



Score in sugar reduction:

***Leverage our
portfolio & expertise
for sweet success.***

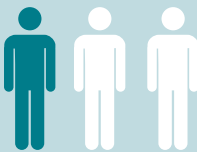
Throughout history, sugars have been used to provide sweetness and enhance product functionality. And while moderate consumption of sugars can be part of a healthy and varied diet, overconsumption may contribute to diet related health issues. In response, public authorities developed a number of tools to encourage food and drink manufacturers to develop products with lower sugars levels. As a result, consumers are also re-evaluating their sugars consumption. In this environment, brands throughout the food and beverage industry are re-thinking their sweetener choices.

Stepping up to the challenge



79% of consumers agree there are “generally” too many sugars in most packaged foods & beverages.

More than 1 in 3 consumers actively avoid artificial sweeteners.



Source: Cargill proprietary research results, November 2022: (N = 3,081, UK, DE, FR)

In recent years, consumers have become increasingly mindful of their food and beverage choices. **They are placing a greater emphasis on naturality and reducing their intake of certain ingredients, such as sugars.** Alongside efforts to limit intake of sugars, consumers also seem to be avoiding artificial alternatives, favoring nature-derived solutions instead.

Our research has shown that **consumers have different strategies for reducing sugars.** The majority prefer buying similar food and beverage products with lower content of sugars. Others opt for products that use natural sweeteners (with no- or low-calories), products without added sugars, or simply buy reduced quantities of the full-sugar products they enjoy. Only a small fraction said they would buy products made with artificial sweeteners.

While consumers may scrutinize sweetener choices more closely, **“Taste & texture” remains a top priority for shoppers when buying food and drink.** Cargill conducted a study examining consumer sentiment regarding no- and low-sugar products. Most consumers of these products either expect the taste to be equivalent to their full-sugar counterparts or allow for slight taste differences, but unsurprisingly have little appetite for poorer tasting products.

Consumers who do not avoid sugars in their diet (36%) highlighted their preference for the taste and texture that sugars bring to products. They also express a dislike for sugars alternatives, citing their artificial or chemical aspects and unfavorable taste profiles¹.

Reasons why consumers do NOT avoid sugar (n = 1106)

33% Sugar is important for the good taste of food & beverages

32% Do not like (products with) sweeteners/sugar alternatives



Why do you say you do not like sweeteners/sugar alternatives?

- Too artificial/chemical
- Different/bad taste
- Not healthy

Source: Cargill proprietary research, (November 2022; n=3082 interviews; France, Germany, UK)



Changing consumer needs are not the only driving force in the market.

Nearly every European country has adopted some form of national dietary guidelines related to sugars. Most guidelines specifically target products like soft drinks and set recommended limits for added sugar intake, usually around 10 percent of total energy.

Adding to the pressure, **several European countries have implemented sugar reformulation initiatives.** For example, the United Kingdom set an ambitious goal of reducing sugars by 20% by 2020 (compared to 2015), which might inspire other countries to follow suit.

