence should not be under-estimated.

Bottled water – growth by the numbers, and other industry boosters

Statistically, the growth of the bottled water market since the beginning of

the late 1960s has been astonishing. In the US, bottled water consumption per person has risen by a cumulative 640% since 1985. In France, the home of Evian and Volvic, it rose from just six litres per person per year in the 1940s, to 140 litres by 2015 – a 2,200% increase (Brei 2018). But in some ways, it is the UK that has seen the most spectacular growth. In the mid-1970s, UK consumption per head was equivalent to just one 330ml can. Today's biggest selling domestically sourced water – Highland Spring – was only formed as recently as 1979 (in contrast to the big French brands). By 2021, we consumed 37 litres per head – total category growth in excess of 10,000% (Fig. 2).

UK Bottled Water Consumption (billion litres)

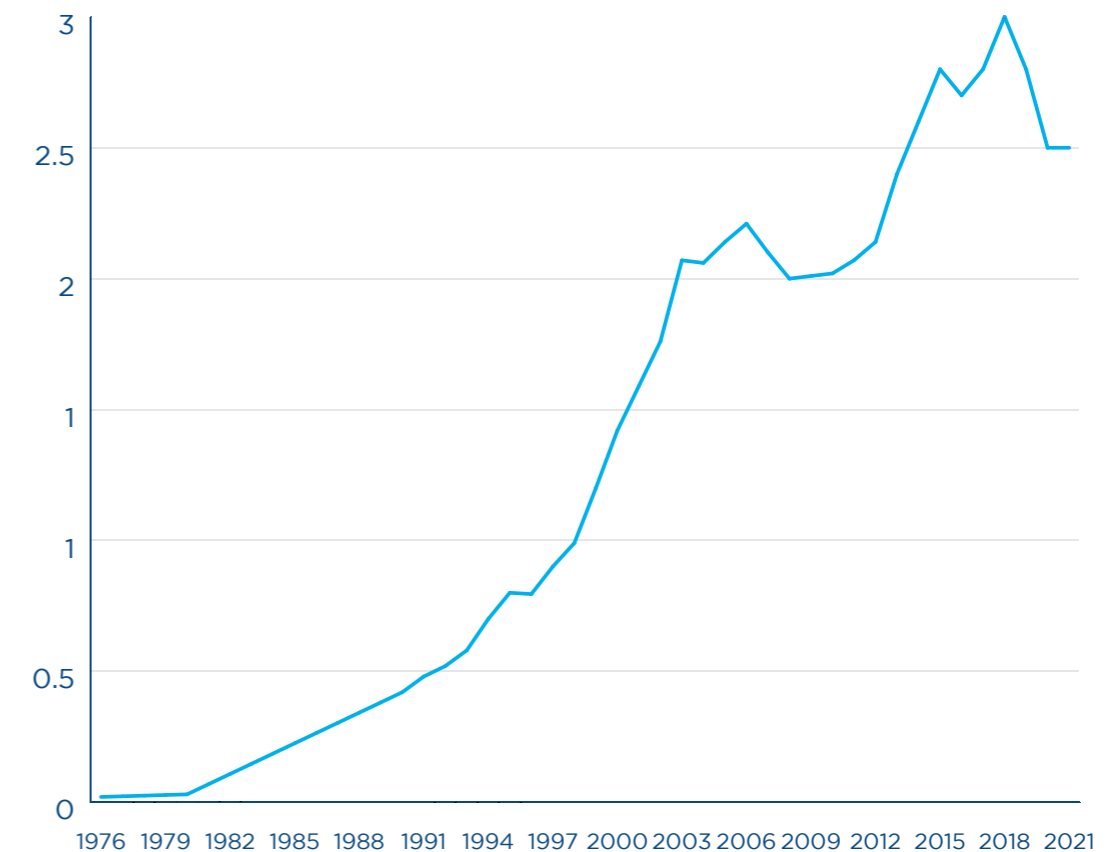


Figure 2: UK Bottled water consumption between 1976 - 2020
Source: Zenith International

INDUSTRY BOOSTERS



Cheap long-distance transportation and plastic packaging



Market Consolidation and Free Trade



Hydration and Personal Fitness



Health and Safety Concerns



Emergence of throw-away culture

Advertising and marketing aside, the bottled water industry has benefited from a number of other significant industry boosters, some unique to it (e.g. personal fitness boom, the hydration movement) and some applicable to business generally (e.g. use of plastic, free trade, falling long-term transportation costs and sophisticated supply chains).

It is also worth noting, that water served in bottles definitely preceded water served at home through taps from pipes – the product wasn't invented entirely 'out of thin air'. Nonetheless, today – in most rich countries – bottled water is the only product people buy for consumption at home that is almost identically available as a significantly cheaper (in financial and environmental terms) plumbed-in service. Furthermore, many drivers facilitating growth in bottled water over the years was much more environmentally costly than was realised at the time.

1. Cheap long-distance transportation and plastic packaging

Due to the transportation revolution in the nineteenth century, bottled water as a 'product' could be much more readily moved long distances at viable costs. The increasing sophistication of logistics also helped bottled water expand their distribution channels, becoming readily available in convenience stores, petrol stations, vending machines, gyms and other venues which ensured easy access for consumers.

In addition, in 1957 changes in bottled water regulations in France supported production, including: (1) a slight relaxation of the strict "Bottled at Source" rule; (2) relaxing prior stipulations against 'mixing' mineral waters from slightly

different sources into the same bottle; and (3) allowing mineral water to be treated subsequent to initial extraction 'at source'. Surprisingly, these particular stipulations are still evident in UK Bottled Water Regulations today – which we believe need reviewing.

Plastic bottles (initially PVC, later PET) began to be introduced in France in 1968 (Marty 2020). By the end of the 1970s in France, plastic bottles commanded a market share of over 70%. In the process, all plastic bottles made the existing deposit return scheme (for glass bottles) redundant.

Not only did plastic bottles turbo-charge bottled water sales wherever they were introduced, but they blew up the circular economy in the process – where the old glass bottles were returned for a deposit, the new plastic ones went to landfill.

2. Market Consolidation and Free Trade

Successive waves of merger activity have considerably reduced the number of bottled water brands, first in the late 1960s and then again in the early 1980s. In the UK today, the bottled water market is dominated by Danone Group (Evian and Volvic) and Nestlé (Buxton Spring, Pure Life and San Pellegrino), with Highland Spring (privately owned) their only significant rival.

Additionally, successive waves of trade liberalisation (including the advent of the EU Single Market in 1986) have also helped the growth of traded goods, especially in Europe. Growth in the UK bottled water market which began in the late 1980s, correlated almost precisely with the implementation of the European Single Market and frictionless trade.

The free movement of bottled water which passed seamlessly across the English Channel, avoiding costly tariffs or a burdensome declarations process helped support growth within the category, particularly for desirable French brands.

3. Hydration and Personal Fitness

As the industrial world grew rapidly in the post-war era, so too did obesity. This contributed to the emergence of the personal fitness industry, which in part, highlighted the importance of physical hydration and high-quality water. As consumers became more health-conscious, they sought alternatives to sugary and calorie-laden beverages, leading to a shift in beverage preferences towards healthier options. Bottled water emerged as a prime choice due to its perceived health benefits and association with hydration.

Consumers increasingly prioritise their well-being, and with its refreshing and pure image, aligns with these health aspirations. The absence of additives and artificial ingredients in most bottled water brands contributes to the perception that it is a clean and natural choice for hydration.

Bottled water companies have capitalised on health and wellness trends by emphasizing the health benefits of their products through advertising and marketing campaigns.

Later in the bottled water story, comes the hydration movement, which in recent years supports category growth where water bottles on school desks and fountains in public places are commonplace.

4. Health and safety concerns

Many studies have demonstrated beyond statistical doubt that there is no difference between UK tap water and bottled water in terms of product safety (United Nations 2023 cites a large number of such studies). However, while water safety and quality has continued to improve to the high standards of today, several high-profile incidents of water contamination in different regions of the UK previously raised concerns about the safety and quality of tap water. One notable case was the *Cryptosporidium* outbreak in Northwest England in 1989, which resulted in thousands of people falling ill and a loss of public confidence in tap water safety. In other cases, lead piping and old infrastructure in older properties have also been a cause of concern, which often resulted in the replacement of lead pipes over the years.

However, disinformation travels much faster than information (Vosoughi, Roy and Aral 2018), explaining why the longevity of tap water scares last much longer than available statistical evidence can ever readily explain.

5. The emergence of throw-away culture

The rapid growth of the bottled water industry in the UK between 1985 and 2000 was propelled by the burgeoning throwaway culture and the subsequent rise of single-use plastic bottles. This cultural shift towards disposability and convenience fuelled the demand for bottled water as a symbol of modern lifestyle.

Single-use plastic bottles perfectly encapsulated the essence of this throwaway culture, offering a quick

and effortless solution for on-the-go hydration. The ease of use and the ability to discard the bottle after consumption aligned with the prevailing mindset of convenience and instant gratification. As a result, the throwaway culture, characterised by a mindset of disposability and an inclination towards convenience-driven choices, significantly contributed to the growth of the bottled water industry during that period.

What's more, the growth of the throw-away culture was also driven by ignorance concerning the environmental footprint and consequences of consumption. During the period of rapid growth of the bottled water industry, the broader understanding of the environmental impacts of single-use plastic bottles was not as prevalent as today.

Consumers often had limited knowledge about the significant ecological consequences associated with the production, use, and disposal of single-use plastic bottles. The life cycle of these bottles, including the extraction of raw materials, energy-intensive manufacturing processes, transportation, and eventual accumulation as waste, was not widely understood.



SECTION 3

The UK Bottled Water Market Today

The bottled water market is estimated to have generated £1.6 billion in annual sales in 2021, from a total of 2.5 billion litres of product. This equates to an 18% share of the estimated market for total soft drink sales. By bottle type, 96% of bottled water sales comprise plastic bottles, while 78% of total sales were for still as opposed to sparkling water.

With an average bottle size of 700ml (median = 500ml), annual UK bottled water sales of 2.5 billion litres equate to 3.5 billion plastic bottles. This equates to virtually 10 million units sold per day. And with an average pack size of ten on typical supermarket shelves, 3.5 billion plastic bottles equate to 350 million pieces of

multi-pack plastic wrap sold per year, or 1 million per day. Virtually none of this plastic wrap is currently recycled in the UK.

Laid end to end, the 3.5 billion PET bottles of bottled water sold annually in the UK would stretch around the world at the equator ten times.

The UK bottled water market is very concentrated with major players such as Danone (Volvic & Evian), Nestle (Buxton Spring & Pure Life) and Highland Spring controlling the lion's share of the branded market. Elsewhere, supermarkets have not been slow to react, creating their own brands, usually cheaper, representing the remaining 36% by sales value.

