



Photo by Arzu Gulen  
Kearney, Istanbul

# Achieving net zero in beverages

KEARNEY

# Key messages

- In 2021, beverage companies emitted 1.5 billion tons of CO<sub>2</sub>e, or 3.8 percent of all global CO<sub>2</sub>e emissions.
- Based on the current trajectory of 0.7 percent reduction per year, the industry will miss both its 2030 and 2050 targets. To reach these targets, the beverage industry needs to improve its current reduction rate 11-fold.
- The lack of progress is not a reflection of the industry's reticence to change, but rather is evidence of exactly how tough a problem this is to solve.
- Kearney has developed a comprehensive model detailing effective methods to reduce CO<sub>2</sub>e emissions.
- By implementing this holistic set of methods, beverage companies can achieve their net-zero targets by 2039 in our "aggressive" scenario, or by 2045 under a more realistic, less stringent timeline.

# Why the industry is on the verge of missing its targets and what it can do about it

As things currently stand, the global beverage industry is losing significant ground in its efforts to hit its 2030 and 2050 greenhouse gas emission reduction targets. In fact, it needs to improve its current reduction rate 11-fold. In addition to the environmental cost, failure to achieve these goals can negatively impact the industry in the form of draconian regulation, cratering stock prices, and a loss of credibility in terms of activists, the media, and consumers.

The threat to share prices is real. On February 9, 2023, activist investor ClientEarth filed a lawsuit against Shell plc’s 11-person board of directors, alleging they had breached their legal responsibilities under the Companies Act by failing to adopt and implement an energy transition strategy aligned with the Paris Agreement. Shell has denied the claims.

If activist investors can attack the petroleum industry, what is to keep them from filing similar complaints against the board of leading global beverage industry firms? And, if they did, what evidence could the industry muster in its own defense? Let’s see where things stand today.

In 2021 beverage companies emitted 1.5 billion tons of CO<sub>2</sub>e, or 3.8 percent of all global CO<sub>2</sub>e emissions (see figure 1).<sup>1,2,3</sup> The dairy industry alone accounted for 45 percent of total beverage industry emissions (0.7 billion tons of CO<sub>2</sub>e). Together, dairy products, soft drinks, beers, and ciders made up more than 80 percent of all emissions. The industry is doing better, as emissions per liter have declined over the past few years. But, while significant, the 6 percent decline in kg CO<sub>2</sub>e per liter from 2018 to 2021 is still short of target goals.

<sup>1</sup> Euromonitor International. Alcoholic drinks, dairy products and alternatives, hot drinks, and soft drinks 2022. Category passport.  
<sup>2</sup> CDP 2022 Climate Change Response Dataset  
<sup>3</sup> Companies’ annual and sustainability reports

Figure 1  
**The beverage industry emitted 1.5 billion tons of CO<sub>2</sub>e in 2021, down 2.5% over the past three years in total and 6% on a per liter basis**

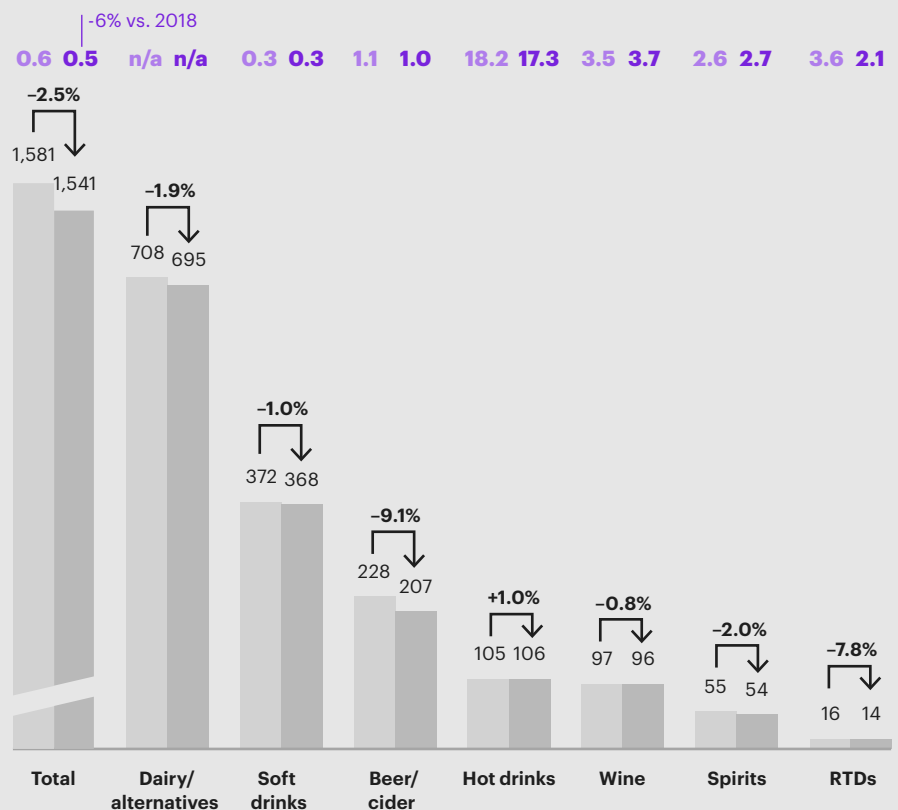
Global beverage CO<sub>2</sub>e emissions by segment (million tons, scope 1-3)<sup>1</sup>