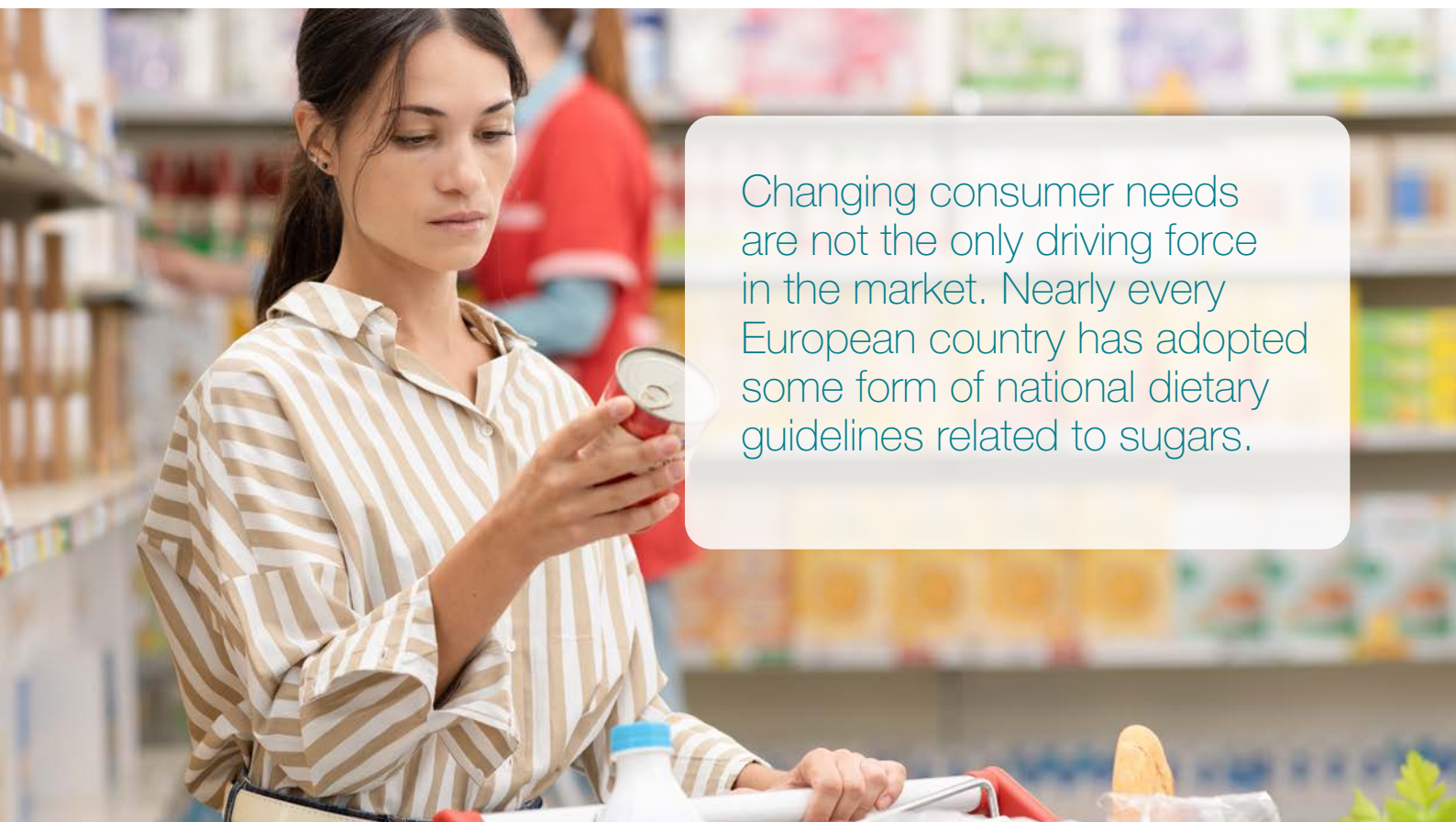
Taxes on sugary foods have also gained momentum, with a growing number of European countries implementing or considering levies, primarily focusing on soft drinks.

It's clear that there is a push for reduction of sugars from both a consumer and regulatory perspective. However, reduction of sugars can take many forms, and the first step for manufacturers is determining just how low to go. This can range from entirely sugar-free to reduced sugar or low in sugars.

Once manufacturers have decided upon their sugar-reduction targets, the real work begins. After all, sugars play many roles in formulations, impacting taste, appearance, physical and textural attributes, shelf life and more. **There is no single ingredient that can replicate all of sugars' functional benefits.** Therefore, determining which sweetener to use will depend on many factors, including product application, price, regulatory requirements, and consumer perceptions.

Determining which sweetener to use for sugar reduction depends on:

- ✔ *Product application*
- ✔ *Price*
- ✔ *Regulatory requirements*
- ✔ *Consumer perceptions*
- ✔ *Technical requirements / functionality*



Changing consumer needs are not the only driving force in the market. Nearly every European country has adopted some form of national dietary guidelines related to sugars.

First results

In 2022, the UK government released a report detailing the industry's progress on sugar reduction from 2015 to 2020. The findings highlighted that **a voluntary sugar reduction and product reformulation program can indeed drive change**. Reductions were observed in several particular categories, including breakfast cereals, yogurts and fromage frais, milk-based drinks, and beverages covered by the Soft Drink Industry Levy. However, other categories, such as confectionery, showed lower reductions, likely due to the functional role sugars play in these products².

More recently, Kantar's Worldpanel revealed that members of the Food & Drink Federation (FDF) have been actively reformulating and innovating their products. **The data indicates that the average shopping basket of FDF members in the UK has become healthier³.**

Specifically, their products now contain 33% less salt, 25% less sugars, and 24% fewer calories in the GB grocery market since 2015⁴.

In the rest of Europe, manufacturers are also prioritizing sugar reduction in new product development. According to Innova Market Insights, 10% of all food and beverage launches in 2024 featured some form of sugar reduction claim. In 2024, over half (58%) of these product launches featured a 'no added sugar' claim. Over the past few years, the popularity of these claims has shifted, with a decline in "reduced sugar" claims and a rise in "sugar-free" claims.

In line with the changes observed in the UK, the most significant increases in sugar reduction claims are found in the sports nutrition and soft drinks sectors, where more than one in three new launches feature such claims. Interestingly, there is also a growing number of sugar reduction claims in the desserts and ice cream categories.

