SustainableWine
ROUNDTABLE

Sparkling Wine Bottle Weight

Towards a Bottle Weight Accord for sparkling wines

Dr Peter Stanbury, November 2025

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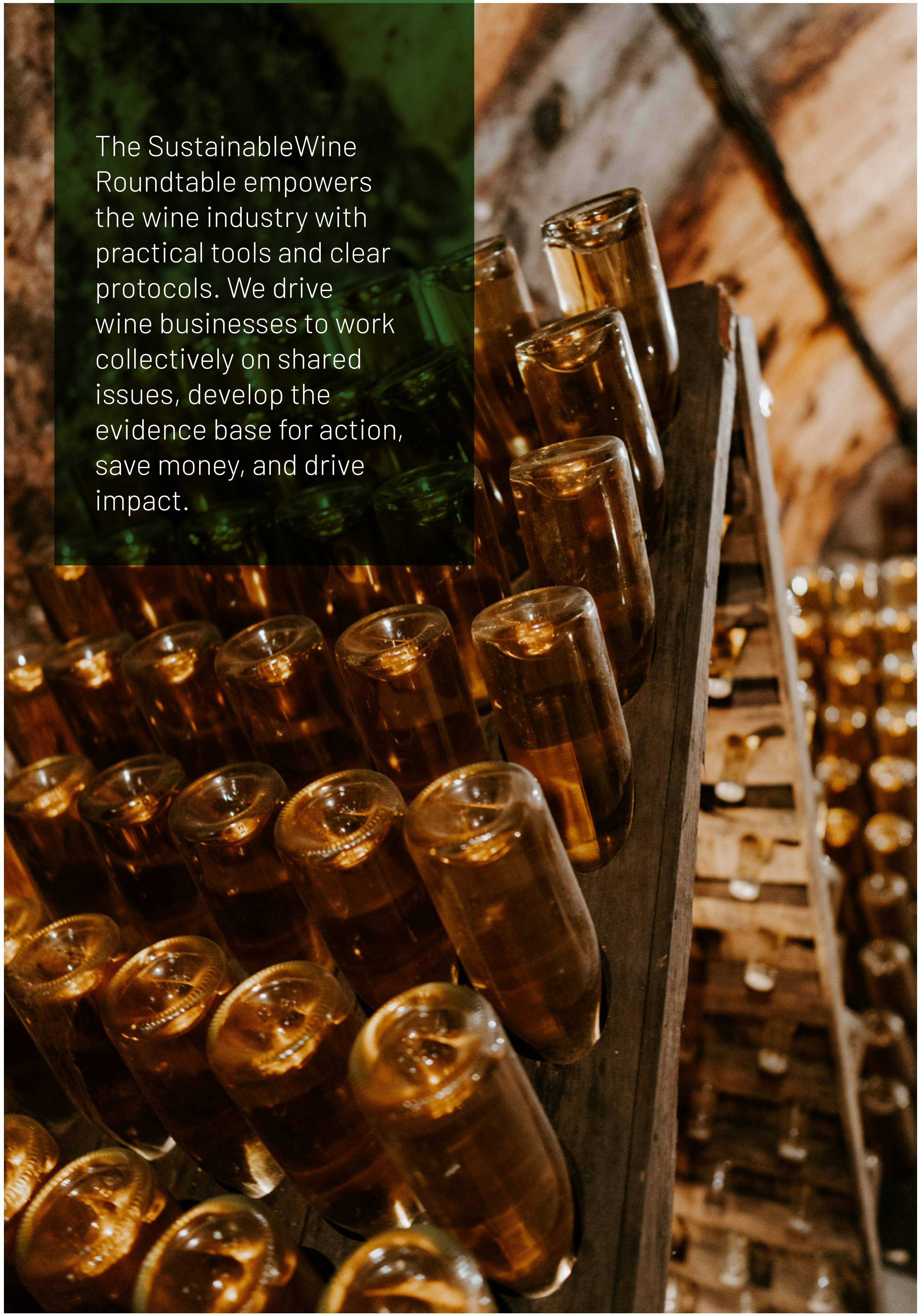


Introduction

In 2023, SWR launched the Bottle Weight Accord (BWA) under which participants commit to reduce the average weight of their still wine bottles to below 420g by the end of 2026. This Accord has been highly successful and now includes companies which between them make and sell more than 2 billion bottles of wine. This is approximately 8% of all the wine sold globally.

Our aim is to follow this up with a similar accord for sparkling wines, and this paper sets out the evidence base for that, and recommendations which emerge from this evidence. However, in practice, developing a clear way forward has not been straightforward as there have been a number of key issues to address.

The first of these is the technical performance of the bottle. By contrast with a still wine bottle, one for sparkling wine bottle has a much tougher job to do. By definition sparkling wines are pressurised, and a bottle needs to be able to withstand that. Moreover, other factors in the case of some wines mean that bottles also need to withstand external pressures too, for example in stacking or riddling.

This basic challenge is further complicated by the fact that there are at least seven methods of producing sparkling wines, and for each of these DOCs and other governing bodies can define very different requirements in relation to wine production.

To address this, SWR has developed a four-part categorisation of sparkling wine types. Whilst this typology is not perfect and will not cover a small number of wines, it marries the need to reflect complexity whilst at the same time enabling us to make recommendations which are practical and actionable. A detailed explanation of these categories is considered later in the report, however they are as follows:

- Champagne
- Other traditional method wines
- Charmat method wines
- Semi-sparkling wines.

A second key issue is the consumer perception around wine bottle weight. There remains a constituency in the wine business which holds that consumers associate heavier bottles with better quality wine. Whilst the evidence suggests that this is true for some demographics in some markets, it is very far from being a universal truth.

In fact, as is demonstrated by the experience of the participants in SWR's BWA, the vast majority of consumers do not seem to be in any way affected by bottle lightweighting. There has been no pushback on this which reflects the reality that consumers' decision making about what they buy is driven by a range of factors – price, varietals, labels, origin and so on.

However, more recent evidence suggests that there is a significant element of the consumer market for whom lighter weight bottles might actually be a positive buying cue. Studies show that younger people – Gen Z – are actually delivering in terms of their stated preference for sustainability in the goods that they buy. This consumer behaviour is, apparently now also being replicated to some degree by these people's parents.

This paper then examines the significant health and safety considerations which need to be taken into account. Any bottle used needs demonstrably to be safe in use from its manufacture right through to handling by the consumer. Lightweighting therefore needs to be done only in light of careful consideration of factors such as carbonation levels, filling levels and bottle quality and testing. How bottles are handled, both on a filling line and in the onward supply chain are also factors which need to be carefully controlled.

To reflect these factors, this study differs from the BWA for still wines which requires participants to achieve an average bottle weight below 420g. To reflect safety concerns, this paper sets a target weight for each category of sparkling wine.

Currently each of the four categories has bottles which vary quite considerably in weight. Charmat wines, for example, have bottle weights from below 500g up to nearly 900g.

In developing our recommendations for target weights, we have plotted the existing spread of bottle weights of the sparkling wine ranges of a number of our retail members. Target recommendations are based on the logic that if some of a style of wine can be, and has been over time, safely put in bottles at the lighter end of these weight ranges, why cannot most, if not all, of that style also be in lighter bottles?

This paper therefore proposes target lighter weights for each of the four styles of wine. However, in doing so we have erred on the side of caution. When we brought forward our proposals for still wine bottles, we were aware that many bottles significantly lighter than 420g were in use. The same is true in the case of sparkling wines. Our recommendations are therefore a balance between weights which, whilst material in terms of reduction, will be seen as sensible and achievable from a safety perspective.

Towards a sparkling wine bottle weight accord

Background

In 2023, SWR launched the Bottle Weight Accord (BWA) under which participants commit to reduce the average weight of their still wine bottles to below 420g by the end of 2026. This Accord has been highly successful and now includes companies which between them make and sell more than 2 billion bottles of wine. The BWA was based on research undertaken by SWR in 2022–23 to develop a clear evidence base for bottle weight reduction. In particular, that report focused on rebuttal of arguments as to why lightweighting was not possible or desirable.

Since then, a key aim for SWR has been to undertake the research to back a further Accord focussed on the sparkling wine sector. Though a relatively small part of the overall wine sector, it is one which is growing strongly. According to IWSR[1], the sparkling wine segment represented some 12% of total global wine sales in 2024. However, this is up from only 7% in 2017. What this shows is that whilst much of the wine sector is struggling, estimates for the sparkling wine sector are forecasting significant growth. The global sparkling wines market was valued at $33.9 billion in 2019, and is anticipated by Allied Market Research to reach $51.7 billion by 2027[2]. This amounts to an annual growth rate of more than 7% during the period.

Clearly, therefore, developing analogous targets for the sparkling wine market to reduce bottle weight is an important need. As this segment continues to expand, if this can be done in a fashion that sees lighter bottles as a priority, this will be a substantial win for sustainability.

Why focus on bottle weight?

This leads us to an obvious question: what is the importance of focussing on bottle weight? Sustainability in wine encompasses so many issues, so why ought this to be a priority? Since the publication of our last report, the answer to this is now two-fold: environmental and commercial.

The environmental impact

Various studies have shown that the single biggest source of carbon in the wine industry is the bottle. This is made up of two components: the manufacture of the bottle in the first place; and then the carbon generated in the supply chain by transporting a heavy product around the world.

In our conversations about, and presentations of the BWA, we tend to use the expression that "anything up to 50% of the total carbon impact of wine comes from the bottle it comes in." This statement is borne out by a number of studies. For example, a 2017 LCA[3] of the Spanish and French wine sectors found that glass production alone contributed more than 45% to wine's carbon footprint. Another report, a metastudy of other LCAs, found that packaging production accounted for 31% of the carbon footprint, with transport contributing a further 14%. By contrast, this study found that the agricultural phase of wine-making accounts for 19% of the carbon total.[4]

1 Arthur R. Fizz drinkers look beyond Champagne. International Wine Challenge 27/08/24. Fizz drinkers look beyond Champagne (accessed 09/09/25)
2 Allied Market Research (AMR). Global Sparkling Wines Market, Opportunities and Forecast, 2021–2027. https://www.alliedmarketresearch.com/sparkling-wines-market-A08370 (accessed 09/09/25).

3 Novarro A et al. 'Econ-innovation and benchmarking carbon footprint data for vineyards and wineries in Spain and France.' In Journal of Cleaner Production. Vol 142 pp1661-1671. 2017
4 Petti L et al. 'Lifecycle assessment in the wine sector.' In Notarnicola B. Life cycle assessments in the agri-food sector: case studies. Methodological issues and best practices. Springer International Publishing 2015.