UK Bottled Water, Sales (£m) & Volume (Ltr.m)

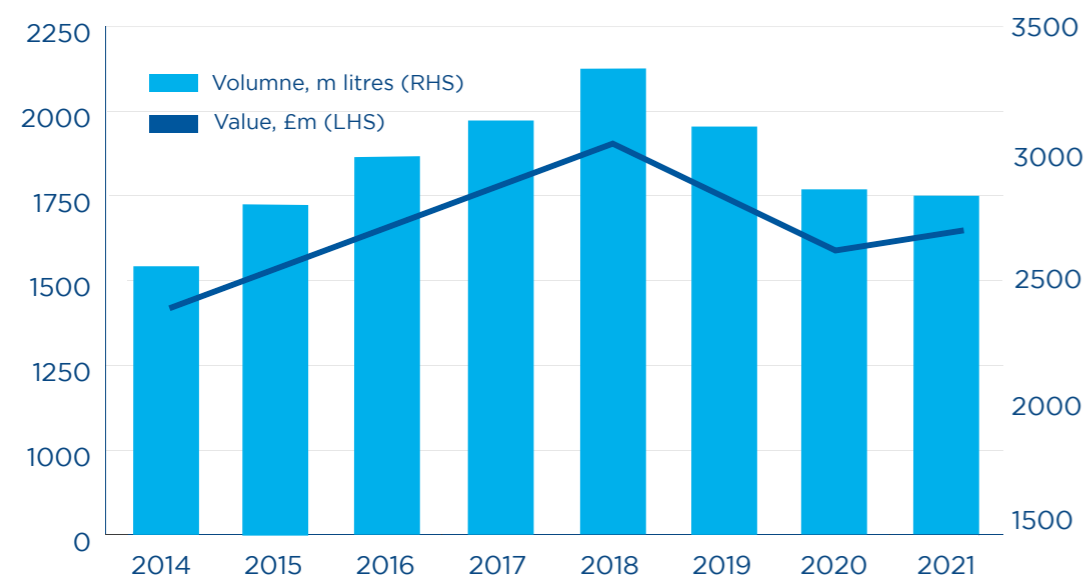


Figure 3: UK Bottled waters sales, values (£m) and volumes (litres millions)
Source: British Soft Drinks Association



CASE STUDY

Whale and Dolphin Conservation

Whale and Dolphin Conservation (WDC) is the leading charity dedicated to the protection of whales and dolphins. Through their extensive involvement in international bodies, consultations, and support for legislative measures, WDC is committed to reducing the impact of plastic pollution on the marine environment, striving to create a world where every whale and dolphin is safe and free.

One significant organisation WDC collaborates with is the International Whaling Commission (IWC). As the forum where the governments of the world make decisions about the conservation and welfare of whales and dolphins, the IWC has a key role to play in understanding and addressing the impacts of plastic pollution on marine life.

WDC's Marine Pollution Coordinator, Sonja Eisfeld-Pierantonio, participates in key IWC meetings - specifically, the intersessional group on marine debris, the pollution group, and the subcommittee for Environmental Concerns of the scientific committee. At the most recent IWC meeting, in October 2022, WDC joined forces with Environmental Investigation Agency (EIA), OceanCare and Humane Society International (HSI) in writing a draft resolution for government delegates, asking the EU to present the case for making plastic pollution a priority concern for the IWC, and to push for regional and international cooperation to tackle its

impacts on whales and dolphins. This joint effort resulted in the unanimous adoption of the resolution by the commission, marking a significant milestone.

The IWC can have a massive, positive impact on global efforts to reduce plastic pollution.

By setting out a clear plan, including supporting and engaging with discussions on a new global agreement on plastic pollution ("The plastic treaty"), the IWC can have a massive, positive impact on global efforts to reduce plastic pollution and, consequently, the harm it's doing to whales and dolphins.

In addition to its involvement with organisations such as the IWC, WDC also actively engages with national consultations regarding plastic reduction measures, with the aim of influencing policy changes that promote sustainable practices.

An example of this is WDC's contribution to the plastic bag charge consultation. Launched by the then UK government on 27 December 2018, the consultation proposed an extension of the charge to all retailers, and an increase of the charge to 10p per bag. The outcome of

the consultation, published on 31 August 2020, confirmed that, starting from 1 April 2021, the charge would be extended to all businesses of any size supplying goods, with the fee raised from 5p to 10p per bag.

Furthermore, in January 2023, the UK Government announced a forthcoming ban as a result of a consultation on commonly littered plastic items. Set to take effect in October 2023, the ban - which includes items such as plastic plates, trays, bowls, cutlery, balloon sticks, and specific types of polystyrene cups and food containers - is an important step towards reducing plastic pollution and, therefore, creating a safer environment for marine life.

To learn more visit:
uk.whales.org



SECTION 4

Consumption trends in bottled water

Within the UK beverage market, bottled water has emerged as a focal point where consumer preferences clash with environmental concerns. This focus is set against a backdrop of ever more sophisticated advertising techniques leveraging deep psychology and technology.

Our research includes results from a comprehensive study of over 2,000 nationally representative households, which provide a detailed examination of underlying behavioural trends. This dataset is rich with information about purchasing habits, preferences, and demographics, and is invaluable for capturing nuances within the market.

Bottled water consumption is widespread across the UK. Our research found that over half of consumers (51%) say that they consume bottled water about once a week or more.

The frequency of consumption was highest amongst millennials (25-44 years old), with weekly figures rising to 61% for this group, compared with just a third for consumers aged 65+. Most notable is the drop-off in consumption in older age cohorts, which is likely a function of both disposable income (more time spent at home), and that the bottled water market was still dormant when today's 65+ age cohort were in their 20s and 30s. In other words, younger adults today can be expected to consume more bottled water in their later life, all things being equal.

Regarding consumption location, our research determined that more than half of all bottled water is consumed either at home or at work. Additionally, a further 14% is consumed during out-of-home dining or drinking activities. This indicates that in most cases, approximately two-thirds of consumption could potentially be fulfilled using tap water, serving the fundamental purpose of hydration.

In terms of why people drink bottled water, there is a range of factors which can be broadly split between 'availability and convenience' on one hand, and 'taste, quality and health' on the other. There is a slight majority in favour of availability and convenience (Fig.7). Preferences were consistent across all age groups, with the only discernible difference arising from Gen Zs who were more than three times more likely than those aged over 65 to say that they had a strong affinity towards a specific brand.

Our research also discovered strong consumer trends when assessing the impact of advertising. Put simply, those that either 'strongly agreed' or 'agreed' that advertising influenced their bottled water consumption consumed 77% more bottled water per capita than those that 'disagreed' or 'strongly disagreed'.

Findings from the study also highlighted that the damaging environmental impact of purchasing bottled water affects buying behaviour. Figure 9

Frequency of bottled water consumption by UK consumers

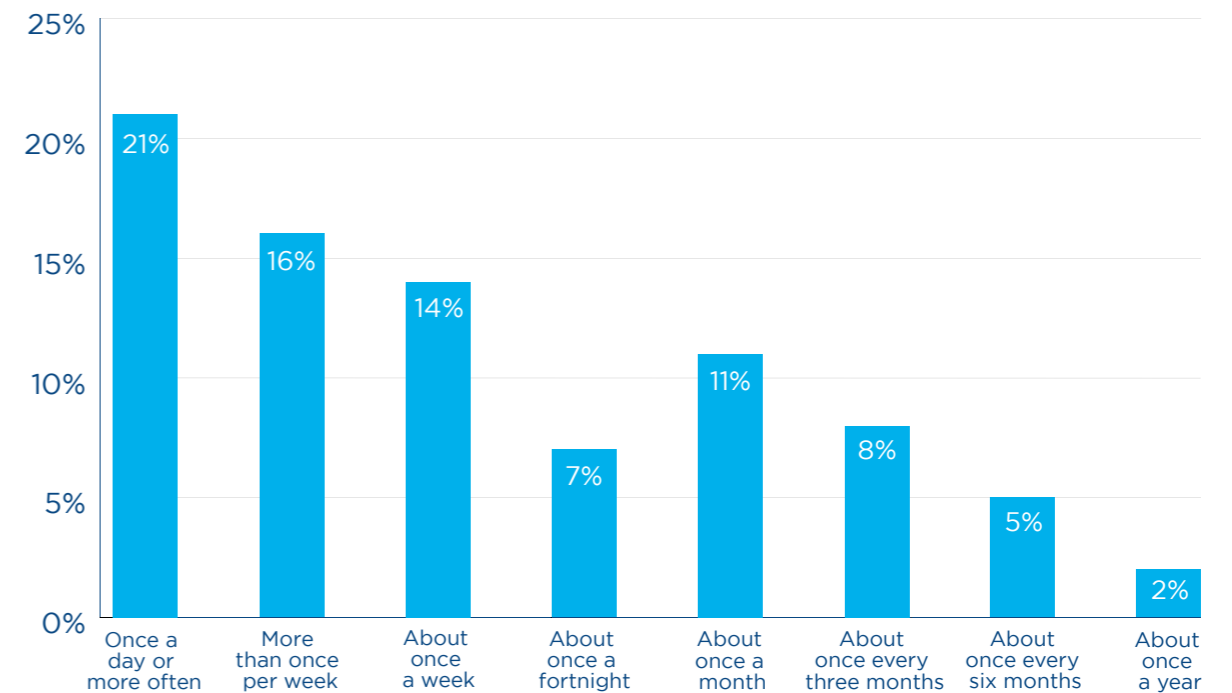
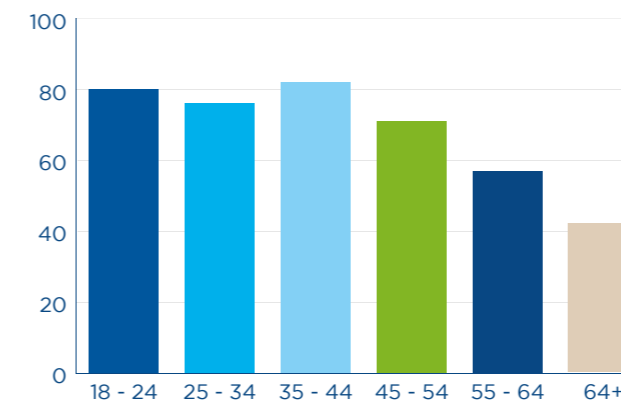


Figure 4: Frequency of bottled water consumption by UK consumers
Source: Retail Economics (excludes respondents who drink less than once per year or not at all)