Examples of where Cargill's portfolio can play a role:

- **Silent reductions:** Decreasing sugar content in full-sugar products without making a claim. Our low declarable sugars (DE) glucose syrups could be an excellent solution for this.
- **Claimable partial reduction** (e.g., 30%): Solutions like Cargill™ soluble fiber excel by providing great performance in terms of taste, appearance, digestive tolerance, and mouthfeel — all critical factors for consumer satisfaction.
- **Full reduction without artificial sweeteners:** Our low and no-calorie ingredients are ideal solutions to help achieve this goal.

Popularity of different claims in the sugar reduction space

Europe, 2024



Source: Innova, food & beverages, Europe, 2024

Stevia fanbase continues to grow

Consumer attitudes toward sugars are well established, but not just any sweet substitute will do. They are drawn to recognizable ingredients, especially those perceived as natural. This makes stevia an ideal nature-derived alternative to artificial sweeteners.

To gain a deeper understanding of consumer attitudes toward stevia, Cargill conducted research in France, Germany, and the UK. More than half of the respondents were already familiar with this nature-derived sweetener, and a vast majority (80%) expressed interest in products made with stevia. For the small minority who had reservations, common barriers included perceptions around taste, limited knowledge of how stevia is produced, or a preference for full-sugar products.

Overall, according to the survey, stevia had a positive net purchase impact (NPI) of +16%, indicating that most consumers were more likely to purchase a product if it included stevia on the ingredient list. Stevia's image seems generally positive among the respondents of the survey, commonly associated with being calorie-free, natural, healthy, environmentally sustainable, and safe.

80%

The vast majority (80%) of consumers expressed interest in products made with stevia.

Source: Cargill proprietary research results, November 2022: (N = 3,081, UK, DE, FR)

Top 5 consumer associations for stevia

For each of the following: move the slider (more to the left, or more to the right) to indicate your opinion on STEVIA.



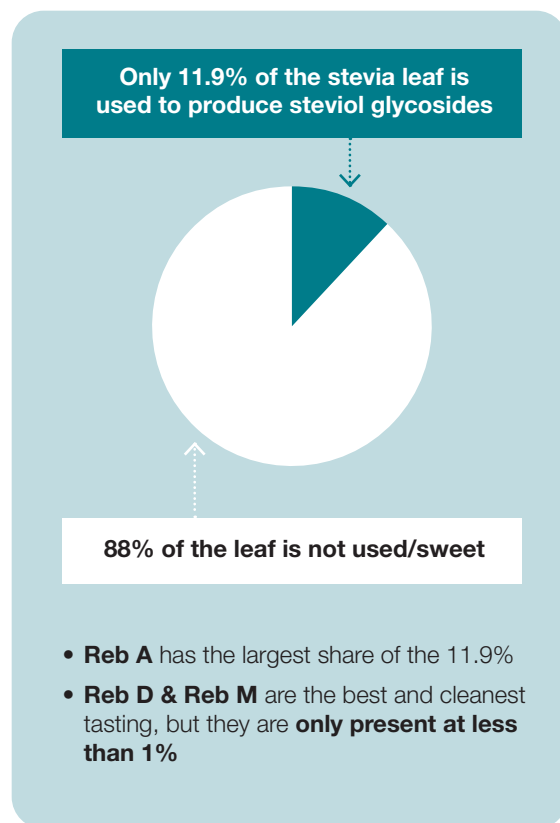
Source: Cargill proprietary research conducted with 3,061 consumers in France, Germany & UK, 2022.

Our study also examined consumer perceptions of three stevia production methods: extraction, fermentation, and bioconversion. All respondents were provided with a concept description to explain each production method. While all three methods boosted net purchase impact (NPI), “extraction” seemed to have the most significant positive impact, followed by “fermentation.”

Looking at the effect of different stevia labeling on purchase decisions, we found that adding details about the production methods to ingredient labels generally seemed to increase NPI. Labels stating “steviol glycosides from stevia” and “steviol glycosides produced from fermentation” seemed to improve net purchase impact compared to “stevia” alone. However, following our survey, NPI for “enzymatically produced steviol glycosides” decreased, likely due to unfamiliarity with this process among most consumers.

Steviol glycosides production methods and labeling

- **Extraction (steviol glycosides from stevia):** involves harvesting and drying the leaves, steeping them in hot water, filtering the liquid, and purifying the extract to remove impurities
- **Fermentation (steviol glycosides from fermentation):** uses a fermentation process to convert sugars into steviol glycosides, such as Reb M and Reb D, which are the sweetest components of stevia
- **Bioconversion (enzymatically produced steviol glycosides):** uses enzymes to convert extracted steviol glycosides into more desirable compounds



STEVIA SPOTLIGHT

Steviol glycosides from stevia

These zero-calorie, high-intensity sweeteners are derived from the stevia leaf and offer a cost-effective and clean, sweet taste. Truvia® is our first stevia-based sweetener that is derived from high purity Reb A; ViaTech® is a proprietary blend of steviol glycosides, optimized for specific applications. With Truvia®, product developers can achieve sugar reduction up to 3 SEV⁵, while ViaTech® enables deeper reductions, up to 6 SEV, depending on the percentage of sugars in the reference product.