However, between different wines there will be considerable variability in the amount of carbon 'embedded' in any given bottle. This variability is driven by a number of factors, of which the most significant are:

Manufacturing carbon mix

Glass for wine bottles is made in a furnace which heats the components to a temperature of 1,500o. Melting sands and silicas is, self-evidently, a highly energy-intensive process, but where that energy comes from has a significant impact on the carbon emitted. One study, for example, concluded that emissions from container glass production in China could be 50% higher than in Europe because of higher usage of coal and fuel oil.[5]

Recycled content

Recycled glass, known as cullet, can reduce the energy intensiveness of the glass-making process because it does require less energy to melt than raw materials. A study by packaging group WRAP found that "re-melting cullet uses 25% less energy than making glass from raw materials."[6]

'Bottle miles'

All too often bottles are transported considerable distances from their manufacturing point to where they are filled. In Europe, according to one leading study, 40% of bottles "travel more than 300 km to reach their destination."[7] Nor is this solely a European phenomenon: one article observed that "industry estimates suggest some two-thirds of glass bottles now used for US wine production are made in China and shipped across the Pacific before even being filled."[8]

Bulk shipping

There is an increasing trend towards wines which need to travel long distances before being bottled in the destination market, not the country of origin. Bulk wine is mostly shipped in 24,000-litre flexitanks, essentially a big plastic bag that fits inside a 20ft shipping container. In the UK, one article estimates, bulk wine accounts for some 40% of the wine sold. Much of it is bottled at Encirc's plant in Eltham, Cheshire, where the firm bottles 337 million litres of bulk-shipped wine each year. [9]The carbon savings on this form of transport can be significant. UK retailer, The Wine Society cite WRAP's view that "transport emissions can be reduced by over 30% by importing in bulk rather than bottling at source." [10]

Logistics choices

Even where wine is not bulk shipped, logistics choices can make a significant difference to the carbon footprint of a bottle of wine. Self-evidently, air freight is very carbon inefficient and should be avoided for non-fresh products like wine. Shipping done using vessels which use technologies like slow-steaming and using electric motors in-port, and ensuring that containers are shipped full, not part full all have beneficial carbon impacts. In terms of terrestrial transport, trains are better than road freight, and where the latter is needed – for example in the 'last mile' to stores, electric vehicles should be preferred over those using internal combustion engines.

The financial impact

Since our last bottle weight report, another highly-convincing reason has emerged to focus on light-weighting of wine bottles: cost. In a number of jurisdictions, governments are putting increased responsibility on producers for what happens to packaging at end of life.

In the EU, the existing Packaging Waste Directive will be replaced in 2026 by a much more stringent Packaging and Packaging Waste Regulation (PPWR). These new rules "aim to minimise the quantities of packaging and waste generated while lowering the use of primary raw materials and fostering the transition to a circular, sustainable and competitive economy."[11] A key element of these new rules is that producers who place packaging, packaged products, or relevant goods on the market for the first time in a given country, will bear the full cost of managing packaging waste, including collection, sorting, and recycling.[12]

5 Hu PP, Y Li & X Zhang. CO2 emission from container glass in China, and emission reduction strategy analysis. In Carbon Management May 2018.
6 WRAP. The quality protocol for the production of processed cullet from waste flat glass. 06/12/16 The quality protocol for the production of processed cullet from waste flat glass | WRAP - The Waste and Resources Action Programme (accessed 02/10/25)
7 Schmitz A, et al. 'Energy consumption and CO2 emissions of the European glass industry.' In Energy Policy. 2011;39: pp142-155.
8 Joy R. 'Wine bottles: A heavy price' Decanter. 15/03/22 Wine bottles: A heavy price - Decanter (accessed 31/01/22)
9 Atkin. T. Bulking Up. 02/04/25 Bulking Up – Tim Atkin – Master of Wine (accessed 02/10/25)
10 Mason S. Sustainability: a long history of bulk shipping. The Wine Society 09/06/22. The History Of Bulk Shipping | Sustainability | The Wine Society (accessed 02/10/25)
11 European Commission. Packaging Waste. Packaging waste - Environment - European Commission (accessed 03/10/25)
12 AVASK. PPWR 2025: What the EU's new packaging rules mean for your business. 28/08/25 PPWR 2025: What the EU's new packaging rules mean for your business - AVASK News & Blogs (accessed 03/10/25)

In this regard, it is important to note that the new rules take the form of a 'regulation', therefore are "a binding legislative act… [to be] applied in its entirety across the EU"[13]. The previous rules took the form of a 'directive' which leaves enactment to member states. Typically, this leads to much patchier practice across the union. In the UK, these regulations are already a fact of life. Extended Producer Responsibility (EPR) levies have already been introduced in the UK, and are payable from 2025.

Nor is EPR only a European phenomenon. Seven U.S. states have active EPR or similar packaging laws: California, Colorado, Maine, Oregon, New Jersey, Minnesota, and Washington.[14] Australia is shifting from voluntary to mandatory Extended Producer Responsibility (EPR) for packaging under the Recycling and Waste Reduction Act (RAWR) and the National Packaging Targets. New Zealand too has legislated on EPR, making organisations more responsible for packaging's recovery and recycling costs. This started in 2023, with full implementation aimed for 2032.[15]

Impact

When enacted, the financial impact of these regulations is significant. In the UK, for example, the rate eventually announced by the Government was a levy of £192/ tonne.[16] Whilst this was less than the £240/tonne originally proposed, it is nonetheless a significant cost to businesses, and a significant incentive for bottle lightweighting. To quantify this, SWR's still wine BWA removed 148,500 tonnes of glass from the wine supply chain in its first year of operation. Had that all been subject to the UK's EPR levy, this represents avoided costs to BWA participants of £28,500,000 in that year.

However, as well as this significant direct avoided costs, the experience of BWA members demonstrates that other financial savings are delivered through lighter weight bottles. Anecdotal evidence suggests that some participants have seen transport costs reduced, either because pallets are lighter or because more bottles can be put on a pallet.

Other considerations

However, there are also other reasons to seek to use lighter bottles. One issue is that of worker welfare: that a case of 12 lighter-weight bottles is noticeable easier to lift, and leads to fewer sprains and strains.

Similarly, lighter-weight bottles put less strain on vehicles and lifting equipment, so reducing the need for on-going repairs. As the Quebecois alcohol monopoly, SAQ, observed as part of the publicity when it introduced its own requirements for lightweight packaging, in addition to the environmental drivers for the change "lighter bottles decrease the risk of injury for our employees."[17]

Other packaging formats

SWR's focus, in this report on lightweighting of bottles does not mean that other measures to reduce the environmental impact of wine packaging are any less important. A wide range of other formats are available for wine, including plastic bottles, metal cans and bag-in-box. A full exploration of the relative sustainable merits and challenges related to each of these will be the topic of SWR research in 2026. Formats other than glass are gaining considerable traction, and this is likely to continue in the future. Environmental concerns and regulation are one driver for this. However, so to are other factors, for example greater consumer acceptance for these other formats, and a realisation that in some settings, alternatives to a glass bottle are actually more useful.

However, whilst a gradual shift towards other formats for wine packaging will continue apace, the reality is that glass bottles remain the principal container for wine. For sparkling wine, this is likely to remain the case longer because of pressure issues involved limit the technical potential of alternative formats. Therefore, given that around 50% of wine's carbon footprint lies in the bottle, light weighting those bottles is a self-evidently important step to take in the journey to sustainability.

13 European Commission. Types of legislation Types of legislation | European Union (accessed 03/10/25)
14 Source Intelligence. Packaging EPR laws in the US. Packaging EPR Laws in the U.S. (accessed 03/10/25)
15 NZ Ministry of the Environment. Priority product stewardship. 03/02/25 Priority product stewardship | Ministry for the Environment (accessed 03/10/25)
16 DEFRA. Extended Producer Responsibility for Packaging: 2025 base fees. 30/06/25 Extended Producer Responsibility for Packaging: 2025 base fees - GOV.UK (accessed 03/10/25)
17 SAQ. Why are we big on lightweight glass 16/01/22 All about lightweight glass | SAQ.COM (accessed 03/02/23)

Constructing a sparkling wine BWA

Mirroring the BWA?

Now covering more than 2 billion bottles of wine, SWR's still wine BWA has clearly been a considerable success. It is the first, and so far, only, global industry-wide initiative to address the carbon impacts of packaging. Clearly, this model is a good starting point in designing and equivalent accord in relation to sparking wine.

In some respects, there can be a direct read-across from the still accord to its new sparkling wine cousin. The target weight for the BWA, of 420g was not aiming at the lowest available bottle, but the lightest consistent with use within normal supply chains.

Even in 2023, we knew that bottles at 300g were on the market, and that many wines were routinely being packed in bottles of 350-370g. However, it was not clear that bottles of this weight would be available in all origins. Moreover, recommending an extremely light weight bottle would be more likely to cause greater resistance from those who might object to any change at all. Our goal, therefore, was to get as high-a proportion of wines sold by SWR retailers as possible into 420g bottles.

In the same way therefore, in the sparkling wine sector, we will not recommend the lightest bottles available, but those which can demonstrably be used within existing supply chains, and which will not cause concern within the market.

Safety concerns

The last point in the section above is especially important given safety concerns, which have been widely expressed to us during the research and writing of this report. The difference between still wines and sparkling ones has significant implications from a health and safety perspective. As a number of those interviewed for this project have said, bottles need to be fit for purpose right the way through the supply chain, from manufacture, until when they are emptied by the consumer.

When it comes to these issues, memories in the industry are long, raising the spectre of an episode in the UK market in 2015. In June of that year, some 15,000 bottles of Prosecco were recalled "after reports emerged of them spontaneously shattering."[18] However, news this year from the US demonstrates the importance of safety considerations in any changes recommended to sparkling wine bottle weight. In late spring and summer of 2025, US retailer Costco was obliged to recall bottles of their own-label Kirkland Signature Prosecco Valdobbiandene because of "a risk of unopened bottles shattering, even when not handled or in use."[19]

There is no indication whether or not these instances were related to lightweighting of bottles. Anecdotal evidence both from retailers and bottle makers suggest that bottle failures can occur because of contaminated cullet which can sometimes contain ceramics as well as glass. However, there is a clear difference in the significance of a bottle failure between still and sparkling wines.

18 Ali A. Thousands of prosecco bottles recalled after reports of 'spontaneous' shattering. The Independent 12/06/15
19 The Drinks Business. Costco recalls 'exploding' Prosecco bottles. 17/09/25. Costco recalls 'exploding' Prosecco bottles (accessed 03/10/25)

The result of a broken still wine bottle, will be a spillage of wine on the floor. A shattering sparkling wine bottle will result in shards of glass flying around, with the obvious injury risks that implies. It is easy, therefore, to understand why safety considerations need to be a key consideration in any move to lightweight sparkling wine bottles.

Performance requirements of sparkling wine bottles

Safety concerns are driven by the fact that sparkling wines require more of their container than still ones. All still wines need of their packaging is that they contain the liquid, in a good condition, from producer to the consumer's table.

Sparkling wines, however are, by definition under pressure, and therefore the structural requirements of the bottle are much more severe. Depending on a number of factors, the performance characteristics of a bottle will vary between different sparkling wines. Of these, the most significant are the following:

Internal pressure

What makes a wine sparkle is that it has CO2 within the liquid. This is typically measured in grams of CO2 per litre of liquid (g CO2/l). The pressure this exerts outwardly on a bottle's walls is analogous to the pressure of air in a tyre.

Different sparkling wines have different pressures. Champagnes, which are extremely effervescent, lead to an internal pressure of around 5-6 atmospheres[20] (5-6 bar).[21] Other wines, though regarded as fully-sparkling have lower pressures. For example, the 'spumante' style of Prosecco is required by the DOC to be a minimum of 3 bar, though most sit in the 4-5.5 bar range.[22] By contrast, Proseccos of the 'frizzante' style, and other semi-sparkling wines come in at between 1 and 2.5 bar of pressure.

Stacking

However, for some sparkling wines, the bottle is under pressure not just from the liquid within, but also from the outside. Especially for Champagne-style wines, many of the governing bodies (appellations, DOCs etc) set requirements on maturation for wines before they are able to be sold with the DOC label. This maturation is typically done by stacking bottles on their sides. Sometimes these stacks of bottles are extremely tall. Obviously, this process places a considerable requirement of the bottle to withstand external weight. Moreover, in some cases, this is pressure which a bottle needs to withstand for a number of years.

Riddling

'Riddling', also known as remuage, is a technique in Champagne and other traditional sparkling wines where bottles are rotated and tilted to consolidate sediment from dead yeast cells in the bottle's neck for later removal. Historically this was done bottle-by bottle and by hand, and this technique is still used by a number of producers. However, where riddling is required, most producers today use a piece of machinery known as a gyropalette which performs the same task automatically on many bottles at the same time, and in a shorter period of time. The bottles are placed in a cage and are moved in a way which emulates the action of manual riddling by means of motors and automatic controls. Bottles need to be resilient enough to deal with this handling process.