**X.X** kg CO<sub>2</sub>e emissions per liter/kilo of product sold in 2018

**X.X** kg CO<sub>2</sub>e emissions per liter/kilo of product sold in 2021

- 2018
- 2021

<sup>1</sup> CO<sub>2</sub>e is carbon dioxide equivalent. Sources: sustainability reports of beverage companies; Kearney analysis



Wine and spirit producers have seen their relative emissions increase while beer, cider, and RTDs producers have been most efficient in reducing their carbon footprint (8 to 9 percent reduction since 2018). Like wine and spirit companies, tea and coffee producers have been struggling to achieve their targets, increasing emissions by 1 percent over the past three years.

## Value chain areas

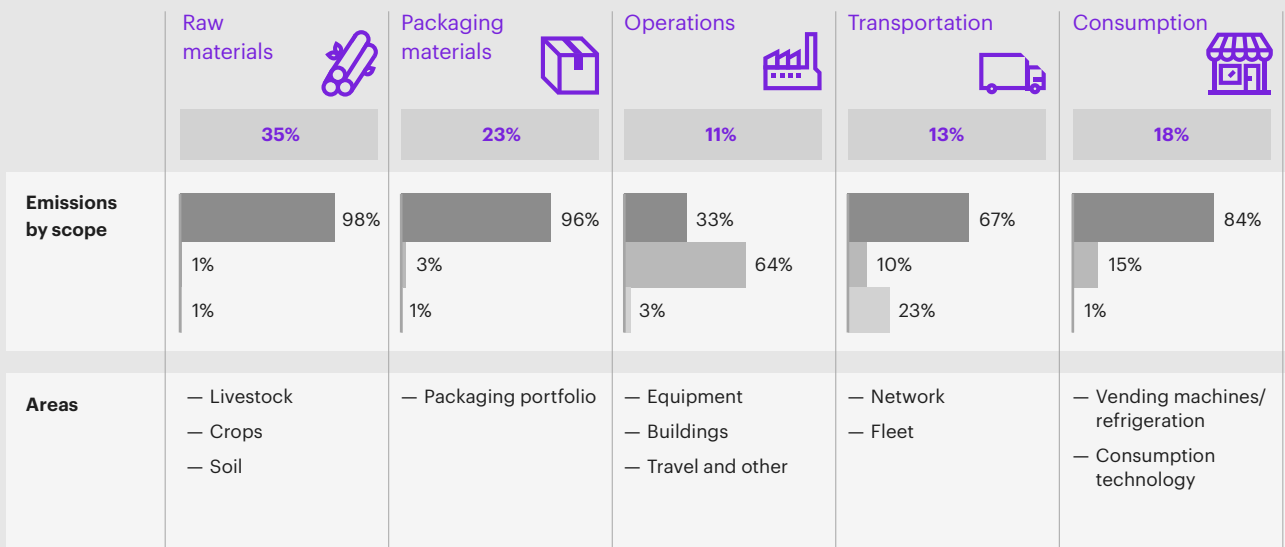
Raw and packaging materials are the biggest contributors to beverage industry emissions at 58 percent (see figure 2).

With the exception of operations, scope 3 emissions play the most significant role across most stages of the value chain and require the engagement of all value chain partners.