Bottles of water consumed per capita per year



Share of bottled water consumption by age

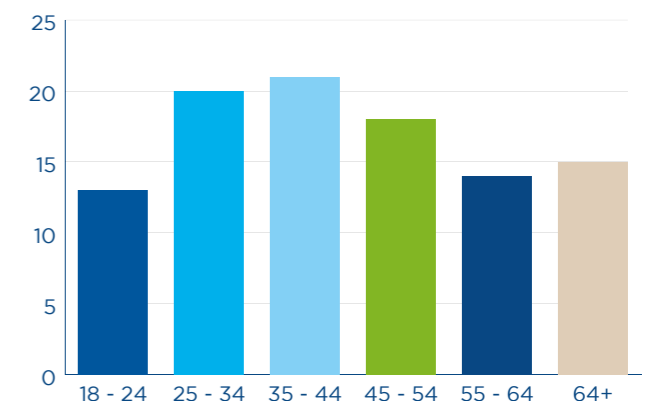


Figure 5: Bottled water consumption per capita and by age
Source: Retail Economics

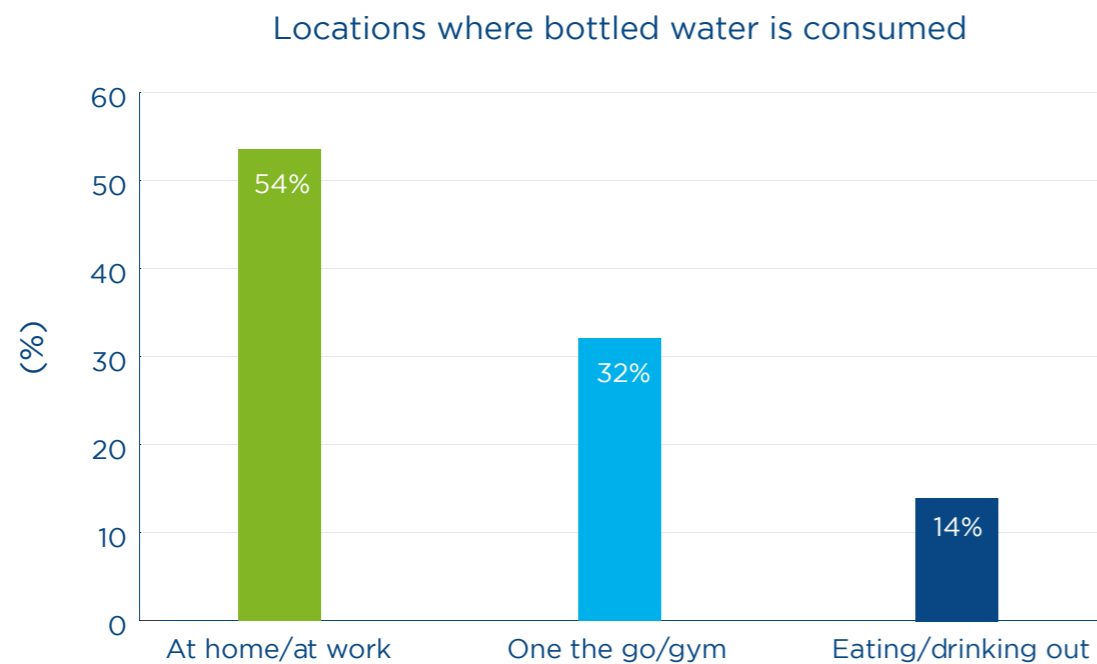


Figure 6: Locations where bottled water is consumed
Source: Retail Economics

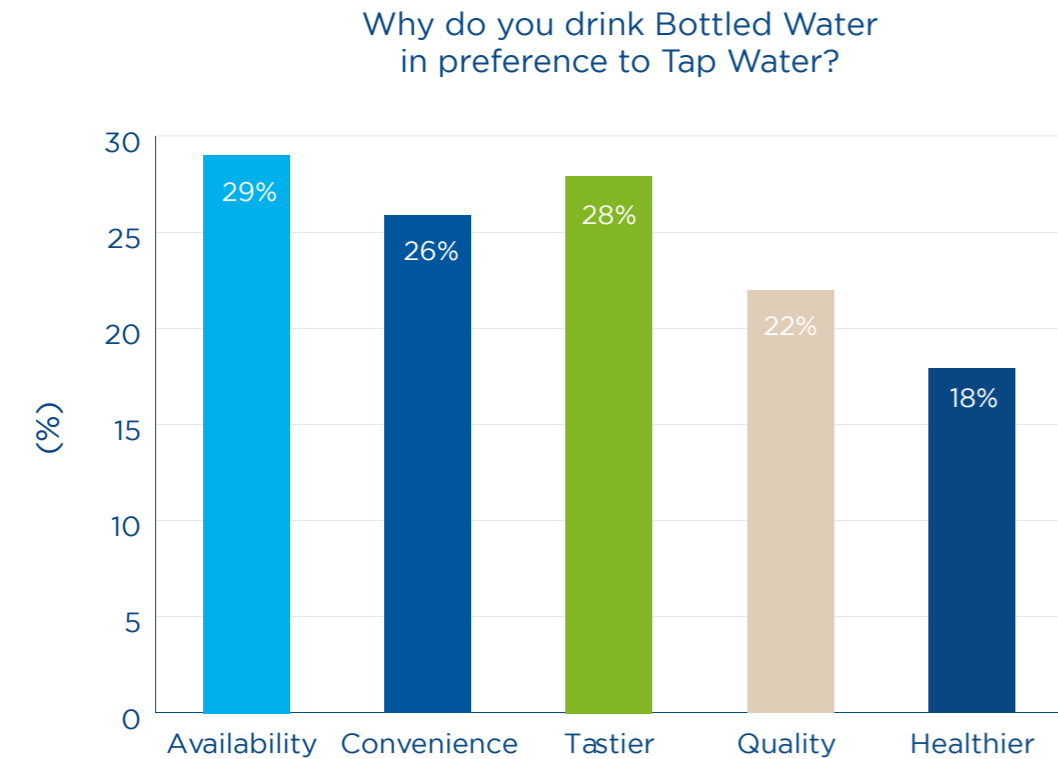


Figure 7: Motivations for bottled water consumption
Source: Retail Economics

shows a narrow majority of respondents expressing intentions to lessen their consumption of bottled water, driven primarily by environmental concerns.

The research highlighted that consumers thought manufacturers and retailers are primarily responsible for the environmental footprint (Fig. 10). Over three quarters (77%) thought that bottled water companies should do more to raise awareness about plastic pollution when advertising, and two thirds also agree that labelling on bottles should draw attention to the carbon cost of consumption.

Our research also revealed that two-thirds of consumers agreed that single-use plastic water bottles should be labelled in a way that informs consumers of their carbon cost.

It's clear that consumption choices reflect a dynamic interplay of factors including convenience, health, taste,

rising environmental awareness, and the impact of advertising. Recent years have seen an interesting dichotomy: on one hand, convenience, availability, and lack of alternative drinking water (e.g. while travelling) continue to propel demand for bottled water, with consumers valuing its 'ready-to-use' attributes; on the other hand, growing environmental consciousness triggered by concerns over plastic waste and carbon emissions is prompting a shift towards more sustainable alternatives.

These market dynamics play out against a backdrop of advertising which continues to maintain market demand, despite the increasingly informative and persuasive messaging around environmental credentials. A key question remains as to the overall impact of bottled water on the environment and whether consumers can make informed decisions regarding their purchases.

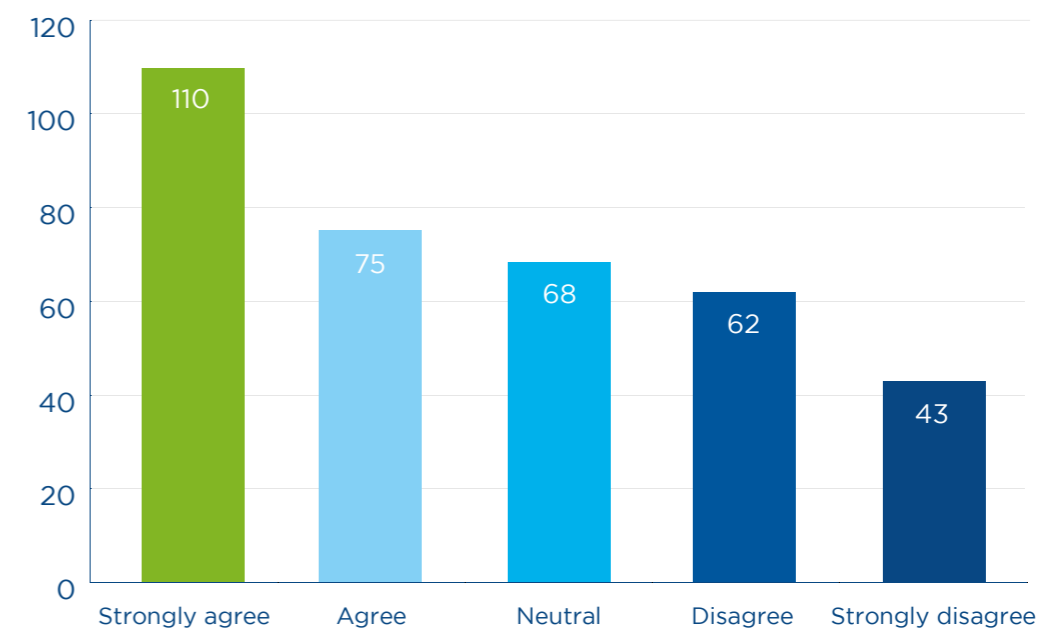


Figure 8: Bottles of water per capita by people who agree that advertising impacts their consumption
Source: Retail Economics