Disgorgement

Traditional styles of sparkling wines have two stages of fermentation. The second of these is in the bottle, known as the secondary fermentation. At the end of this process, it is necessary to remove the yeast sediment from the bottle. This is called disgorgement. This normally involves plunging the neck of the bottle into freezing brine, so that the sediment forms a solid plug that is ejected under pressure when the bottle is opened.[23] The bottle is then re-corked for storage and eventual sale. Again, this is relevant in terms of bottle weight because of the additional handling that is required.

20 BBC. How much pressure is there in a champagne bottle? BBC Science Focus
21 Technically one standard atmosphere is only 0.987 of a standard atmosphere. However, for the purposes of this report, the terms will be used interchangeably.
22 The Drinks Business. Everything you need to know about Prosecco. Everything you need to know about Prosecco - The Drinks Business (accessed 03/10/25)
23 Decanter. Disgorgement Disgorgement - Decanter (accessed 03/10/25)

Making sparkling wine

As all the different factors set out in the previous section make clear, the production process for sparkling wines is not as straightforward as for still wines. Indeed, according to one assessment, there are at least seven different methods for making sparkling wines.[24] It is not for this report to go into these in detail, though the article cited does provide more insight. However, for the record, the different methods are as follows:

- The Traditional Method
- The Ancestral Method
- The Transfer Method
- The Charmat Method
- The Continuous Method
- The Dioise Method
- The Soda Method.

However, the reality is even more complicated than this. Within each of these seven methods of production, regional appellations and trade bodies set very different requirements around issues such as required pressures, maturation time, bottle shape and other variables. This means, that in practice, there are a very significant range of different sparkling wines depending on their manufacturing process and requirements of an appellation or trade body.

Reconciling complexity with actionability

What has been central to the success of the BWA is that we were able to set a single, clear target weight in relation to 750ml wine bottles. By contrast, this report could recommend a different target bottle weight for each of the different sparkling wine types and regulatory frameworks. A weight for Sekt, another for Franciacorta, another for Cap Classique and so on, and so on.

This is not a practical approach. SWR's goal is to use evidence-based research to develop actionable recommendations that can drive sustainable change in the wine industry. A panoply of different targets, whilst it would reflect diverse production approaches, would not be consistent with the need to effect change at scale when it comes to sparkling wine bottle weight. Nevertheless, this report recommends bottle weights which we believe can work with the range of different approaches mandated by DOCs, appellations and other regional bodies.

We have therefore had to develop an approach which both reflects some of the complexity in this segment of the wine market, but at the same time provides clear, actionable targets for participants in a new sparkling wine bottle weight accord.

Therefore, we have worked very closely with a number of our members – drawn from different parts of the wine value chain – to create a typology of sparkling wines which reflect the bulk of styles as they are sold and consumed. Based on this collaboration, a sparkling BWA will be based on a division of the sparkling wine market by the most important styles. These are as follows:

- **Champagne:** As set out above, stacking (sometimes for many years) and riddling require additional strength in bottles in addition to the internal pressure from the wine itself.
- **Non-Champagne traditional method wines:** Technically, these wines are produced in broadly the same way as Champagnes. The reason for separating these out is two-fold. Firstly, these wines are generally in lighter weight bottles than Champagnes, and secondly, as will be seen from the consumer perception chapter, there are some interesting potential differences from a marketing perspective.
- **Charmat method:** This style of wine is fermented in a metal tank. Hence, they are sometimes referred to as 'tank fermented' wines: Charmat stems from the name of the man who developed the process. Principally, this means Prosecco, although others (Sekt) also use this method. Generally, these wines have a lower internal bottle pressure as fermentation is done before bottling.
- **Lightly sparkling wines:** Generally speaking, any sparkling wines at below 3 bar would be considered lightly sparkling. This would include styles such as Frizzante, Pet Nat and carbonated wines.

Clearly, not all sparkling wines will sit within this categorisation. However, in the considerable discussions we have had over recent months, we feel this four-part categorisation is the best means to balance recognising complexity, yet still coming up with recommendations that are actionable. For those wines which are not covered by these categories, it would make most sense for them to be put in the category which best reflects their gCO2/l and internal bar pressure.

24 The Wine Caverns. 7 Different Methods of Making Sparkling Wine. 7 Different Methods of Making Sparkling Wine – The Wine Caverns (accessed 03/10/25)

Defining bottle weight targets

The BWA sets a target for its participants to reduce their average bottle weight below 420g by the end of 2026. The term 'average' was included to allow for the fact that some growers would still insist on using heavy bottles, but that this should not be an impediment to lightweighting the vast majority of bottles. As noted elsewhere, we know from engagement with those in the BWA that a considerable amount of wine is already delivered in bottles well below the 420g target.

However, safety considerations mean that recommending a weight below target for sparkling wines could be dangerous. Any wine bottle needs to be fit for purpose, but the pressure and other issues informing the performance requirements of sparkling wine bottles mean that bottles below a weight that is demonstrably safe and reliable could pose risks at any stage in their use.

To accommodate this, the recommendations in this paper are for target weights for bottles for each of the four categories of wines defined. We know from data provided by some of our retail members that all of these categories are currently provided in bottles of quite considerable variability in weight. Prosecco wines, for example are currently in bottles ranging from 540g to 830g.

Our recommendations are therefore based on the logic that if some of each of the four styles of wine can be, and has been over time, safely put in bottles at the lighter end of these weight ranges, why cannot most, if not all, of that style also be in lighter bottles? This paper therefore proposes target lighter weights for each of the four styles of wine.

However, at this point our recommendations are reflect the approach we used for still wine, as discussed above. We are not focused on the lightest possible bottle, but the lightest practical bottle. When we brought forward our proposals for still wine bottles, we were aware that many bottles significantly lighter than 420g were in use. However, we wanted to recommend a target weight which, whilst material in terms of reduction, did not require re-tooling of bottling lines or other capital expenditure. Further, we wanted a weight which would be recognised as sensible and achievable from a practical perspective. We are taking a similar approach in our recommendations for sparkling wine bottle weight.

This report therefore sets out target weights for each of the four styles of wine defined in collaboration with our members. Further discussions are needed about the timeframe for the achievement of these targets. When it was established, the still BWA set a three-year timeframe, but longer may be needed for some sparkling wines, especially those which are matured for an extended period of time.

It should be noted that we have been very conservative in our recommendations. This is because it is important to stress that achieving these targets need to be done in a way which pays proper attention to the safety-related issues. Sustainability is an extremely important element of business success, but so is safety. The final chapter of this report sets out some of the key variables which will need to be borne in mind during the journey to lightweighting sparkling wine bottles. As has been the case with the still BWA, SWR will be able to provide a forum for sharing experience, practice and knowledge between those who sign up to the sparkling BWA. Furthermore, the bottle making companies, who have been extremely valuable in putting this research together, will also be valuable assets to provide ongoing practical insights into how this can, and will work commercially.

The BWA sets a target for its participants to reduce their average bottle weight below 420g by the end of 2026.

Consumer perception

When we began to scope our 2023 report into still wine bottle weight, one of the two key factors to be addressed was that of consumer perceptions in relation to wine bottles and their weight. Whatever else it may be, wine is a consumer good and the public has a huge selection of wines to choose from. Brands and marketers are wary of making any changes to products which may make them less attractive. Equally, these people will always be on the lookout for ways in which to enhance their products' consumer appeal.

This chapter explores what we currently know about the purchasing cues which consumers use: in particular how bottle weight features alongside other factors. It then goes on to suggest that, contrary to the expectation of some, lighter weight wine bottles could in fact be a significant positive factor in driving consumer choices.

Perhaps the most important thing to note is that there is no single, monolithic 'consumer': there are many, varying by demographic, location, age and a wide range of other factors. Moreover, those consumers' decisions on what to buy are informed by many different cues.

In navigating this complexity, what does not help is that there is relatively little recent insight into consumers' wine buying behaviour. No systematic work has been undertaken for several years, crucially a period when sustainability has been rising as an agenda. This means we know less than we would like about how consumers factor sustainability into their buying decisions.

However, there has been a great deal of work in other sectors about how consumers view sustainability. This chapter therefore builds on what we do know about the wine sector, and then looks at what wine can learn from elsewhere.

What we know about consumers' and wine bottles

Bottle weight and wine quality

In some parts of the wine industry, a perception remains that consumers associate heavier bottles with wine of higher price and better quality. Thus, the argument runs, reductions in bottle weight will potentially negatively impact sales as consumers will assume that a lighter bottle equates to an inferior wine. Some SWR members and contacts in places like California and Argentina, for example continue to raise this as a challenge to lightweighting, and cite anecdotal evidence about cases when bottle lightweighting led to a drop in sales. The association in the minds of some about weight and quality was borne out by an article in the Washington Post in 2021: "the biggest obstacle to making the switch [to lighter bottles] remains the perception among U.S. consumers that a heavier bottle indicates better wine inside of it."[25]

Aside from geographic differences, there is also some evidence that the association between heavy bottles and perceived quality of the product within differs according to the consumer's experience in drinking wine. A 2012 study in the UK used a questionnaire which first asked the participants about their subjective categorization of their own wine expertise (giving them three options: naïve, amateur, or expert). The study reported significant differences between these three groups. The naïve cohort more strongly related the weight of the bottle to the price and quality of the wine. However, this relationship decreased with the increasing wine expertise of the respondents. Those who considered themselves wine experts did not manifest any inclination to relate the weight of the wine bottle to its quality.[26]

25 McIntyre D. The weight of that wine bottle doesn't indicate quality, and it's hurting the planet. Washington Post 04/11/21. The weight of that wine bottle doesn't indicate quality, and it's hurting the planet - The Washington Post (accessed 24/09/25)
26 Piqueras-Fiszman B & C Spence. 'The weight of the bottle as a possible extrinsic cue with which to estimate the price (and quality) of the wine? Observed correlations.' In Food Quality and Preference. Vol 25. Pp41-45 2012

On the other hand, conversations with SWR members demonstrate quite clearly that for other parts of the market this association in consumers' minds is simply not the case. As one grower in southern France put it, "I've been gradually taking weight out of my bottles for the past few years, and it's had no adverse impact at all on my sales." Even in the USA some growers have lightweighted their bottles with no impact on sales. Quoted in an article in 2022, Fintan du Fresne, the winemaker at Crimson's Chamisal Vineyards, said that "There's that assumption there's going to be consumer pushback, [but] even at the highest level of wine price, there's been zero pushback."[27]

The experience of Crimson is clearly supported by the success of SWR's BWA. At the time of writing it encompasses more than 2 billion bottles – more than 7% of the total amount of wine sold globally – and the companies involved are not losing sales as a result of shifting away from heavier bottles. Data from BWA signatories shows that many wines are already packaged in bottles much lighter than 420g. Some retailers, for example, have the bulk of their assortment in bottles at around 360g.

A study by packaging coalition WRAP tested shoppers' ability actually to discern the difference in their hand between bottles of different weights. The research found that "participants struggled to detect a 5-10% difference in glass container weight, even when expecting a weight difference."