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Figure 2

**GHG emissions need to be reduced across the entire value chain; raw materials and packaging show most potential**



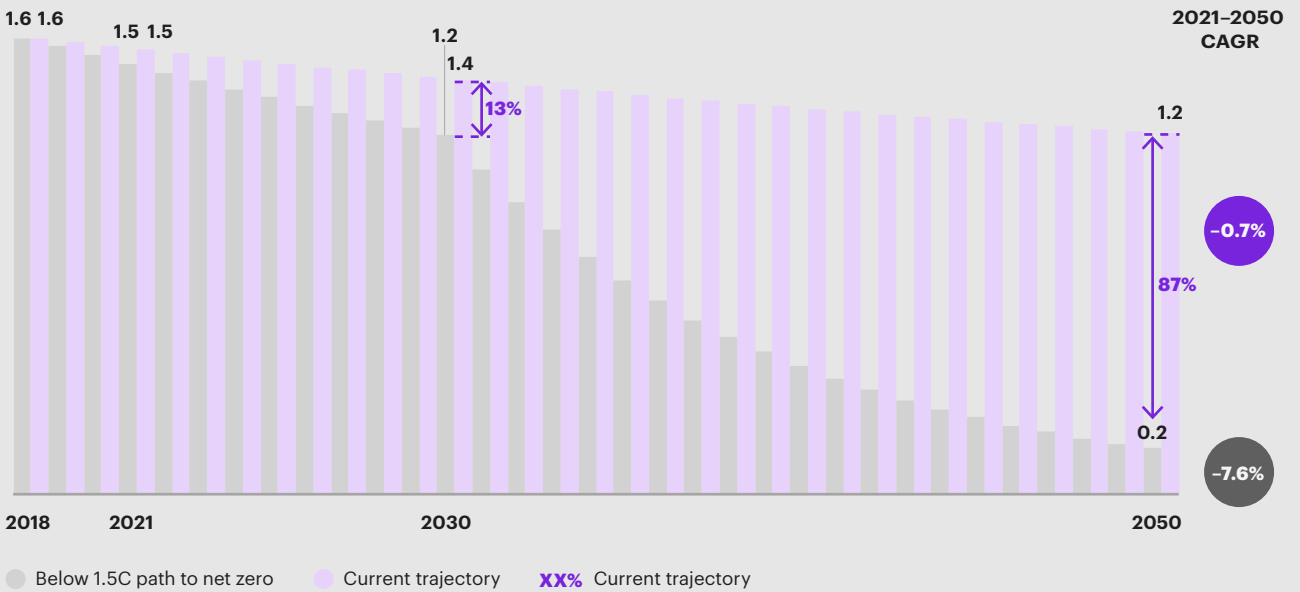
XX% Share of GHG emissions in 2021 ● Scope 3 ● Scope 2 ● Scope 1

Sources: sustainability reports of beverage companies; Kearney analysis

Figure 3

**The industry requires significant decarbonization acceleration to meet 2050 net-zero goals**

Total CO<sub>2</sub>e emissions, scope 1–3 (billion tons)



Source: Kearney analysis

**Beverage companies are missing their targets**

Given the financial and regulatory stakes, not to mention the impact on consumer and media opinions, beverage companies—currently on track to miss their 2030 and 2050 emission reduction targets—need to work hard to make up for lost time (see figure 3).

Kearney sees the lack of progress to date as a reflection not of any ill will or industry reticence to change, but rather a result of this being a tough problem to begin to resolve. The lack of a clear path forward toward resolution prompted us to develop a comprehensive model for evaluating leading emission reduction efforts. We tracked the CO<sub>2</sub>e emissions of leading beverage companies based on their public filings and extrapolated the CO<sub>2</sub>e emissions for the entire beverage industry. The results are sobering.

As we mentioned earlier, based on the current trajectory of 0.7 percent reduction per year, the industry will miss both its 2030 and 2050 targets.

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## Reduction methods including case studies

To help beverage companies reduce their CO<sub>2</sub>e emissions swiftly and effectively, we have developed a comprehensive model consisting of value chain-specific, as well as transversal, reduction methods, complemented by a set of enablers (see figure 4 on page 5).