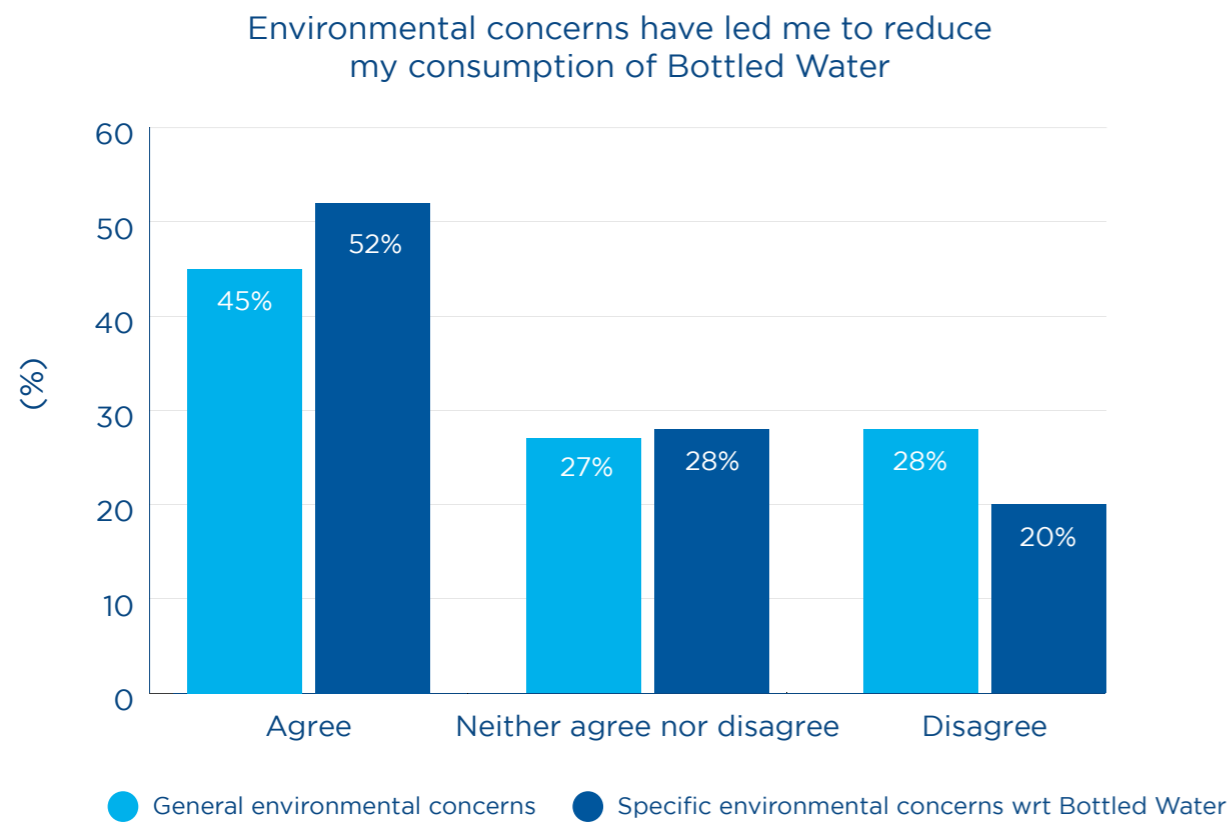


Figure 9: Environmental concerns impact bottled water sales
Source: Retail Economics

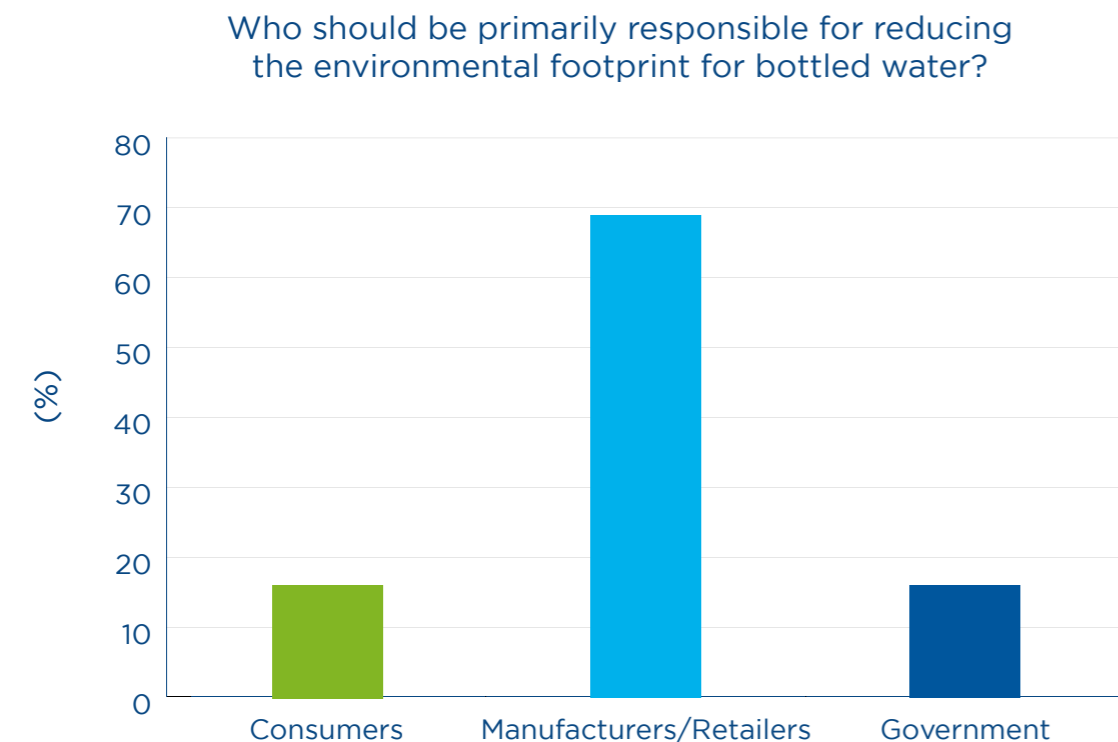


Figure 10: Who should be primarily responsible for reducing the environmental footprint for bottled water?
Source: Retail Economics

Package sizes and associated multi-pack plastic wrap

Our research shows that the supermarket shelf space for bottled water is predominantly occupied by single-serve bottle and multi-packs encased in carry-out plastic wrap.

Indeed, it's hard to think of any other non-refrigerated, non-fresh food, or non-alcoholic supermarket category that comprises so much plastic wrapping around the outside of so many single-serve plastic bottles. In contrast, carbonated drinks comprise very few multi-pack plastic bottle SKUs; and multi-pack single-serve SKUs are typically aluminium cans in a cardboard pack (both of which material are more readily recycled than PET bottles).

In the world of plastic packaging, bottled water is in a 'plastic league' of its own. In fact, according to our calculations, 90% of plastic water bottles on a typical



Figure 11: Virtually all bottled water multi-packs wrapped in flexible plastic vs carbonated drinks with no plastic wrap

(non-convenience) supermarket shelf are wrapped up as part of a multi-pack, while 80% of the bottles on the shelf are single serve (defined as 500 ml or less).

Plastic packaging is often touted by its manufacturers as being the 'hygienic' choice, or something that extends product shelf life. But when it comes to bottled water, multi-pack plastic wrap provides no product benefits for the water itself at all. And, as previously stated, carbonated drinks (and indeed flavoured water too) which are sold in much higher quantities, often have no associated plastic wrap.

The UK bottled water market in a global context

The UK bottled water market appears relatively small within in a global context where sales tip the \$300bn mark internationally (United Nations and Statista). In fact, the UK is only the world's 37th largest market for bottled water (the £1.6bn of sales as estimated by the British Soft Drinks Association translating into around \$2bn), and is not even in the top-fifty markets in terms of sales per capita.

But national markets for bottled water are highly heterogeneous, rendering country-by-country sales practically meaningless, even within Europe. For example, Germany's huge bottled water market is predominantly sparkling, whereas the UK market (and France) is predominantly still. Furthermore, consumer attitudes to tap water are equally diverse. In a 2015 report commissioned by the European Commission, for example, more than 80% of consumers in Sweden said they always drink water directly from their kitchen tap, while barely 20% said they did so in

Ireland (the UK rate was just over 60%). Some of the largest markets for bottled water today are in industrialising middle-income countries, where governments have yet to provide sufficiently robust infrastructure to guarantee clean potable water, especially in the mind of their emerging middle classes.

What are the medium-term prospects for UK bottled water today?

Our forecast suggests branded bottled water volume growth of c.3.6% in the next three (2024-2026) years per annum.

However, it's possible, particularly in the wake of recent so-called Sugar Tax regulations, that bottled water (particularly flavoured or otherwise enhanced) might benefit from a switch away from carbonated drinks. This switch has happened in recent years

in the US, for example. While this may seem like a win on health grounds, it would almost certainly be a loss on environmental grounds, as carbonated drinks are predominantly in large single bottles (no multi-pack plastic wrap) or in single-serve aluminium cans wrapped in cardboard packs (with both aluminium and cardboard being recycled at higher rates than plastic, especially the non-PET plastic multi-pack wrap).

On a global basis, the bottled water market seems set for continued growth. Indeed, analysts at Statista foresee annual sales growth in excess of 5% for bottled water for at least the remainder of the 2020s. As a base case, this means the environmental footprint of the UK bottled water industry will grow even further in the years ahead without firmer action being taken now.

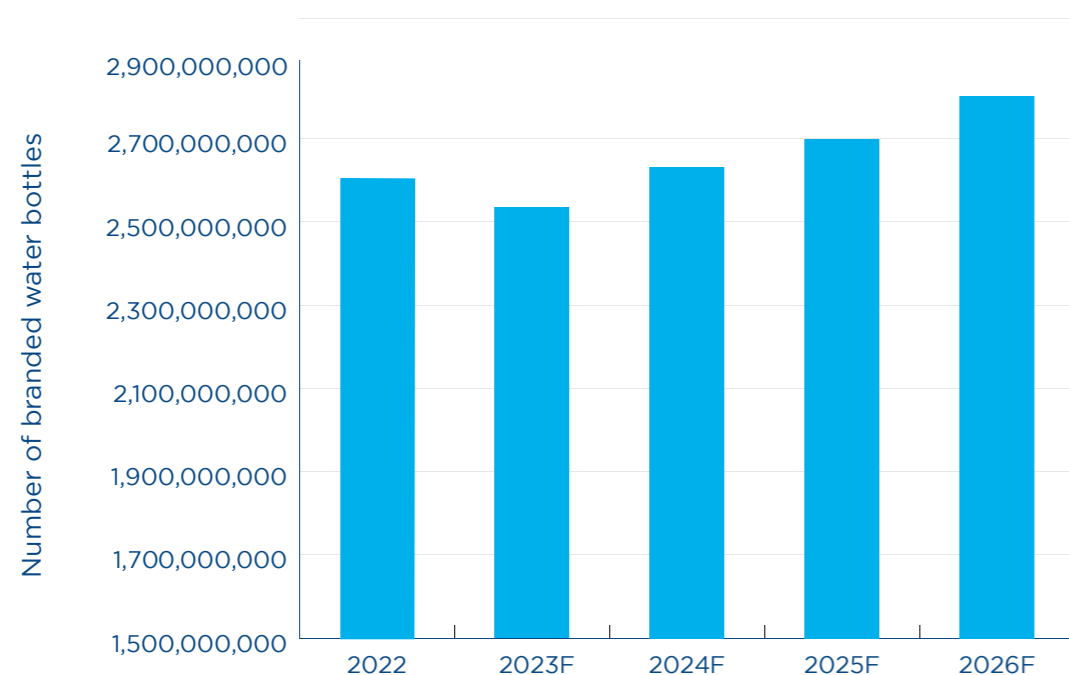


Figure 12: Forecast for branded water bottle sales 2022 to 2026
Source: Retail Economics



Photo by: Waldemar

CASE STUDY

Refill

Refill is an award-winning behaviour change campaign to help people live with less waste. By providing a framework and platform for communities, businesses and consumers to take action, the campaign supports the transition towards reuse systems and tackles the global issue of plastic pollution by reducing waste, whilst empowering individuals, community groups, local authorities, and governments to drive lasting change in their communities by reducing single-use plastic. With the support of local volunteers, Refill Schemes, and International Delivery Partners, the campaign facilitates action at a grassroots level.