It's a bit more complicated than that

In the real world however, we know that consumers do not buy their wine only on the basis of bottle weight, or indeed on any one single factor. Our own 2023 research showed that whilst bottle weight is a factor influencing consumers' choices, it is only one of a much wider set of cues. As one study puts it, "there is no one over-riding source of information which all consumers use when buying wine, and most adopt a multi-stranded information seeking strategy in reaching their decisions."[28]

The importance of buying cues clearly varies from country to country. A 2009 study[29], of wine-buying behaviour across 12 countries found that the factors shaping purchase decisions include origin, prior tasting, food pairing, and brand. But they also vary by age, experience, and geography. When asked to recall buying a wine for dinner with friends, respondents revealed striking national differences: in France and Italy, food matching dominated; in Israel and the UK, prior tasting was most influential, with recommendations in the UK also carrying notable weight; and in Italy, grape variety ranked highest overall.

A more recent article in Forbes magazine made the same point about the differences between countries on purchasing cues. "Having tried a wine before is a strong predictor of future choice…However, if you didn't try it yourself, Australian and U.S. consumers tend to rely on price, whilst Italians seem to be guided more by the food they are going to match with that wine."[30]

This multi-factor view of consumers' decision seems also to apply to purchases of sparkling wines as well as to still ones. A 2024 study[31] asked participants about 30 different purchasing cues. As can be seen from the figure below, there is considerable variation in the importance of these cues. Price was the cue most frequently cited (69% of consumers), followed by flavour (56%), quality (54%), country (53%), and sweetness level (53%). From the perspective of those who fixate on the importance of the bottle in consumer choice, the results of this study are interesting. Bottle colour (9%) and shape (14%) were among the three least commonly cited cues.

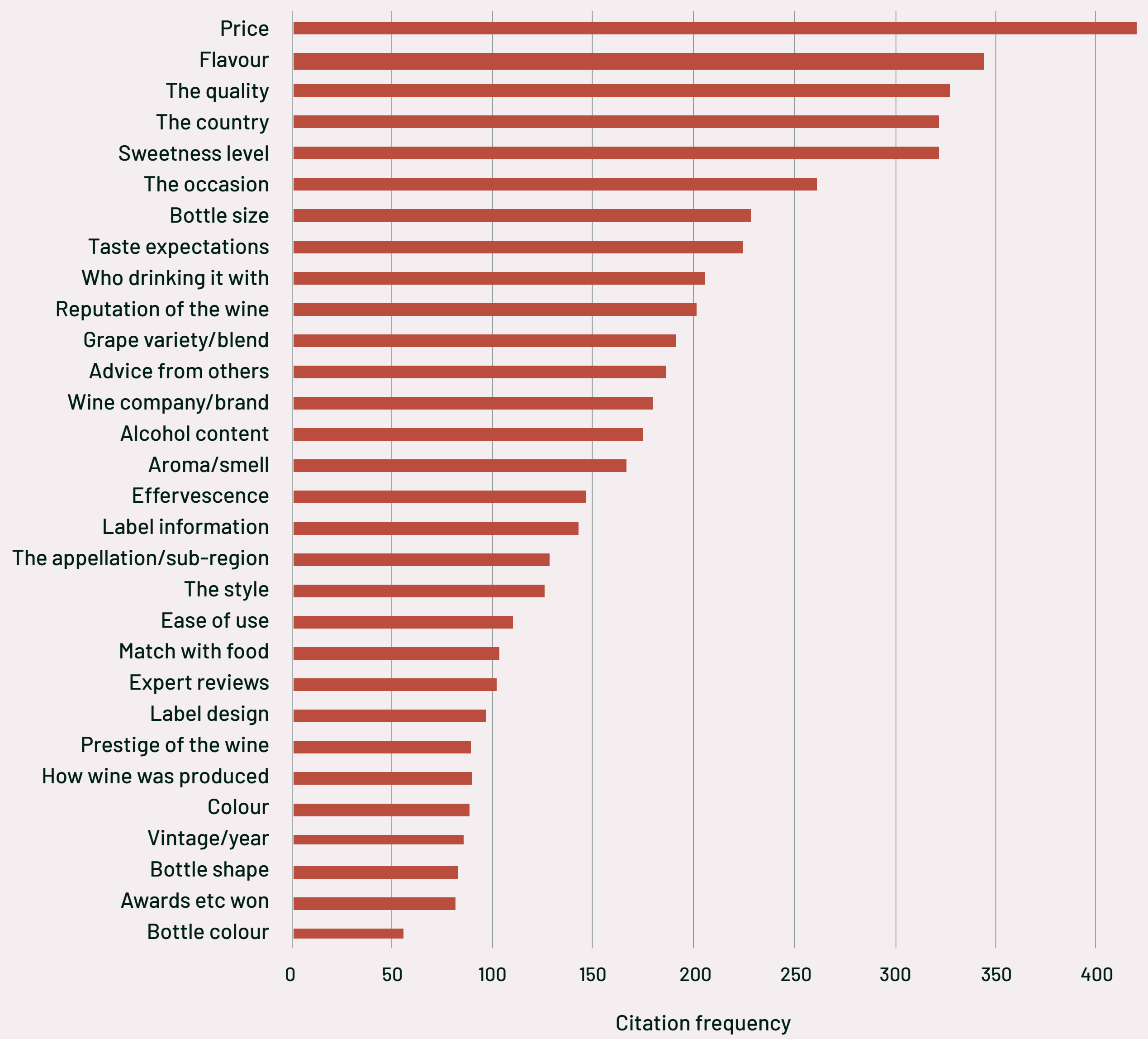
This is interesting particularly in relation to those who might claim that bottle weight for sparkling wines is more likely to be a factor in consumers' buying decisions. These wines are more often bought for gifting or celebration, so the argument goes, and therefore the packaging is more important. The evidence of this study suggests that this is not the case and that many other factors predominate in consumers' minds.

27 Andrews B. 'The Shrinking Footprint of Glass Wine Bottles.' SevenFiftyDaily 21/07/22 The Shrinking Carbon Footprint of Glass Wine Bottles | SevenFifty Daily (accessed 24/09/25)
28 Charters S, L Lockshin & T Unwin. 'Consumer responses to wine bottle back labels.' In Wine Industry Journal. Vol 15, No 3, May-June 2000.
29 Goodman S. 'An international comparison of retail consumer wine choice.' In International Journal of Wine Business Research. Vol. 21 No. 1, 2009 pp 41-49
30 Thach L. New Survey Reveals How Consumers Select Wine: Taste Trumps Price. Forbes 06/09/23
31 Pickering GJ & B Kemp. 'Understanding Sparkling Wine Consumers and Purchase Cues: A Wine Involvement Perspective.' In Beverages, 10, 19 Beverages, 2024

What also seems to be the case is that, in general, consumers do not understand the environmental implications of heavy bottles. A study undertaken in Canada[32] found that "Surprisingly, respondents didn't consider bottle weight an important attribute in their assessment and choice of environment friendly wines."

Another, more recent study, this one of consumers in Australia, America and Italy found the same thing: "consumers still do not understand the effect of bottle weight on wine's carbon footprint and environmental implications."[33]

Figure 1: Pickering and Kemp, Importance of sparkling wine purchase cues[34]



32 Lopes P, R Sagala & T Dood. Extrinsic wine attributes importance on Canadian consumers purchase decisions for environmentally sustainable wines. Academy of Wine Business. 2014.
33 Corsi AM et al. How consumers perceive different wine containers. In Wine Business Magazine. Nov/Dec 2023 pp32-34
34 Pickering & Kemp. Op cit

What can consumer insights from other sectors tell us?

Wine is not the only industry to be wrestling with the question about how consumers regard sustainability. Do they value it as part of their buying decisions, and if so what aspects of sustainability? Do changing demographics alter views of the importance of sustainability? So statements of intent actually get follows up by action? Given that others too are considering these issues, it makes sense to explore in some detail what others' experience can tell us.

Reasons to be cheerful

Some recent evidence gives great optimism that consumers do value sustainability. Research published in the Harvard Business Review[35] in 2023 reported on a survey of more than 350,000 U.S. customers. This found that "truly sustainable brands — those that make good on their promises ... — will seize the advantage from brands that make flimsy claims...We're fast approaching this tipping point where sustainability will be considered a baseline requirement for purchase..."

This change also seems to be borne out by research from First Insight and the University of Pennsylvania.[36] This found that Gen Z places greater importance on sustainability than brand name and is influencing older generations to do the same. Indeed most consumers across age groups now expecting brands to act sustainably. UK research supports this trend: a 2021 Deloitte survey reported that over a third of consumers choose brands with strong environmental values, while 28% have stopped buying from those with poor sustainability practices.[37]

Not so fast...

However, how certain can we be that consumers' positive statements about sustainability are actually reflected in what they actually buy? Evidence from the UK food market, for example, suggests that although most consumers will say they value sustainability, this is not always reflected in their behaviours.[38]

Useful insights about this paradox come from Kantar Worldpanel's long-running research[39] into attitudes towards sustainability. Their research tracks three cohorts: Eco-Actives, Eco-Considerers, and Eco-Dismissers. As their names suggest, these three groups represent variously those who will actively seek out sustainable products, those who are open to them, and those who have little or no interest and may well be dissuaded by sustainability claims.

According to Kantor, Eco-Dismissers' views stem from the perceived expense of green options, and from a wider mistrust of corporate claims, and suspicions about greenwashing. They are thought to represent around a third of all consumers. By contrast, Eco-Actives are only around 20% of consumers.

However, what is most interesting is the group which makes up just less than half of consumers: the Eco-Considerers. This group are open to sustainable claims, but are not ideological about them one way or another. According to Kantar they take few actions to minimise their environmental impact, with their biggest barriers to action being convenience and price.

35 Reichheld A, J Peto & C Ritthaler. Research: Consumers' Sustainability Demands Are Rising. In Harvard Business Review 18/09/23 Research: Consumers' Sustainability Demands Are Rising (accessed 26/09/25)
36 First Insight & Wharton School, U Penn. The State of Consumer Spending: Gen Z Influencing All Generations to Make Sustainability-First Purchasing Decisions. November 2021. The State of Consumer Spending - Gen Z Influencing All Generations.pdf (accessed 26/09/25)
37 WEF. Gen Z cares about sustainability more than anyone else – and is starting to make others feel the same. 18/03/22. How Gen Z's sustainability concerns are influencing others | World Economic Forum (accessed 26/09/25)
38 d'Angelo, C, E Ryen Gloinson, A Draper &Susan Guthrie, Food consumption in the UK: Trends, attitudes and drivers. RAND Corporation, Santa Monica, CA. 2020. Food consumption in the UK: Trends, attitudes and drivers | RAND (accessed 13/11/25)
39 ntar (Worldpanel Division), WHO CARES? WHO DOES? Planet, Profit, and Perception: The new truths of today's eco-conscious consumers, Issue 5, September 2023

A major OECD[40] study based on a survey of 37,000 consumers across 40 countries gives some context to their behaviour. It notes that while reported interest in claims like natural, local, and organic is high, the overall market share of these labels remains low. It suggests the reason for this is that trust and country-specific factors heavily influence willingness to pay. Complementary academic research[41] explores more deeply the various psychological drivers of consumption, and notes that factors like self-expression, social acceptance, and impulsive buying often outweigh sustainability commitments.

A key question, therefore, is how to overcome the intention-behaviour gap. Research by advertising agency, Ogilvy shows that sustainability claims focused on distant, abstract benefits are far less effective than those offering immediate, personal advantages. Based on multinational research across 1,500 consumers, Ogilvy[42] argues that altruistic framing around emissions or plastic reduction are too remote to drive behaviour. Instead, consumers respond better to near-term benefits like cost, convenience, health, or taste. In the context of bottle light weighting, therefore, tangible, personal rewards ("easier to carry home") might be more attractive to many consumers than abstract goals ("reduces carbon emissions").

The implications for wine: light weight as consumer positive?