Steviol glycosides from fermentation

EverSweet® is the next-generation stevia sweetener from Avansya – a joint venture between Cargill and dsm-firmenich. Produced using advanced fermentation techniques, EverSweet® brings to life stevia’s sweetest elements – steviol glycosides Reb M and Reb D. With EverSweet®, you can reach deeper sugar reduction than previously possible with stevia sweeteners without compromising on taste.

Not only does EverSweet® offer great taste, but an internal life-cycle assessment (LCA) study highlights improved environmental performance in key metrics such as carbon footprint, water use and land use impact for EverSweet® compared to production from leaf or bioconversion, or traditional sugar.⁶

EverSweet®
Stevia Sweetener

Mastering sweet success!


Reducing sugars is challenging as consumers don't want to sacrifice taste, and sugars play important roles beyond sweetness, like affecting texture, appearance, and shelf-life. Fortunately, Cargill's variety of nature-derived sweeteners and expertise can help you create delicious, sugars-reduced products. Our goal is to help you meet diverse consumer needs and enable positive choices. Since sweeteners vary in taste, cost, and functional attributes, we collaborate with our customers to identify the best ingredient formulations for each of their products.

Staying on top of evolving trends is essential as innovation starts with consumers. By leveraging proprietary research tools and external market analysis, we keep abreast of market dynamics. Innovation efforts are focused where

they matter most. With a deep understanding of market trends, we can co-create innovative, sugar-reduced success stories across multiple categories.

We offer a broad range of nature-derived sweetening solutions, with full-, low- and no-calorie options. In addition, we can help product developers replace sugars' bulk and functionality. Bulking agents like maltodextrins or soluble fibers can replace the mass and volume lost when sugar is removed. As an added benefit, fibers may also improve the nutritional profile of the final product. Further textural adjustments may be needed, and our extensive portfolio of texturizers, including starches, pectin and carrageenan, can help address mouthfeel and other organoleptic issues.


A BROAD PORTFOLIO OF SOLUTIONS TO ENABLE YOUR SWEET SUCCESS



Full-calorie sweeteners

Variety of full calorie sweeteners, such as fructose syrups and low DE glucose syrups that can be a first step in reducing sugars.


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Low- & no-calorie sweeteners

Polyols are versatile sweeteners that offer the potential for great-tasting sugars-reduced and sugar-free products, while contributing important sensory and functional benefits. We offer isomalt, maltitol, mannitol and sorbitol.

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High intensity sweeteners

Stevia contains sweet components called steviol glycosides that are up to 300 times sweeter than sugar. Stevia sweeteners have quickly become a favorite high-intensity sweetener as they have proven to be a useful, heat-stable, zero-calorie ingredient for a wide range of applications.

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Bulking agents/ soluble fibers:

Cargill™ soluble fiber can help manufacturers answer consumer demand for sugar reduction and fiber enrichment while improving the nutritional profile of food & beverages.

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Food manufacturers are encouraged to offer products with less sugars, but finding a winning formula is challenging. Consumers still demand great taste and texture, and their expectations for label-friendliness limit ingredient choices. Cargill can help brands navigate these challenges by offering more than just sweetening solutions. Our experts review the entire product recipe and can help create new, reduced-sugar formulations. By collaborating with us, brands gain access to our extensive ingredient toolbox, deep technical expertise, and proprietary consumer insights, all supported by our nutrition, sensory, and regulatory specialists.

Learn more about reformulating for sugar reduction.

References

- ¹ Cargill proprietary research conducted with 3082 consumers in France, Germany & UK, 2022.
- ² Office for Health Improvement and Disparities (2022). Sugar reduction and reformulation progress report 2015 to 2020. Retrieved from <https://assets.publishing.service.gov.uk/media/6388cd71d3bf7f328c0ded27/Sugar-reduction-and-reformulation-progress-report-2015-to-2020.pdf>
- ³ Worldpanel GB Take Home Purchase data for FDF members, Nutrient Profile Model Score 2019, 2023
- ⁴ Kantar's Worldpanel GB Take Home Purchase data for FDF members, 2023 vs 2015 total nutrient volume contribution (percentage difference).
- ⁵ SEV = Sweetness equivalent value – expressed in % of sucrose
- ⁶ LCA results have undergone a ISO14040/44 panel review, underlying report available upon request.