Across the United Kingdom, over 400 community and council-led schemes are committed to waste reduction in their local areas. Among these, 88 Refill Schemes are led by councils, demonstrating the campaign's widespread impact and involvement. An astounding 89% of Refill Schemes report that their "involvement with Refill has helped deliver a positive environmental impact" within their communities.

The Refill campaign formed an integral part of the Turning the Tide project in Bournemouth, Christchurch and Poole. This partnership with the local council helped to transform 14 miles of coastline into a low-impact tourist destination by reducing single-use plastic on its beaches, and saw Refill working with MIW Water

Cooler Experts to install new fountains to help residents and visitors stay hydrated and prevent plastic pollution caused by the millions of bottles of water bought every year. Free drinking water is now provided at over 150 locations, including 18 seafront kiosks, more than 130 existing beachfront taps, and 15 newly introduced "Hydration Stations", with brightly coloured, fun and engaging signage directing people to refill at them.

All 150 water Refill Stations across the Bournemouth, Christchurch, and Poole (BCP) seafront have been added to the Refill app, bringing the total amount of Refill Stations in the BCP area to over 400. Encouraging visitors at the beach to remember their reusable bottles and refill at one of the now easy-to-find Refill Stations means less bottles of water are sold – and less empty bottles end up on the beaches, streets and in the sea. This partnership helped to stop 19,000 single-use plastic bottles in July 2022 alone!

Through the collaborative efforts of Refill, local councils, businesses, and passionate volunteers, the campaign is continuously driving significant progress in tackling plastic pollution. By connecting individuals to reuse solutions, supporting businesses in waste reduction, and engaging communities through various events and initiatives, the Refill campaign is creating a lasting positive impact at both local and regional levels. "We have really valued the relationship

with City to Sea turning our initial plan into a project of significantly greater value to BCP Council, its residents and visitors here on our award-winning seafront. Through excellent collaboration we were able to create a strategy, Turning The Tide, which amplified our ambitions for our Environmental Hub project, supported by excellent members of the CTS team, who brought vision, expertise and professionalism allowing us to deliver a major PR launch of the project in July 2022, operational changes delivered at scale and speed, and a real passion for the project." – Andrew Brown, Seafront Operations Manager, BCP Council.

For more info:
www.refill.org.uk



SECTION 5

Calibrating the impact of advertising on UK bottle water sales today

As we have already highlighted in Section 2 of this report, promotional activity was pivotal to the establishment of bottled water as a distinct product category within Food and Drink. Today, the advertising activities of the major brands seem – at least on the surface – to be much more passive, protecting the category in the face of environmental headwinds as much as growing it further. Partly, the big brands themselves are at least somewhat conflicted in terms of bottled water growth since it might impinge on their higher-margin sales in other neighbouring categories (this is most obviously true with respect to Coca-Cola and Pepsi, but also applicable to Danone and Nestlé at least to a degree).

Yet the use of advertising in the bottled water industry continues to evolve. It serves a multitude of objectives such as: (1) 'Expansionary' - directly impacting sales; (2) 'Rivalry' - attempting to win market share from competitors; (3) 'Informative' - educating consumers to aid more informed choices; (4) 'Persuasive' - influencing consumers' views about products; and (5) 'Complementary' - enhancing value or social prestige as a complimentary effect.

Of course, these are not mutually exclusive. For instance, a recent campaign from Glacéau Smartwater brand used

a tagline '100% recycled plastic, now that's 100% smart' to 'inform' consumers about their ambitions to produce all bottles using recycled plastic by the end of 2020. Simultaneously, the campaign also 'persuaded' consumers about their environmental credentials while reinforcing brand presence to expand category sales.

But it is important to realise that advertising alone understates the overall promotional efforts made by the industry to support its product. Largely owned by global brands, it's likely that traditional advertising spend data will underestimate other elements of sponsorship that are visible in the UK, without being paid for in the UK (e.g. Emma Raducanu's sponsorship deal with Evian, and Evian's sponsorship of the US Open Tennis Championship). Furthermore, our estimate excludes the effect of in-store and online channel promotional activity, retail media, product placement and the use of influencers which informs a significant part of an overall marketing strategy.

Therefore, evaluating the impact of advertising on bottled water sales is highly complex, it involves accounting for: the intricacies of marketing mix variables (e.g. pricing strategies, product placement, specific campaigns), the diversity and efficacy of advertising

channels, external factors such as evolving consumer behaviour, weather, societal trends towards environmental sustainability, and competitive manoeuvres within the industry.

Consequently, a sophisticated statistical approach is needed. We examined recent weekly trends with respect to bottled water advertising and product sales using a Bayesian Marketing Mix Model (MMM) over the period March 2020 to December 2022 – almost three years. This model is a flexible statistical regression model which accounts for the historical relationship between marketing spend and sales; it then uses this information to estimate the contribution of each marketing channel to

overall sales of bottled water. The regression analysis considers the spending levels of different advertising channels (e.g. TV, radio, digital), external factors such as seasonality (e.g. effect of holidays and time of year), as well as macroeconomic factors (e.g. COVID restrictions).

Initial research highlights a strong correlation between advertising and sales (Fig. 13), with the industry doing the majority of its advertising in the summer months as sales pick up with rising temperatures.

Using the MMM regression approach to estimate the individual contributions of

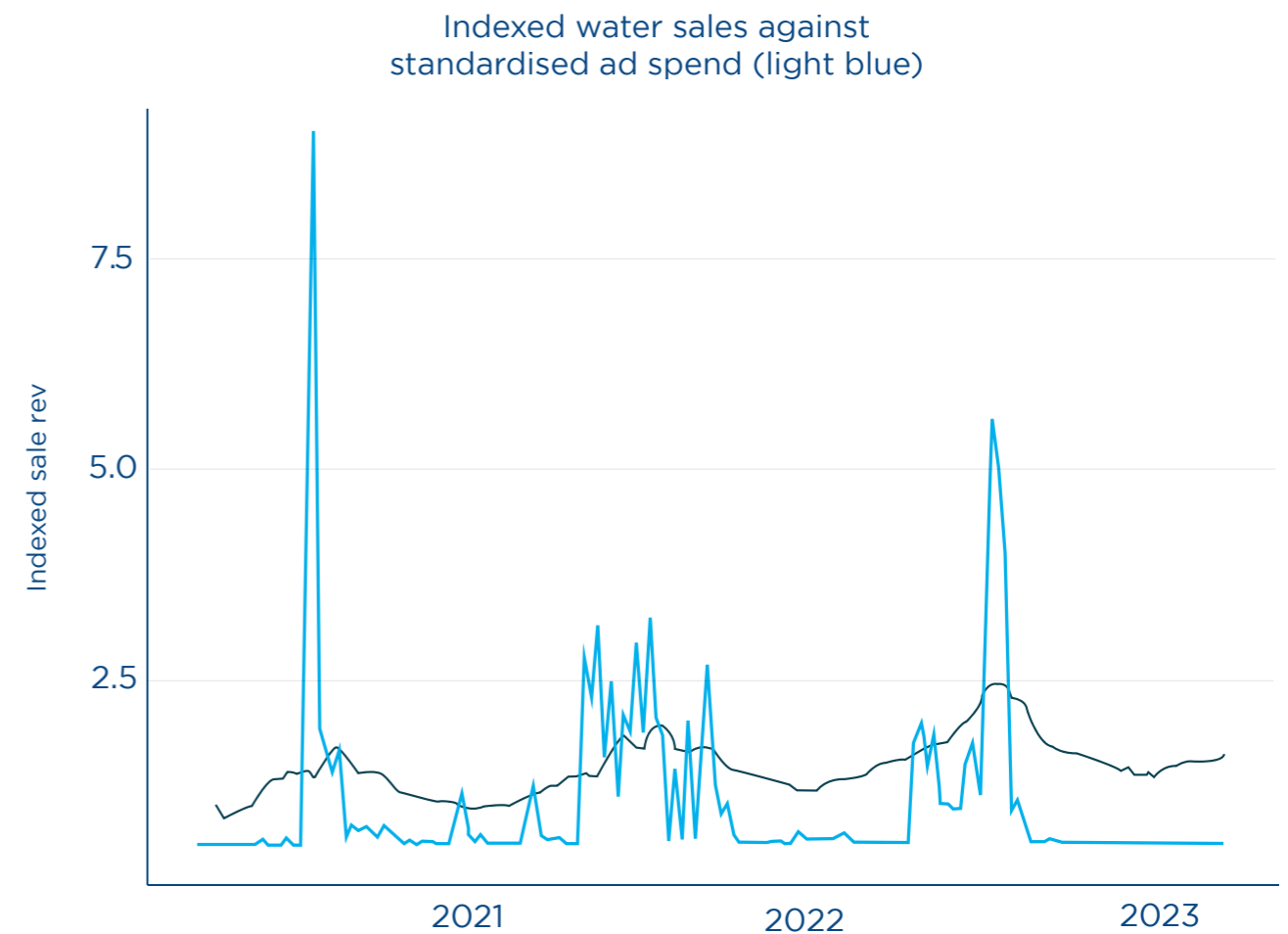


Figure 13: Indexed water sales against standardised ad spend
Source: Nielsen, Nielsen IQ

advertising spend, while accounting for other seasonal factors such as average UK temperature and COVID restriction levels, reveals a positive contribution to sales. Isolating the impact of advertising (statistically) and applying this to just the branded bottle market suggests that advertising directly contributed to the sale of over c.81 million bottles of water in 2022. Put another way, it had a direct contribution of c.£39 million.

Advertising is likely to contribute to sales over 413 million bottles of branded water in just five years.

Including our forecast period and applying this from 2022 to 2026 (5-year period), advertising is likely to contribute to sales of over 413 million bottles of branded water in just five years.

Given the multifaceted nature of advertising, its cumulative impact is anticipated to be considerably more substantial. However, for the sake of maintaining a rigorous approach, our assessment confines its scope to impacts that can be reasonably observed and measured.

Despite the plastic waste, bottle water still seems to position itself as 'good for the environment'

Promotional activity around consumer products comprise various product claims

and suggestions, which for bottled water are predominantly environmental in nature, including those on the face of the bottles themselves. To better understand these claims we looked more carefully at the messaging on bottle packaging designs from eight popular UK brands (parent owner in brackets):

1. Evian (Danone)
2. Volvic (Danone)
3. Highland Spring
4. Buxton Spring (Nestlé)
5. San Pellegrino (Nestlé)
6. Nestle Pure Life (Nestlé)
7. Glaceau Smartwater (Coca-Cola)
8. Fiji Artesian Water

Despite the fact that these eight brands belong to just five parent companies, we failed to find a single, standardised point of similarity between them (other than the word 'water') in terms of how they are described - even the units used to describe bottle size. As such, there is practically no way for consumers to quickly and accurately assess the various product claims, never mind rank them in any meaningful way. And this remains true even when consumers are prepared to invest the time to research the brands further online.