If we draw on all this research and apply it to the wine sector, it is clear that two-thirds of consumers are at least open products that demonstrably deliver on sustainability claims. 20% (Eco Actives) will proactively select sustainable products, and almost half (Eco-Considerers) will select these products if it is simple to do, provides them with immediate benefit and has no associated cost.

We know that it is undeniably the case that lightweighting of wine bottles, be those still or sparkling, is the single most effective step that can be taken in reducing the carbon footprint of wine. Therefore, for winemakers, lightweighting is a clear, greenwash-free step to demonstrate good sustainability credentials. Wine makers who do not move away from heavy bottles – whatever other work they may do in the arena – increasingly risk being seen by consumers as not delivering on sustainability.

As a clear business opportunity, those brands which proactively embrace lightweighting have a significant opportunity to demonstrate clear action on sustainability and so align with consumer preferences. Indeed, this was a clear finding of a report cited earlier: "messages emphasising the environmental and sustainability aspects of alternative wine packaging, as well as messages highlighting the quality and price of regular and lightweight bottles, are likely to align better with consumers' perceptions of these packaging formats."[43]

The opportunity of lighter bottles is also suggested by anecdotal evidence from Canada. For some years now both the main alcohol monopolies have operated a still wine bottle target of 420g. They accompanied this change with strong messaging to consumers about the environmental benefits of lighter bottles. Anecdotal reports from the Canadian monopolies suggest that this has worked, and indeed some consumers are now asking why some bottles remain so heavy.

40 How do consumers interact with environmental sustainability claims on food? Evidence from 40 countries. Koen Deconinck, Céline Giner, May Hobeika, Céline Nauges. OECD Food, Agriculture and Fisheries Papers No. 218. https://dx.doi.org/10.1787/0587c663-en
41 Nguyen, N. et al. (2023), 'CSR-related consumer scepticism: A review of the literature and future research directions.' In Journal of Business Research, Vol. 169, 2023
42 Ogilvy. Sustainability communications need to get real. 09/06/22 Sustainability Communications Need to Get Real | Ogilvy (accessed 13/11/25)
43 Corsi AM et al Op Cit

Communicating with the consumer

How best then can all this be communicated to consumers: bearing in mind therefore that consumer perceptions are not monolithic and vary by demographics and geography. Furthermore, sustainability is only one of a wide range of cues that lead someone to buy wine A rather than wine B. SWR are not experts in consumer communication or branding. As a result, we are not able to offer a comprehensive answer to the question "how to communicate with consumers?" What we can do, however, is offer some initial insights on which other can build.

Education is clearly part of the equation: as discussed earlier we know that many consumers do not realise the significance of bottle weight in terms of carbon emissions. The Pickering/ Kemp study, for example, speaks of a "need for consumer education around the sustainability-related benefits of the various alternative packaging".

However, there is also much that can be done in providing simple, straightforward communication tools. As one wine-specific study concluded "information and extrinsic cues about innovative products can foster their acceptability, especially when supported by adequate marketing strategies and activities."[44]

In this regard, a good deal of evidence suggests that bottle labels could be a means of communicating the sustainability benefits of lighter bottles. A study conducted by West Virginia University in 2015 with US consumers came to a similar conclusion about the role played by labels. "In the wine market, bottle labels are particularly relevant to the decision-making process, especially for infrequent wine drinkers, who have been shown to rely heavily on labelling information."[45] 2019 research from US market research firm Nielsen makes a similar point: that about 62% of the time, "consumers are considering multiple options leaving huge opportunities for labels to make an impact."[46]

Back labels too are important, as demonstrated by an Australian study published in 2010. This went further than the previous work, and explored exactly what information on the label was used by consumers in taking a purchasing decision. "Wine back label information was found to have a positive effect on consumer choice…"[47]

Where next?

Amongst some, the perception that consumers associate heavy bottles with better quality wine persists. Certainly some evidence supports the idea that, for some consumers at least, this association is true. However, trends in consumer behaviours and demographics strongly suggest that sustainability is moving from being a nice-to-have to being an essential factor for a growing number of consumers. There would therefore seem to be a clear opportunity for the wine sector to capitalise on this trend, particularly in relation to lightweighting wine bottles. Much sustainability practice can be quite hard to explain to non-specialists, but the environmental benefits of lighter bottles are simple to communicate. Simple measures – especially clear labelling and shelf marker – can effectively communicate this message and help align perceived quality with sustainability.

44 Nesselhauf L, JS Deker & R Fleuchaus. Information and involvement: The influence on the acceptance of innovative wine packaging. In International Journal of Wine Business Research. 2017, 29, 285–298
45 Marhcant S. Message on a bottle: the wine label's influence. West Virginia University, 2015
46 Reported in Talbot P. Why wine label design matters so much. Forbes Magazine 21/08/19. Why Wine Label Design Matters So Much (forbes.com) (accessed 06/02/23)
47 Mueller S et al. Message on a bottle: 'The relative influence of wine back label information on wine choice.' In Food Quality and Preference. Vol 21, pp22–32. 2010.

Performance, safety, quality

Safe sustainability

As has been said on several occasions in this report, safety considerations are key to any decision about bottle choices for sparkling wines. If a bottle does not have the correct performance characteristics, there is an unnecessary risk of those bottles exploding. It is the responsibility of all those in the wine value chain to ensure that bottles are fit for purpose.

In developing our target weights, therefore, our aim has been to identify, in each case, a target weight which whilst being meaningful in terms of light-weighting, is demonstrably safe. Bottle weights have not been recommended on the basis of theory, hope or expectation. They have been recommended because they are already used for many wines in each category. They should therefore be the target for all wines in that category.

That said, as SWR members and others undertake the shift towards lighter sparkling wine bottles, it is important that this is done fully mindful of the safety agenda. Key issues to address include those set out below.[48] Wine makers, retailers and other need to work together, and with bottle makers to ensure that lighter bottles can be used safely and without problem.

Significant guidance on the technical issues around bottle performance are available. Most obviously, this will be from the bottle manufacturers, which all have detailed product performance information, which includes safety-related factors. Information is also available for trade organisations such as British Glass[49], and the Paris-based platform, CETIE.[50]

Factors to address

Our research has identified a number of issues that need to be addressed. The most significant of which are explored here.

Carbonation level

Carbonation is the most significant factor in the need for heavier bottles for sparkling wines. The amount of CO_2 dissolved in the liquid is what causes the internal pressure in the bottle. This level of carbonation is measured in grams of CO_2 per litre of liquid – expressed as gCO_2/l[51].

In the experience of the drinker, this refers to how fizzy a wine is, and this varies considerably between wine styles. Proseccos for example, typically have around $6gCO_2/l$, whereas Champagne could be $10gCO_2/l$. Semi-sparkling wines will typically have a rate of $5gCO_2/l$. These differences are the key reason for defining different bottle weights for different styles of wine.

Bottles for use with sparkling wines are sold with a clear statement of the maximum carbonation level that that are able to withstand. The central argument of this report is that in many cases, wines are sold in bottles much heavier than they need to be in order to be able to withstand the pressure exerted by the wine within them. Nevertheless, it is important that wine makers ensure their wines' carbonation levels are appropriate to the bottle used.

48 This list is intended to be indicative of the issues to be considered, not exhaustive.
49 British Glass. Container Glass Technical Documents . Container glass technical documents | British Glass (accessed 07/10/25)
50 CETIE. Cetie - Standards for PET and glass packaging dedicated to bottling (accessed 07/10/25)
51 This can sometimes also be expressed as $VolCO_2/l$. The relation between these is approximately $1VolCO_2 \approx 1.96gCO_2/l$. For the purposes of this report, gCO_2/l will be used.

Pressure and pressure testing

Carbonation levels translate into the internal pressure that a bottle must withstand. This is measured as number of atmospheres, or 'bar'. Technically one bar is only 0.987 of a standard atmosphere. However, for the purposes of this report, the terms are used interchangeably. Different sparkling wines have different pressures. Champagnes, which are extremely effervescent, lead to an internal pressure of around 5-6 atmospheres[52] (5-6 bar). Other wines, though regarded as fully-sparkling have lower pressures.

For example, the 'spumante' style of Prosecco is required by the DOC to be a minimum of 3 bar, though most sit in the 4-5.5 bar range.[53] By contrast, Proseccos of the 'frizzante' style, and other semi-sparkling wines come in at between 1 and 2.5 bar of pressure. For some styles, the pressure when filling a bottle is higher than the long-term pressure of the wine thereafter. Given appropriate filling levels, bottle pressures for different carbonation levels of wine are as follows:[54]

Figure 2: Internal pressures for sparkling wines of different carbonation levels[55]

Carbonation (gCO_2/l)	Pressure (bar)	Carbonation (gCO_2/l)	Pressure (bar)
2	≈0.5	9	≈5
3	≈1	12	≈7
4	≈2	14	≈9
6	≈3	18	≈12

52 BBC. How much pressure is there in a champagne bottle? BBC Science Focus
53 The Drinks Business. Everything you need to know about Prosecco. Everything you need to know about Prosecco - The Drinks Business (accessed 03/10/25)
54 Verallia. Good use of Verallia bottles for carbonated products. Microsoft Word - buenas_practicas_para_el_uso_de_botellas_verallia_en_productos_carbonatados_0_PT (accessed 08/10/25)
55 Ibid

In turn, bottles need to be tested to a minimum pressure test to ensure that it will be able to withstand that pressure safely in-use. This pressure testing depends on the carbonation rate of the wine. Bottles need to be tested to demonstrate that they are safe and appropriate to the wine they will contain. According to CETIE[56], the minimum pressure testing requirements for key carbonation rates for sparkling wines are as follows:

Figure 4: Minimum pressure test control levels for different product carbonation ranges, for non-refillable bottles[57]

Carbonation rate (gCO2/l)	Minimum pressure test control level (bar)
Below 2, up to and including 4	8
Above 4, up to and including 6	10
Above 6, up to and including 7	12
Above 7, up to and including 9	14
Above 9, up to and including 10	16
Above 10, up to and including 12	18

Bottle manufacture and quality

The need for bottles to be properly pressure tested highlights a further issue of importance: the need to buy from reputable bottle makers which are able to manufacture to a consistent and high level of quality. A buyer needs to be assured that the maker's new bottle SKUs are extensively tested for resilience and for their operational tolerances.

Moreover, the manufacture of lighter weight bottle requires much greater technical capabilities. The double-mould and blowing process which is used needs to be highly accurate to ensure that the molten glass is properly dispersed in the mould so that the bottle has additional strength where it is needed. Furthermore, the 'recipe' for the glass needs to ensure that it is of the right consistency, and has the correct behaviour characteristics for use in lighter bottles.

Furthermore, as this author has witnessed during visits to bottle making facilities, leading makers have quality control measures built into their production lines. This includes scanning them for defects, pressure testing and for consistency in the moulding process.

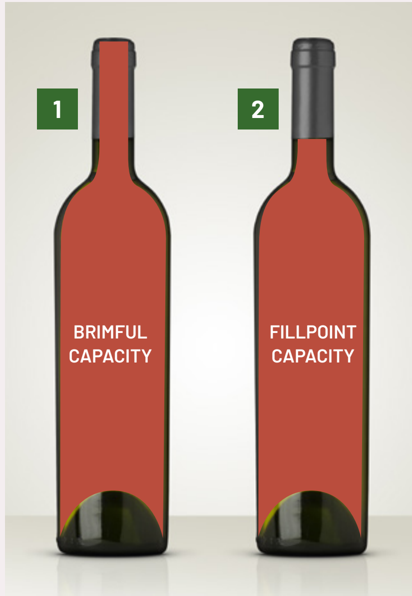
Filling levels

Ensuring the correct filling level of a bottle, and that the filling is done at the correct temperature, is an essential step in ensuring that a bottle and its contents will be stable until opened. Bottles will have been designed with an intended volume of air to be left between the bottom of the cork and the liquid in the bottle. In effect, this gap provides a sort of pressure valve for sparkling wines and ensuring that a proper gap exists and is maintained is an essential element in ensuring the safety of sparkling wine bottles.

56 CETIE. Op cit
57 Information provided by Encirc.

The relationship between brim capacity of a bottle and the filling level capacity is described as 'vacuity'. It is expressed as a percentage of the difference between both capacities related to one of them. This is based on filling line capacity when the liquid is at 20oC.

$$Vacuity\,(\%) = \frac{brimful\ capacity - filling\ line\ capacity}{filling\ line\ capacity}$$



Brimful Capacity 1
The total capacity of the bottle in cubic centimetres (cc).

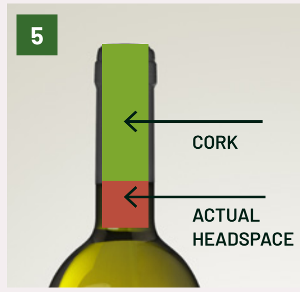
Fillpoint Capacity 2
The capacity up to a specific level 3 in cc. The definition of the level refers to the distance (mm) from the mouth to the defined fill level. 3

Headspace in CC 4
The difference between the brimful capacity and the fillpoint capacity.

Headspace in % 4
The difference between the brimful capacity and the fillpoint capacity, by percentage to the capacity level.

Actual Headspace 5
This is the headspace less the volume less the volume occupied by the cork or insert.

Source: CITIE



Expressed in ml, the headspace for 750ml bottles are as follows:[58]

- For wines with a carbonation rate of between 2 and g gCO2/l is 12-50ml
- For wines with a carbonation rate of between 2 and g gCO2/l is 30-50ml

58 Data from email exchanges with Encirc

Bottle handling on the filling line

Throughout their lifecycle, it is important that bottles are properly handled to avoid breakage or damage. The risk in bottle supply chains is not just immediate failure of a bottle after it has come into contact with a hard object. Damage can be done invisibly, and at different stages of the production and filling process. Contact between one bottle and another, or between a bottle and a substance harder than glass (on filling lines, this will be metal) can create what are known as micro-fractures. These are tiny cracks in the glass which would be invisible to the naked eye, but which cause a weakness in the bottle. If micro-fractures like this accumulate, for example through repeated collisions on a filling line, then the bottle can fail. "The strength of a glass bottle can be reduced by flaws generated during its manufacture and by surface damage sustained in subsequent use."[59] In the case of 'regular', heavy bottles, the larger amount of glass they are made from means that these micro-fractures rarely lead to a bottle breaking completely. In lighter weight bottles, the risk from these is a greater challenge, and requires attention at various stages of the supply chain.

Key stages of the process which need to be managed are as follows:

- **Packing after manufacture:** The pallet needs to be stacked and packed in such a way as to minimise vibration, and the risk of bottles coming into contact with each other.
- **Depalletizing:** Care is needed in the handling of bottles, particularly in removing strapping and when bottles are washed. Handling equipment needs to be made of plastic or nylon, not metal.
- **Filling line operation:** So far as possible, a line should be operated at a constant speed as this minimises the risk for collisions between bottles. Halts and re-starts to a line should be done with gradual acceleration and deceleration.
- **Cork insertion:** This process needs to be handled carefully so that damage is not caused to the neck of the bottle. This is true of all wines, but is especially the case for sparking wines where corks are larger.
- **Capping and labelling:** At this stage, bottles full of wine, and are on the highest-speed part of the line where bottles advance one-by-one. Once again, it is important to ensure that bottles do not come into contact with materials harder than glass.
- **Packing for onward transport:** Bottles need to be packed in such a way as to minimise movement, and therefore the risk that they come into contact with each other. In most cases, this is helped by the use of cardboard inserts between bottles.

Bottle handling in the onward supply chain

The same care needs to be taken in the onward supply chain in terms of how bottles are handled. However, there is a further key issue which needs to be addressed: temperatures.

Temperature management

Sparkling wines are, by definition, pressurised, and therefore adversely affected by temperature changes. All wines can suffer damage if subjected to excessive heat, however, in the case of sparkling wines, there is the additional threat that heat causes bottles to explode. Careful management of wine temperature during transportation is therefore of great importance. The following chart shows the pressure increases associated with higher temperatures for various carbonation levels of sparkling wines:

Figure 5: Pressure levels in sparking wine bottles of different carbonation rates[60]

Carbonation (gCO2/l)	20°C	30°C	40°C	50°C
4	2 bar	2.5 bar	3 bar	5 bar
9	5.5 bar	8 bar	10 bar	12 bar
15	10 bar	15 bar	22 bar	30 bar

59 Hartley A. Lightweight wine bottles. WRAP 2008
60 Verallia. Op cit

Target weights

This chapter sets out SWR's recommended target weights for each of the four categories of sparkling wine defined earlier in this report. These are as follows:

- Champagne
- Other traditional method
- Charmat
- Semi-sparkling

As noted there, this four-part division is not perfect and will not cover a small number of sparkling wines. However, it is worth noting that, in reviewing actual bottle weights, the number of wines which did not fit into these categories were very few.

Our research and recommendations need to reflect the complexity of the topics being explored, but at the same time we need to make recommendations for action which are clear and tangible. As noted earlier, a bottle weight accord for sparkling wine which recommends a different bottle weight for each of the myriad styles of these wines would not be practical.

Methodology

The weight recommendations contained in this chapter are based on analysis of bottle sales and weight data received from a number of SWR retailer members. The reason for using retailer data was simple. Retailers sell a representative cross-section of all the sparkling wines available globally. Those retailers whose data has been used are of differing sizes, and focus on slightly different market segments. We are content, therefore that the wines included in this analysis are broadly representative of sparkling wine sales globally.

That said, there is a caveat. The companies whose sales data we are using are all members of the BWA, and in some cases have already met the requirements of that Accord. It is possible, therefore, that they have already taken steps also to look for lighter sparkling wine bottles.

This may affect our data in two ways. On the one hand, it means that the average weight of sparkling wine bottles from our analysis may, in reality, be lighter than a true 'global' average.

On the other hand, these are retailers who will have worked with their suppliers and growers to push a lightweighting agenda, and so they are likely to have entered territory in terms of light weight bottles where others have yet to tread.

And this latter point is the key one. The aim of this report is to demonstrate that lighter weight bottles are possible even when controlling for safety factors. Our members have been pioneers in this, and have led the way where others can follow. The simple logic of this report is that if lighter bottles are already being used, and are therefore demonstrably safe, those lighter weights should be a target for all wines of the same style. The lighter bottles in use will have been properly safety tested, and subject to proper risk analyses.

In the case of each of the four categories we have developed scatter diagrams of the range of bottle weights currently in use. The data was provided to us on the assurance that it would not be apparent from whom the data has been derived. To achieve this the spread of bottle weights is shown not in relation to a total volume of sales, but in relation to the percentage of sales for each retailer that a given wine represents.

As is clear from each of these diagrams, there is a considerable variation in bottle weights used. As with still wine bottles, we are not recommending the lightest bottle available as a target. We have made recommendations on basis of the need to balance making meaningful reductions in weight and therefore GHG emissions, against recommending weights we may deter some from any action at all. These recommendations therefore err on the side of caution.

Each section lists three figures:

- Approximate share of the total sparkling wine market: This is based on the overall market and sales data from retail members
- Current average weight: This is the average weight of bottles in this category based on the data source
- SWR target weight: The recommended SWR target weight for this category.[61]

61 Based on ensuring compliance with all safety factors, including those discussed in the previous chapter.

Targets

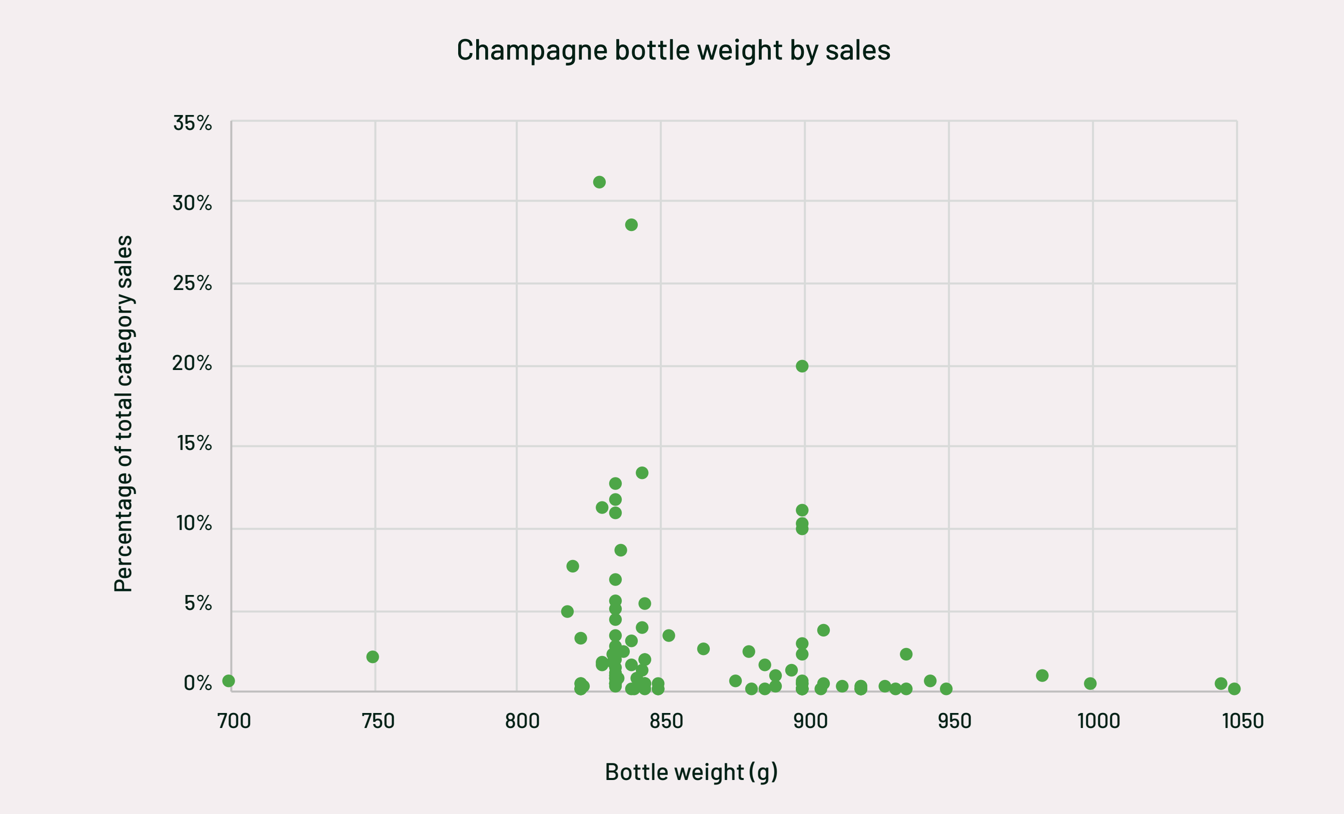
Champagne

For many, the word 'Champagne' is almost synonymous with sparkling wine. It is certainly the world's best known sparkling wine region. Produced by a first fermentation, and then a second in the bottle, it is typically aged on the lees and allowed to mature for a period of time. Therefore, from the perspective of the technical requirements of bottles, factors such as the external pressure exerted by stacking are very important. A number of years ago, the regional wine body, the CIVC, recommended a bottle weight of 835g. They did this recognising the need to recommend a bottle weight that both addresses the sustainability agenda, as well as reflects safety concerns.