For example:

1. Only six of the eight bottles carry the UK's standardised 'On-Pack Recycling Label' (Evian and Fiji do not), which is probably the best current device for consumers to effectively compare recycling instructions.
2. From the eight bottles analysed, we found seven different graphical devices



concerning recycling. No single graphic is used on more than one bottle, even though five of the eight bottles are owned by just two parent companies. Evian even carries two such devices on the face of the same bottle (Fig. 14).



Figure 14: Graphic design for recycling messaging on an Evian water bottle

3. Six of the bottles carry information on the mineral content of the product, even though only four of the products (pertaining to mineral water) strictly require it according to current UK regulations. The majority of the mineral

content statistics are listed neither alphabetically nor numerically, and no two listings contain the same minerals in the same order.

4. Both of the spring water brands we analysed choose to list their mineral content using an 'average' or 'typical' analysis title, but Buxton Water (a mineral water) also carries a 'typical analysis' title when, legally, the mineral content of the water is required to be stable over time.
5. As enumerated on the face of the bottles, the mineral content of the mineral waters is not meaningfully different from that of the spring waters; indeed, the average mineralisation rate of a sample of seventeen bottled water units we analysed was 8% higher for the spring waters than it was for the mineral waters. Would a reasonable consumer expect this?
6. Only five brands display written text on their bottles asking consumers to dispose of the product responsibly (Buxton Spring, Highland Spring & Volvic do not).
7. Three of the bottles carry 'use by dates' once the package is opened, two of which instruct the consumer to use the contents within three days. One own-label bottled water SKU we reviewed even went as far as to advise its buyer "do not refill for hygiene reasons".
8. Ironically, only one bottle (Nestle Pure Life) references the two officially approved health claims regarding water.

9. Glaceau Smartwater contains spring water as an ingredient, but it is not a spring water according to its so-called 'reserved description' (a form of legal product name). Would a reasonably knowledgeable consumer understand why?
10. The reserved description used to describe Fiji Water currently differs from one supermarket website to another, rendering it difficult for an average consumer to even know what kind of water it is under UK regulations.
11. The companies use wildly different numbers to state how long it takes surface water to be filtered down to their source: from 5 years (Volvic), to 15 years (Highland Spring & Evian), to 30 years (San Pellegrino), to 5,000 years (Buxton Spring). Prima facie, it is difficult to believe these numbers are in any way comparable. Are we to conclude, for example, that Buxton Spring is 'better' because it is being filtered for longer, or is it 'worse' because it must be more stale by the time it is extracted?
12. For no apparent reason whatsoever, Evian advises its buyers that its bottles are 'not designed for long distance transportation outside Europe'. Why is this?

In short, the slew of environmental and quasi-environmental claims made by the bottled water industry at present seem to be at significant odds to the on-shelf reality of single-serve bottles and associated multi-pack plastic wrap. As such, it is hard to conclude that these brands are giving a fair representation

of the full environmental impact of their products, thus rendering consumers incapable of making fully-informed and responsible purchasing decisions.

SECTION 6

The environmental cost of bottled water

In section 2 of this report, we set out the primary factors that have driven the surge in bottled water sales over the past decades, starting with all of the surrounding promotional activity. However, this escalating trajectory has been accompanied by less conspicuous and damaging environmental ramifications.

As the sector grew, and is expected to grow further in coming years – pending any action to restrain the associated plastic footprint – its environmental footprint will only grow further, with plastic waste and transportation emissions underscoring the industry’s sustainability challenge.

Our analysis suggests that for the branded bottled water market alone, there were more than 2.6 billion PET bottles sold in 2022. If lined up from top to tail, they would stretch out to over 294,000 miles, enough to circle the equator of our planet 10 times over each year.

The associated carbon footprint would be in the region of 440,714, 994,943 grams

| Water market in 2022 | Total PET water bottle market | Branded PET water bottle market |
|-------------------------------------|---------------------------------|---------------------------------|
| Number of bottles sold | 4.0 bn | 2.6 bn |
| Number of miles if laid top to tail | 453,000 miles | 294,000 miles |
| Amount of carbon emission | C.678,023,069,143 g e of carbon | C.440,714,994,943 g e of carbon |

Figure 15: The impact in numbers - total market

of carbon, or the equivalent of 262,000 cars on the road for a year. However, taking into account our forecast period makes for sombre reading.

Branded bottled water sales are likely to reach 2.8 billion by 2026, a rise of over 280 million bottles from 2023 to 2026 – a 11.2% increase over the four-year period. This increase alone will add c.34,087,608,715 grams of additional carbon emission by 2026 – the equivalent of over 20,000 cars on the road for the period of a year.

Raw materials and packaging (48%) account for the latest proportion of the increase, followed by downstream transport (31%) and end of life (15%).

Given the urgency for all parts of the economy to decarbonise, the issue around bottled water is all the more perplexing when around two-thirds of its use could be satisfied by the tap.

Carbon cost of the branded bottled water industry from 2022-2026(F)

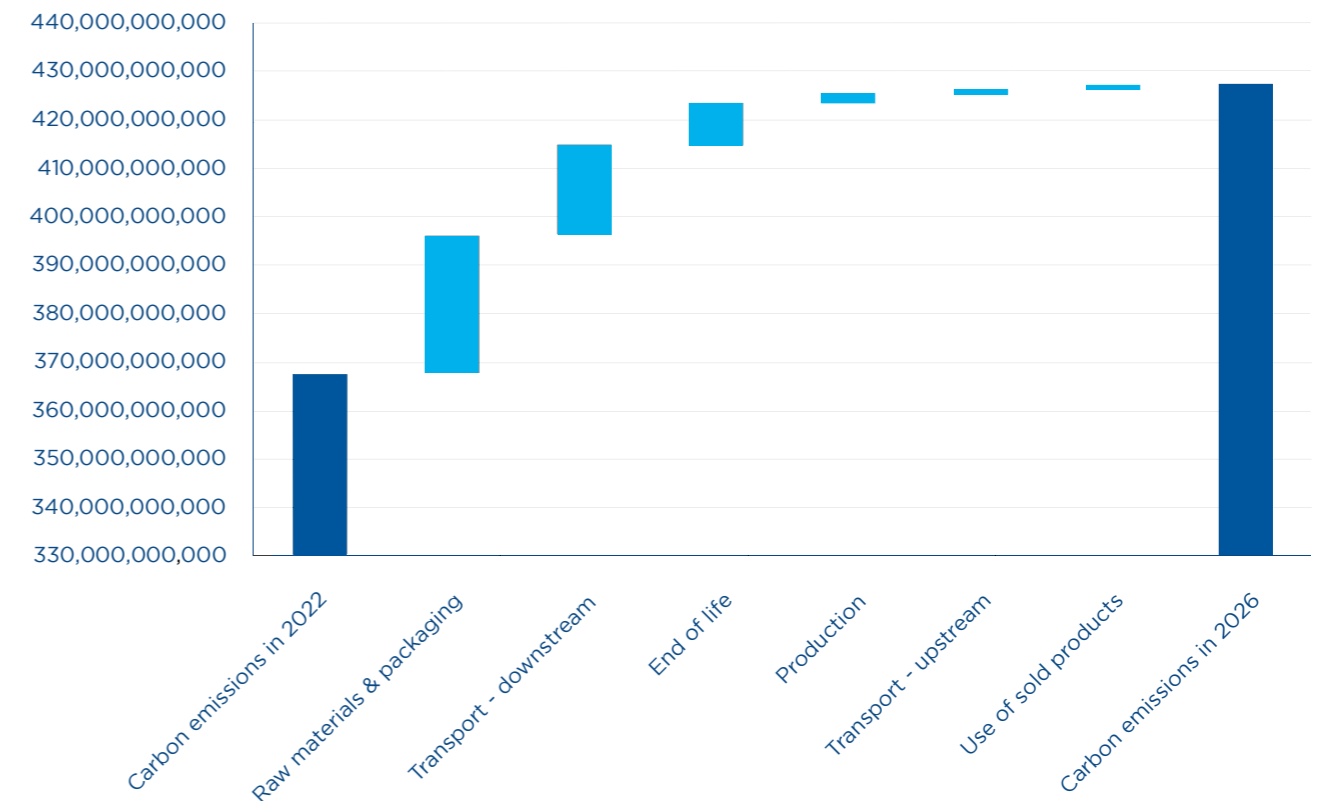


Figure 16: Figure 16: Carbon cost of the branded bottled water industry from 2022-2026(F)
Source: Retail Economics analysis

The high environmental cost of plastic packaging

Although estimates of the impact of plastic packaging on greenhouse gas emissions vary, it’s generally accepted that there is a material contribution in the industrialised world. Whatever its recycling prowess, the UK is a very high generator of plastic waste (Law et. al 2020 suggests we are secondly only to the US in terms of plastic waste emitted per capita).

In a widely cited study (Geyer, Jambeck & Law 2017), it was estimated that of the 6,300 million metric tons of plastic waste ever generated globally, only 9% had been

recycled, with 79% ending up in landfill, and 12% incinerated.

In Europe presently, packaging remains overwhelmingly the largest sector for plastic usage, accounting for nearly half of all plastic materials consumed. Despite the extensive strides made in recycling, a mere 10% of the plastic used in 2021 was successfully recycled (Plastics Europe 2022).

According to estimates for a medium-sized supermarket chain in the UK, plastic emerges as the primary contributor to greenhouse gas (GHG) emissions associated with packaging (Berners-Lee 2015). Among all plastic packaging-related

emissions, PET bottles are identified as the leading source. In an analysis of 77 sub-categories, it was found that water in particular, exhibited the highest carbon dioxide (CO₂) emissions per sales value in terms of packaging.

The challenge of consumer recycling

Statistics from Defra and Recoup highlight that recycling rates in the UK have barely increased in the past decade. In 2021/2022, the official 'Waste from Households' recycling rate was 42.5%, down from the 43.0% recycling rate reported ten years earlier (Fig. 17).

Statistics from Recoup show that collection rates for plastic wrap have even fallen in recent years. In 2021, only 13% of UK local authorities collected

plastic films and wraps, which was the lowest percentage since 2010. In April, Yes Recycling in Scotland called in administrators to seek a buyer for its ground-breaking soft plastics recycling plant just months after opening as it could not source enough pre-sorted flexible plastics to recycle.

Lacking a concrete financial incentive to do so, it is perhaps hardly surprising that consumer recycling rates seem to trail markedly those of businesses. Our calculations, grounded in the seminal Burgess et al. 2021 study, expose a stark contrast – a recycling rate of 34% for consumers, compared with 70% for businesses. This highlights an urgent requirement for improved incentives to encourage consumers to recycle their waste more conscientiously.

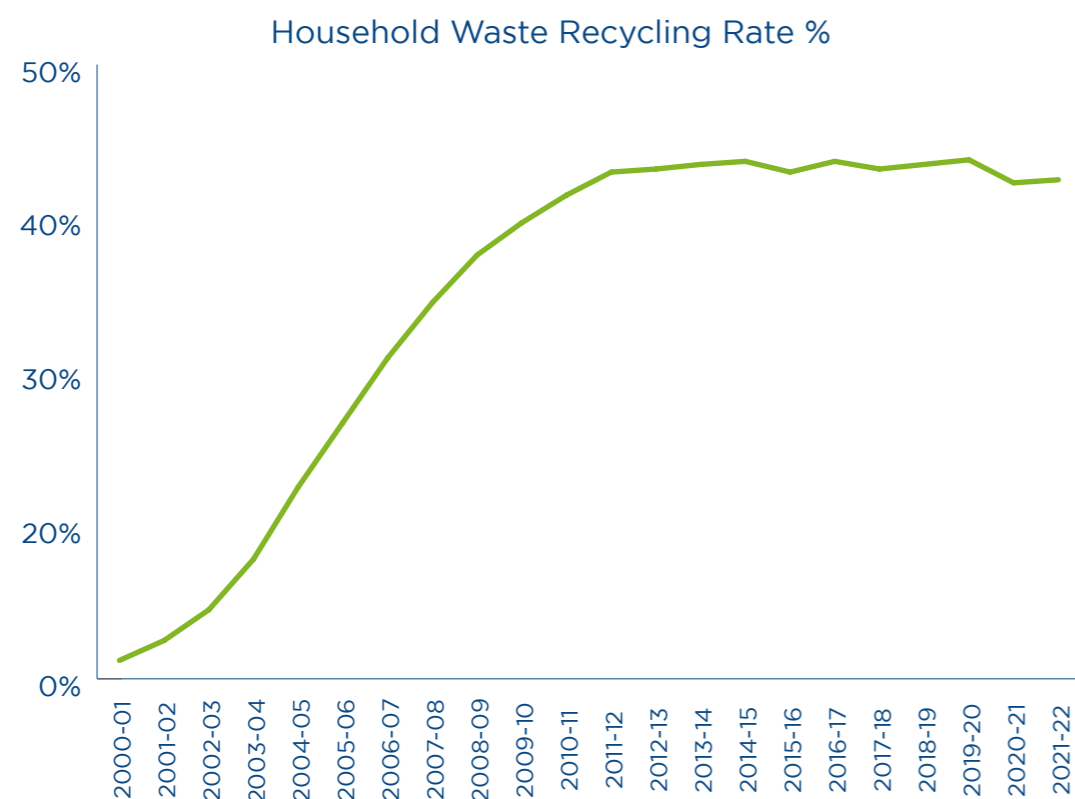


Figure 17: UK Household waste recycling rates (2000 – 2022)
Source: DEFRA

Even councils can be conflicted with respect to recycling incentives, especially where they have a financial interest in Energy Recovery Facilities that benefit monetarily from the incineration of flexible plastic waste.

Furthermore, a recent authoritative study conducted by the Carbon Trust (2021) highlighted that 'the introduction of return schemes in new markets is likely to require significant consumer education and engagement to achieve the return rates needed to generate significant carbon savings over one-way PET bottles.' In simpler terms, even if a nationwide Deposit Return Scheme is implemented (which is unlikely to happen within the next two years under current plans), it will not either immediately or even necessarily result in a significant breakthrough in terms of carbon savings.

This might explain why former British Prime Minister Boris Johnson, in a candid moment while discussing environmental issues with school children prior to the Glasgow COP Summit, admitted that recycling alone cannot solve our carbon problems, especially when it comes to packaging that can be avoided in the first place.

The high environmental cost of transportation

A recent study of transportation and supply chains (Ganpati & Wing 2023) pointed out that the combination of globalisation and industrial consolidation had tended to actually lengthen supply chains. It has been estimated that transport usage per unit of output had more than doubled in the past half-century.

In the context of UK supermarkets, the weight of bottled water and the long road distances it travels from source to shelf (average 600-mile journey given water sources in Southern France, Scotland, and the Peak District), constitute a particularly heavy environmental burden. Indeed, Evian (32%) and Volvic (30%) in their latest carbon management plan admit that downstream transport accounts for close to a third of overall carbon emissions.

On the environmental impact of bottled versus tap water, there is only one winner – tap water.

Many studies have been conducted on the relative environmental impact of bottled water versus tap water. In every single study, the differential impact has been of the order of magnitude of hundreds-to-1 against bottled water.

In his book 'How Bad are Bananas: the Carbon Footprint of Everything', Mike Berners-Lee concluded: 'for anyone living in a country where the tap water is safe to drink, knocking the plastic bottles out of our lives has got to be a simple win'. His calculations saw bottled water come in with a carbon footprint 1,000 times that compared to tap water (Fig. 18).

| |
|--|
| A litre of tap water |
| 0.352g CO ₂ e |
| Number of miles if laid top to tail |
| 320g CO ₂ e locally sourced and distributed |
| 480g CO ₂ e transported 600 miles by road |

Figure 18: Carbon footprint comparison of tap water versus bottled water
Source: Mike Berners-Lee (2020)

In a rigorous meta-analysis synthesising the results of 28 studies comparing the carbon cost of bottled versus tap water, researchers in Italy (Fantin et. al., 2014) calculated an average carbon footprint for bottled water 180 times that of tap water.

Finally, the environmental impact of bottled water also compares poorly (on average four times higher) to the provision of public drinking fountains, according to one recent study (Makov et. al., 2019), particularly where a high proportion of electricity generation is renewables-based.

The case against bottled water isn't new: it's been made by environmentalists for years

For all of the reasons mentioned so far, it's unsurprising that there has been a movement against bottled water – and plastic packaging in particular – for many years.

In 1985, the European Economic Community enacted a directive 'on containers of liquids for human consumption', directing nation states 'to take steps to ensure that a clear indication is given on new refillable containers offered for sale, either on the container itself or on the label, that the containers concerned are refillable. The indication will be applied in such a manner as to be easily visible, clearly legible and durable, and to remain intact when the container is opened'. Nine years later, this particular stipulation was – rather remarkably – revoked by the implementation of the European Community Directive 'on packaging and packaging waste', which noted that 'the best means of preventing


the creation of packaging waste is to reduce the overall volume of packaging', and also that 'life-cycle assessments should be completed as soon as possible to justify a clear hierarchy between, reusable, recyclable and recoverable packaging'.

In 2007, Tesco announced a plan to put carbon labels on every item in its product range, with its then CEO Sir Terry Leahy noting: "I listen when the scientists say that if we fail to mitigate climate change, the environmental, social and economic consequences will be stark and severe". Five years later, having labelled less than 1% of its product range, Tesco dropped the pledge, admitting that "we expected that other retailers would move quickly to do it as well, but that hasn't happened".

In 2008, Times columnist Giles Coren wrote 'Drinkers of bottled water are the new smokers'. In 2009, the town of Bundadood in New South Wales, Australia became the first town to ban bottled water sales. Similar such town-wide banning orders have been enacted in the US, including Nantucket, Massachusetts. In 2015, Selfridges announced it would no longer sell single-use plastic bottled water.

With all the focus on plastic packaging, how has multi-pack bottled water wrap escaped attention?

As we have shown, plastic packaging remains a particular problem for the bottled water industry. And yet it appears to have escaped specific attention during the most recent round (2020-) of environmental concerns. Why?



On the environmental impact of bottled water versus tap water, there is only one winner – tap water.

Photo by: Claudio Schwarz

Interestingly, WRAP (Waste and Resources Action Programme) has identified 'plastic wrapping for multi-sales of tins, bottles, and cartons' as the first item on its list of 'six new problem plastics set for elimination' with a targeted removal by the end of 2022 to the greatest extent possible. However, the industry is far from achieving this objective. In fact, we believe the situation concerning the use of multi-pack plastic wrapping around bottled water has worsened in recent years.

Part of the issue is that multi-size packs have become larger while individual single-serve bottles have become smaller, negating some of the targets set out by

WRAP. For example, 'WRAP challenges Pact members to remove plastic wrapping for multi-packs of fewer than 5 items, 400ml/400g or larger'. However, the industry has moved from the once popular four-packs of 1.5-litre spring water into six-packs, exempting them from WRAP's target. Similarly, the large packs of single-serve bottles frequently on shelves are exempt, being in smaller 330ml bottles.

SECTION 7

What is the solution?

In recent years, the UK Government has taken a range of policy measures to address perceived harms associated with specific products. Some initiatives have focused on safeguarding individuals from self-harm (e.g. smoking, drinking and gambling), while others have broadened their scope to encompass wider societal issues (e.g. financial strain on the NHS from obesity, child abuse resulting from alcohol misuse). In the past fifteen years, UK policymakers have increasingly 'nudged' consumers to take actions deemed beneficial, either for their own well-being or for the greater public interest.

It's vital to acknowledge that in all these instances, consumer laws have been enacted to protect consumer rights and interests. These laws serve as a protective framework in a marketplace where the companies that individuals interact in, wield significantly more power. Furthermore, efforts have been made to enhance information disclosure during important transactions, ensuring greater transparency for all parties involved.

The traditional domains - tobacco and alcohol

Tobacco regulation is the most obvious example of proactive government regulation and action in the past fifty years. It is taxed heavily, partly to deter demand, and partly to pay for the cost of treating the resulting harms. It is subject to an advertising ban. It faces restrictions

at point of sale. There are labelling requirements on the face of the product. An age limit is imposed for purchasing. And most recently, new restrictions were imposed on a range of venues where smoking would not be permitted, not out of a desire to protect the smoker, but to protect the health of passive smokers.

Alcohol faces similar restrictions to tobacco. It faces specific advertising rules designed to prevent it from being made to look 'trendy'. In Scotland, alcohol is subject to a minimum unit price, a measure specifically designed to stop teenage children with limited budgets from easily accessing alcohol in their early years.

Measures to help consumer awareness of their carbon footprint

One area where UK Government has introduced an environmental tax relates to vehicle excise duty which was earlier levied on the basis of engine capacity, and more recently on the basis of carbon emissions. Air Passenger Duty has a weaker link with strict carbon emissions – though there is a correlation – and in fact was originally introduced as a means of closing a perceived tax loophole rather than a pure environmental tax.