However, it is interesting to observe that already, a number of Champagnes in the ranges of SWR retailers are provided in bottles less than the 835g. Quite a number are in bottles at 822g. We would also flag the work that Champagne Telmont have done with bottle maker Verallia[62] to pioneer the use of an 800g bottle for their wines.

For reasons that will be set out in the next section of this report, we have at this stage taken the decision to separate out Champagne from other traditional method wines. However, our data clearly shows that some of these other traditional method wines are provided in bottles as light as 700g, with many in the 750-770g range. Given that these other wines are produced broadly in the same way as Champagnes, it seems reasonable to us that, over time, Champagnes too should be packed in bottles at these significantly lighter weights.

At this stage, in recommending a target weight, we are mindful of the fact that CIVC's recommendation for a 835g bottle was made as long ago as 2010[63]. Since then bottle technology has moved forward significantly. A meaningful number of Champagne bottles in our data set are at 822g. Over time, it seems clear that Champagnes, in line with other traditional method wines, could be in bottles of 770g or lighter. However, at this stage, we will recommend a target of 822g, but will engage CIVC and our members in Champagne to establish the appetite to move to even lighter bottles over time.



62 Arthur R . A new standard for Champagne bottles? 18/05/23 A new standard for Champagne bottles? (accessed 18/10/25)
63 Peskett S. Champagne: 'Lightweight bottle used by almost all houses within two years'. Decanter 17/03/10 Champagne: 'Lightweight bottle used by almost all houses within two years' - Decanter (accessed 24/10/25)

Champagne

21%	865g	822g
Approximate share of sparkling wine market	Current average weight	SWR target weight

Other traditional method wines

Many producers in other regions and countries make wine with the same method as that used in Champagne. Regulations around geographic indicators, however, mean that only Champagne can describe their production method as 'méthode champenoise'. For others, the term 'traditional method' is used, which includes Cremants from France, Cava from Spain, Cap Classique from South Africa, and many others.

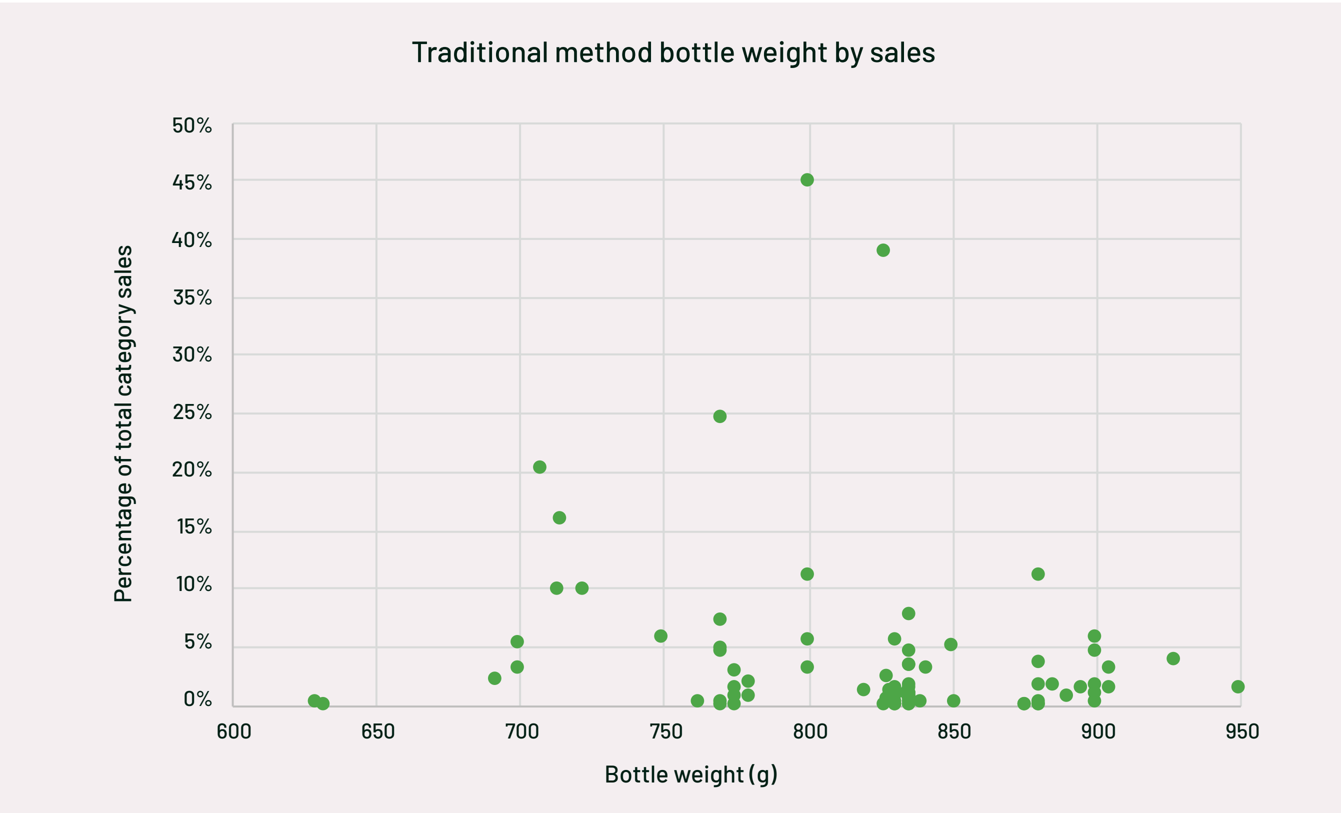
It may seem curious that we have decided to separate Champagnes from other traditional method wines. The reason for this was two-fold. Firstly, these wines are generally packed in lighter bottles than their Champenois competitors, and this seemed material to draw out, in particular in order to demonstrate, as stated above, that these lighter weights should also be achievable by Champagnes. Secondly, our research in relation to consumer behaviour suggested that bottle weight provided a potentially interesting marketing opportunity to these other wines.

We recognise, that for some retailers, it will not be possible to differentiate between Champagnes and traditional method wines from other regions and countries. For these retailers, unless there is a technical difference between wines, it is not be possible to differentiate on the basis of geographic origin. This would be seen as a non-tariff trade barrier. We accept that this legal point is important and that, therefore, some of our retail members will not be able to push their suppliers for lighter weight bottles for wines in this category.

However, the insights on consumer perception addressed in that chapter suggest that bottle weight may provide a potential marketing and sales opportunity for non-Champagne sparkling wines. As the chapter on consumer perception argues, whilst there are certainly some groups of consumers who favour heavier bottles, there is good evidence to suggest that there is a significant and growing segment of consumers who would proactively buy wine in lighter bottles.

Moreover, non-Champagne traditional method wines generally sell at a lower price point than Champagnes. This is likely to make them more affordable to younger consumers who generally have less disposable income than older people. If at the same time a case can be made to these young people that sparkling wines in lighter bottles are more environmentally friendly, that argument will appeal to what we know to be their priorities in deciding what to buy. It seems, therefore, that wines like Cava and Crémants have a potentially very interesting marketing opportunity through the use of lighter bottles.

Clearly, 700g bottles for other traditional method wines are possible since, as the chart below shows, there are clearly a number in use. However, these are outliers. As can be seen from the scatter chart, however, there is a critical mass of bottles in the 750-780g area. Being cautious, we our recommended target weight is the upper level of this: 780g.



Traditional method

22%
Approximate share of sparkling wine market

812g
Current average weight

780g
SWR target weight

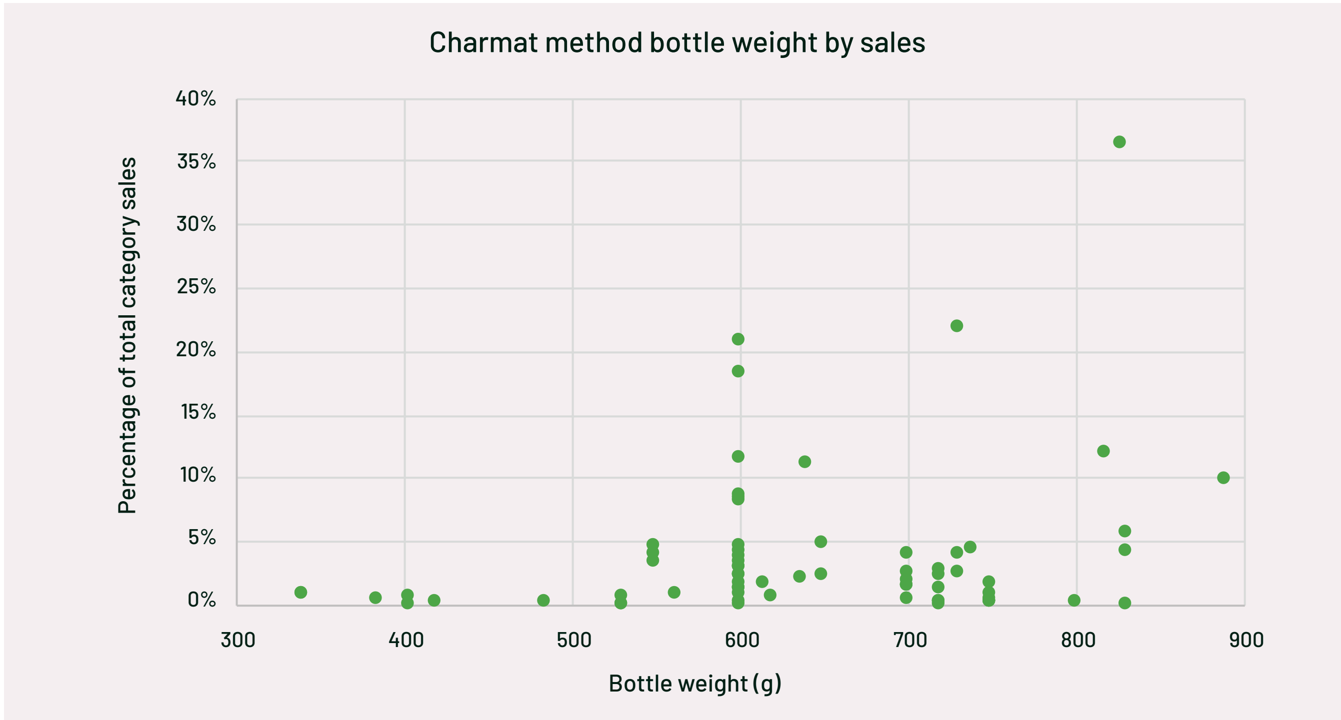
Charmat method wines

Charmat method sparkling wines form the majority of all sparkling wine sales globally. Of this, the vast bulk of wines come from Prosecco in Italy. However, it is not just the scale of the sales of these wines that is important, it is the swift turnover of vintages. Whilst Charmat method sparkling wines can be aged or laid down for later drinking, the reality is that the vast bulk of these wines are consumed within a year or two of being made.

From a bottle weight perspective, what this means is that, for this category of sparkling wine, there is a significant opportunity to effect change, and at scale. The fact that the appellations/ trade groups for most traditional method sparkling wines require some period of lees aging and maturation means that changes in bottle weight will take some time to manifest in the bottles that are seen on the shelves of retailers. This is generally not the case for Charmat method wines, where changes in bottle weight – with all the benefits that brings – could be felt very quickly.

Again, for this category of wines too, lighter bottles could be a very effective sales tool to appeal to younger consumers for whom wines at this price point are likely to be amongst the most attractive.

It is in this category where we found our self-imposed caution most difficult to maintain. This is because although 600g has already become a widely-accepted weight for Charmat wine bottles, we know that a significant range of bottles are in use which are lighter than this. Verallia, for example, has more than 130 SKUs of 750ml sparkling bottles under 600g, all designed for Charmat wines. These are available in Italy, Iberia, France and Germany. These include bottles weighing 560g which are able to cope with carbonation levels of up to 10g CO_2/l.[64] However, we need to remain on the side of caution, so recommend a target weight of 600g, compared with a current average of 641g.



Charmat method

45%
Approximate share of sparkling wine market

641g
Current average weight

600g
SWR target weight

64 Data from email exchange with Verallia.

Semi-sparkling wines

Semi-sparkling wines are generally defined, for example by EU regulation[65], as being those with 2.5 bar of pressure or less. They are produced in a number of ways. Some are made by the Charmat method, but with the fermentation stopped at a lower pressure. Others may be wines that are carbonated through the injection of CO2 in the same way as many soft drinks are made. Others – so called 'Pet Nat' wines (Pétillant naturel) are made using a method called méthode ancestrale, where wine is bottled before the first fermentation is finished. The fermentation continues in the bottle, capturing the carbon dioxide to create the bubbles.

The sales figures from retailers suggest that Pet Nat wines are relatively small segment of the of their sales. This is not to say that, from a sustainability perspective, that it is any less important in theory, but making changes to bottle weights in this segment is less material than, for example, in the main tank fermented sparkling wines.

In many cases these wines can safely be packaged in normal wine bottles, using a crown cap. As one study put it: "The Frizzante Proseccos can easily be recognized, since they have regular wine corks or sometimes even screw cap on the simpler variants"

In this category, the relatively smaller data set makes making a recommendation slightly harder. However, we know that standard wine bottles can be used for these semi-sparkling wines, and the data in the chart below shows a critical mass of bottles at 550g. We also know from our still wine bottle research that the average (that is before lightweighting) still wine bottle weight is 550g. This therefore will be the target weight for semi-sparkling wines.

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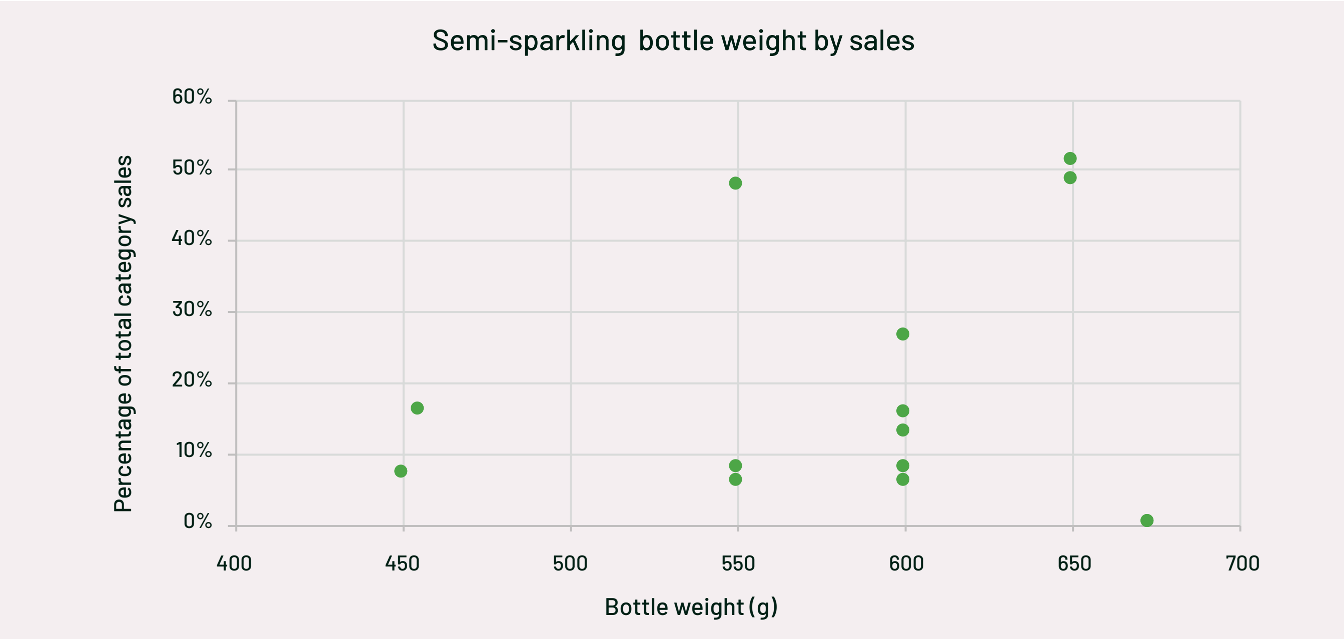

Semi-sparkling

12%
Approximate share of sparkling wine market

585g
Current average weight

550g
SWR target weight

65 European Union. Product specification. 13/02/25. C_202500821EN.000101.fmx.xml (accessed 12/11/25)

Next steps: developing a sparkling wine BWA

This report is not an end in itself. It is intended to provide the evidence base to launch a Bottle Weight Accord (BWA) for sparkling wines.

Over the coming 2-3 months, we will work with our members to establish how this accord will operate, and to recruit an initial group of members. Conversations to date suggest that many of the signatories of the still wine BWA will also adopt the new one on sparkling.

A first point to consider will be to agree the weight recommendations. This report has sought to balance the achievement of meaningful reductions in bottle weights with the need that bottles be safe in use. It may be that SWR members may want to be more ambitious. This needs to be agreed between participants in a new sparkling BWA.

A further factor to consider will be the time frame for a sparkling BWA. In the case of the still wine accord, it was launched in 2023, with a target date of 2026. In the case of sparkling wines the time scales may need to be different for each category. Charmat method wines are generally made, bottled and consumed within a year or so, in which case changing bottle weights may be relatively more straightforward and therefore quicker to enact. Where wines are matured in-bottle for a period of time, as is the case with many traditional method (inc. Champagne) wines, the time scales for light weighting may need to be longer.

It is also important that the concept of 'average weight' is carried over to a sparkling accord. In the mainstream BWA, the aim is that the average weight of a participating company's wines – be that those they make or that they retail – is below 420g. This allows participants to have some wines in heavier bottles if they so choose so allows for flexibility and brand choices (in most cases with 'premium' wines) whilst the vast majority of wines are in lighter weight bottles.

We will begin consultation on a sparkling BWA immediately, and anticipate that it will be launched in February 2026. We also expect that, as is the case with the still BWA, that participants will be drawn from across the wine supply chain, from producers, to traders to retailers.

Conclusions

Given the proportion of the product's carbon footprint which is made up by the bottle the wine is in, lightweighting of those bottles, both for still and sparkling wines remains an obvious goal for the wine sector. However, with EPR schemes gradually being rolled out in different jurisdictions, there are now significant financial motivations to focus on bottle lightweighting. It is now clear that for sparkling wines, as well as still, that there is a clear multi-factor business case for lightweighting by producers: Regulatory cost savings, carbon/transport savings, and consumer and retailer trends towards lower carbon sustainability performance of products.

In the case of sparkling wines, however, that task is complicated both by the wide variety of styles of these wines and by the need to prioritise the safety of bottles in use throughout the supply chain. As a result, providing a single weight, as was the case with still wines, is not practical. Nor might it be safe to recommend moving towards a 'weight below' a target, again as has been the case with the BWA.

Nevertheless, in this report, SWR has developed an approach which balances the complexity of the sparkling sector, the need to prioritise safety with the need to make meaningful reductions in the weights of sparkling wine bottles. By providing a four-part categorisation of this market, and setting target weights based on practical experience we have proposed a framework which is realistic and deliverable.

We have been cautious in the target weights we have recommended, but this seems prudent. Pressing for weight reductions that some may perceive as potentially dangerous may mean that some will not want to move at all. By recommending the use of lighter weight bottles that are already safely being used seems a sensible way of driving meaningful but safe change.

As with the initial bottle weight research in 2023, this paper will provide the basis for consultation with SWR members about developing a sparkling BWA to mirror the existing one focussed on still wines. That Accord delivered significant carbon savings the equivalent to the emissions of a medium-sized town in its first year of operation. We anticipate that an Accord for sparkling wines will be similarly successful in driving down the carbon footprint of wine.

The success of the still BWA demonstrates value of having clear targets for lightweighting that are agreed across the supply chain. It provides a focus for joined-up action and allows the industry to work collaboratively. This is much more efficient and provides clarity to everyone.

We therefore urge all of our members throughout the supply chain to work with us on the consultation to develop a sparkling BWA on the back of this report and to join the Accord when it is established.

Style	Current average (g)	Target weight (g)	% of total sparkling market
Champagne	865	822	21
Other traditional method	812	780	22
Charmat method	641	600	45
Semi-sparkling	585	550	12

Acknowledgements

This report is based on a review of literature and other documentation but also, most importantly, on interviews with a series of experts in different aspects of the wine supply chain. This included bottle makers, retailers, packaging specialists, academics, market analysts and trade bodies. Not only were these interviews extremely valuable in their own right, interviewees also pointed me in the direction of other literature and were able to provide additional data and insight. In particular, I would like to thank O-I for hosting me at their bottle plant in Asti, Italy. As when I visited the Encirc site in 2023, there is little substitute for seeing the bottle making process up-close.

A number of those interviewed also provided extremely helpful and insightful comment on early drafts of this report. I am extremely grateful to all of these people who have been impeccable in their inputs: any errors which remain are my own.

Interviews (in some case several!) were undertaken with the following:

- Martin Campion, Direct Wines, UK
- Francisco Campos, Amorim, Portugal
- Simon Capell, M&S, UK
- Ines Castillo, SAQ, Canada
- Guillaume Chazelle, Verallia, France
- Armando Corsi, University of Adeleide, Australia
- Shae Courtney, Coles, Australia
- Sue Daniels, M&S, UK
- Barry Dick, Waitrose, UK
- Asier Etxebarria, Vidrala, Spain
- Joe Fattorini, JoeFattorini.com, UK
- Ernesto Ghigna, O-I, Italy
- Thomas Hill, Pinnacle Drinks, Australia
- Linda Johannson, Systembolaget, Sweden
- Belinda Kemp, NIAF, UK
- Larry Lockshin, University of South Australia, Australia
- Nick Kirk, British Glass
- Siglinda Losch, Vinimark, South Africa
- Christian Marier-Pilon, SAQ, Simon Mason, The Wine Society, UK
- Chris Millson, Direct Wines, UK
- Madalena Moreira, Encirc, UK
- Fiacre O'Donnell, Vidrala, Ireland
- Joe Olding, Tesco, UK
- Gary Pickering, Brock University, Canada
- Chiara Ponti, O-I, Italy
- Catherine Ryder, Direct Wines ,UK
- Matteo Scarpellino, Vinmonopolet, Norway
- Senni Simola, Alko, Finland
- Marcello Sferati, O-I, Italy
- Robin Thompson, Encirc, UK
- Jennifer Turner, WSTA, UK
- Alice Waters, Sainsbury, UK
- Jim White, Cloudy Bay, New Zealand
- Emily Wolf, Sainsbury, UK

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ROUNDTABLE

Who we are

The Sustainable Wine Roundtable (SWR) is an independent global platform dedicated to advancing sustainability in the wine industry through collaboration.

What we do

Our initiatives, such as the Bottle Weight Accord and the Global Reference Framework, drive real progress and innovation with measurable impacts.

We unite wine businesses to tackle shared issues, build an evidence base for action, save money, and create meaningful change. With over 130 members spanning the entire wine value chain—from growers and producers to retailers, standards owners, packaging suppliers, academics, and more—SWR is leading the way in fostering collaboration and catalysing change in the wine sector.

Contact us

Interested in learning more about how the SWR can support your business? Whether you're exploring membership, collaborative opportunities, or need more information on our initiatives, please reach out to our team.

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