In 2003, UK Government introduced Home Information Packs (for England) as part of property sales to facilitate improved operation for new and existing

occupants. And while most of the details of these packs have subsequently been removed, a requirement to include a valid Energy Performance Certificate remains, as is also the case with a range of other electrical appliances consuming high electrical loads (e.g. dishwashers).

Investment in refill stations

Investing in refill stations aligns with governments' environmental stewardship commitments, fostering a transition towards a circular economy. By encouraging citizens to embrace tap water, refill stations effectively reduce the demand for single-use plastic bottles, curbing plastic waste and significantly cutting carbon emissions throughout the bottle lifecycle.

By actively promoting tap water through a well-designed network of refill stations, governments can make substantial progress in achieving environmental sustainability goals, driving economic growth, creating jobs, and enhancing public health and well-being.

Present-day action - Calories, Carrier bags and Cotton buds

The following cases exemplify present day actions stemming from well-considered policy aimed at reducing environmental harm through steering consumer products and packaging:

In 2012, the government started to take action, initially on a voluntary basis, with respect to calorie labelling in restaurants and other eating establishments. These were recently codified in The Calorie Labelling (Out of Home) (England)

Regulations 2021, which took full legal effect in 2022.

In 2015, the Single Use Carrier Bag Charges (England) Order came into effect, widely accepted as having significantly impacted plastic bag use, and re-use. As discussed later in this paper, we view the plastic wrap around multipack bottled water as being a de facto carrier bag, and believe it should be taxed as such.

In 2020, The Environmental Protection (Plastic Straws, Cotton Buds and Stirrers) (England) Regulations 2020 came into effect. Also known as single-use plastics.

And in 2021, The Food (Promotion and Placement) (England) Regulations 2021 became law, impacting food and drink products High in Fat Sugar & Salt (HFSS) with new rules on product placement (not next to the checkouts) and nutritional specifications.

In each case, specific product concerns or harms gave rise to tailored and proportionate action. Every policy involved rigorous research, keen debate and appropriate measures. They are all steps in the right direction. But more steps are needed if we are to hit our net-zero climate goals.

Earlier this year, UK Government announced that England's Deposit Return Scheme (DRS) would now not be implemented until October 2025 at the earliest, mostly likely with a 20p deposit per bottle, and excluding glass. This is a long way away. And even when it is implemented, it will not solve the problem of plastic multi-pack wrap at all.

New guidance on environmental claims

The Advertising Standards Authority and the Competition & Markets Authority have both recently promulgated new guidance regarding environmental claims that companies make about their product and services, explicit and implicit. Of particular concern to us are the following principles and advice:

- 'Claims must not omit or hide important relevant information' (CMA Guidance 2021)
- 'Claims must consider the full life cycle of the product or service' (CMA Guidance 2021)
- 'Avoid using unqualified 'carbon neutral', 'net zero' or similar claims' (CAP Guidance 2023)

In Section 4 of this report, we set out some of the claims made by the top bottled water brands in the UK at present. With specific reference to being carbon neutral, Evian and Volvic have both used the wording 'carbon neutral' on their bottles in recent years, as 'certified' according to methodology approved by the Carbon Trust. All the same, their "carbon neutral" claims as published still make no direct mention of the certificates the companies purchase to offset their actual carbon emissions. Meanwhile, most brands indicate their bottles as being recyclable in some way, but none point out the harm caused by not recycling the bottle, or that the overall rate of plastics recycling in the UK is still less than 50%, according to current government statistics.

What kind of policy strategy works?

As we previously outlined in Section 1, there are significant and rising doubts regarding the ability of any single policy measure (tax-related or otherwise) to act as a 'magic bullet', allowing countries to hit their net-zero commitments. Instead, action is necessary on multiple fronts, with urgency being critical.

Evidence suggests that consumers alter their spending habits in response to clearer product labelling, partly because they otherwise seem to underestimate emissions associated with food and drink (Camilleri et. al., 2019). Traffic-light style environmental labelling successfully triggered more environmental product choices in a virtual reality setting at least (Arrazat et. al., 2023). Consumers also support labelling changes that allow them to make more informed buying choices according to our data.

In another recent meta-analysis (Bergquist et. al., 2023), researchers found the use of peer-group comparisons (indicating what the 'best' consumers do in specific relevant situations) and financial incentives to be most effective in causing behavioural change.

Consumers alter their spending habits in response to clearer product labelling, partly because they otherwise seem to underestimate emissions associated.

SECTION 8

Key Policy Recommendations

We hereby set out our proposals for bottled water grouped under four broad headings:

1. Packaging Restrictions
2. Labelling Restrictions
3. Promotional Restrictions
4. Accelerate existing commitments

Packaging Restrictions

With 90% of the bottled water on our supermarket shelves being encased in plastic wrap (flexible, largely non-recyclable, multi-pack associated), it is time to see this plastic wrap for what it really is – a carrier bag (some SKUs even come with handles).



Figure 19: Multi-pack flexible plastic bags

As such, multi-pack plastic wrap should be taxed (at 10p per item) under suitable amendments to the Single Use Carrier Bags Charges Order 2015, or it should be banned under amendments to Environmental Protection (Plastic Straws, Cotton Buds & Stirrers) Regulations 2020. Of course, when it comes to carrier bags, consumers pay the tax when they purchase one, whereas with bottled water the item is automatically attached and non-removable prior to sale. Perhaps, like the Soft Drinks Industry Levy, the government might propose to tax the consumer at the point of sale unless the industry has reformulated the product (packaging in this case, rather than ingredients per the Soft Drinks Industry Levy) prior to the introduction of the levy. Either way, this measure alone could save *an estimated one million items of such wrap per day from incineration or landfill*. Other carbonated drinks – and even flavoured bottled water – exist today in UK supermarkets almost wholly without multi-pack plastic wrap. As such, we do not believe it should present the industry with any significant implementational problems.

We also suggest that the industry be challenged to reduce the proportion of its sales accounted for by single-use bottles, especially with respect to non-sparkling water. Currently, we see no reason why the industry should be selling more than one-third of its product in 500 ml bottles in less than three years from now, especially considering what consumers

indicated regarding their bottled water drinking habits when surveyed (mostly at home or at work).

We also urge the government to review the antiquated and poorly understood rules and restrictions surrounding the bottling and labelling of mineral water, spring water and filtered water. These all hinder the effectiveness of the bottled water market in benefiting consumers – and the environment. While some restrictions might have been understandable a century or more ago (e.g. bottled at source, mineral composition reporting requirements), they have no place in the modern UK economy as they perpetuate an aura of health benefits and superior product safety predicated on completely unsupported medical grounds, and would never be accepted as valid present-day health claims.

Labelling Restrictions

In his recent 'Mission Zero' Report, Chris Skidmore MP set out among his 129 recommendations, a goal for industrial product ecolabelling starting by 2025 (e.g. paper, glass), and that "government should continue to work with the industry" with respect to food ecolabelling. These are commendable and important goals, although the historical reality of food labelling systems (e.g. so-called traffic-light systems) suggests the road to final implementation will be long and arduous, certainly far beyond 2025 based on historical evidence.

Yet with respect to bottled water in particular, its carbon footprint relative to tap water is clear, and beyond any

reasonable statistical doubt. What's more, our research finds that two-thirds of personal water consumption is either at work, at home, or in a restaurant/bar, all of which locations provide by law, ready access to safe drinking water.

As such, we propose a mandatory labelling requirement on bottled water to the effect of 'UK tap water is just as safe and has a significantly lower carbon footprint than single use bottled water', to be implemented alongside forthcoming labelling changes which will be necessary as part of the introduction to the UK's Deposit Return Scheme.

Our own research also found that over two-thirds of consumers thought that there should be a label on single-use plastic bottled water to inform them of the environmental impact.

In addition, we call for carbon emissions labelling on all single-use plastic water bottles to support education and improve consumer awareness of carbon emissions associated with consumption.



We see four main areas in which labelling will help support environmental objectives:

Environmental Awareness

Carbon emissions labelling on single-use bottled water would serve as a powerful tool to raise environmental awareness among consumers. By providing clear information about the carbon footprint associated with the production, transportation, and disposal of each bottle, consumers would be more informed about the environmental impact of their purchasing decisions. This awareness can drive behavioural changes, leading to reduced demand for single-use bottled water and a shift towards more sustainable alternatives.



Informed Consumer Choice

Carbon emissions labelling empowers consumers to make more informed choices. By disclosing the carbon emissions associated with each bottle, consumers can factor environmental considerations into their decision-making process. This information enables them to choose products with lower carbon footprints, aligning their purchasing decisions with their environmental values.



Encouraging Industry Accountability

Introducing carbon emissions labelling on single-use bottled water encourages industry accountability. The presence of carbon emissions information creates transparency, holding companies accountable for their environmental impact. This can incentivise the industry to adopt more sustainable practices such as reducing emissions throughout the production and distribution processes.



Driving Market Transformation

Carbon emissions labelling can act as a catalyst for market transformation. By making carbon footprints visible to consumers, demand can shift towards products with lower emissions. This, in turn, encourages manufacturers and suppliers to innovate and invest in more sustainable production methods and materials.





Promotional Restrictions

We propose that the Advertising Standards Authority (ASA) and Competition & Markets Authority undertake an immediate review of the explicit and implicit environmental claims and credentials proffered by bottled water manufacturers. This is in context of the negative environmental impact of their industry on society, and also in light of existing ASA rules in place regarding environment claims in particular.

After all, the whole of the bottled water industry is estimated to produce 4.0 billion bottles in 2022, with the majority either ending up in land fill or the incinerator. In addition, our research shows that advertising contributes directly to further the growth of the industry which causes further negative externalities.

With respect of the branded bottled water market, we forecast that the number of bottles sold will rise from 2.6 billion in 2022 to 2.8 billion in 2026. Our MMM model suggests that a ban on advertising could reduce the number of branded bottled water sales by 413 million over this period.

The bottled water industry produced an estimated 4.0 billion bottles in 2022, with the majority ending up in land fill or the incinerator.

Importantly, this estimate does not account for the wider impact of sponsorship deals, promotions and discounts, retail media spend or in-store product placement.

Indeed, in our fight against climate change, Government and industry stakeholders need to draw inspiration from other industries and regulation. Drawing inspiration from the HFSS regulations and their impact on product placement, a similar approach can be applied to single-use water bottles to promote sustainability. Similar to the restriction on confectionery at the point of checkout, the removal of single-use plastic water bottles at prominent points of sale, such as checkout counters or impulse-buying areas, may prompt consumers to consider alternative options.

Pending the conclusion of such investigations, there should be no new bottled water advertising commissioned for the UK market.

Accelerate existing commitments

We strongly suggest that the UK government should accelerate the existing commitments to the Resources & Waste Strategy, Deposit Return & Extended producer responsibility schemes. In light of a series of delays, these commitments should be prioritised and legislation implemented as a matter of urgency to reflect the environmental cost of the industry on society.

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