### Overarching enablers

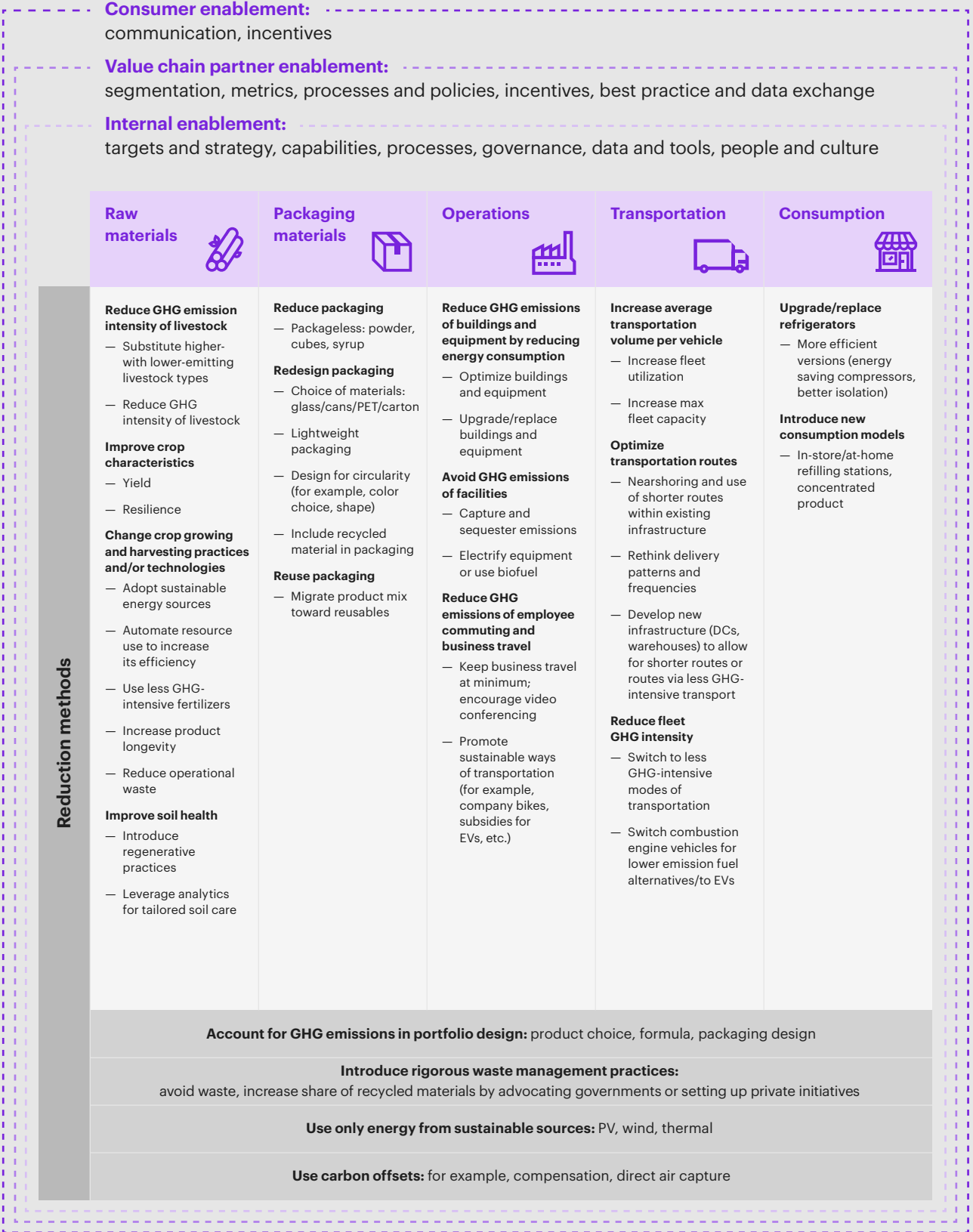
To effectively reduce their carbon footprints, beverage companies need to implement sustainable practices within their operations and clearly communicate their efforts to consumers. This can be achieved through various means including marketing campaigns, social media, and packaging design. Educating consumers makes them more aware of the environmental impact of their consumption habits and can motivate them to participate in sustainability efforts such as recycling campaigns, reuse initiatives, and adopting new purchasing models. Beverage companies can also incentivize consumers to act sustainably by offering rewards such as paybacks for recycling bottles or discounts on products with more GHG-efficient packaging. This approach encourages consumers to make more conscious choices and ultimately contributes to the reduction of the company's GHG emissions. Effective consumer communication and incentivization allows beverage companies to create a more sustainable future while simultaneously benefiting their business.

To effectively reduce emissions, beverage companies need to actively enable and support their value chain partners in adopting sustainable practices. While consumer education is crucial, significant emission reduction also depends on value chain partner enablement since suppliers are the source of the majority of emissions. Beverage companies need to reach out to their suppliers and help them find and develop decarbonizing solutions that are cost beneficial for both sides. One key approach is sharing operational best practices and knowledge transfer. By using their expertise and experience, beverage companies can provide guidance to suppliers on implementing energy-efficient processes and waste reduction strategies. Collaboration through better planning and co-investments for sustainable energy and more efficient assets is also essential. Beverage companies must work closely with their suppliers to identify opportunities for joint investments in renewable energy infrastructure, such as solar panels or wind turbines. This collaborative approach not only helps suppliers reduce their emissions but also strengthens the overall resilience and sustainability of the beverage industry value chain. Additionally, such a collaboration would help companies retain their key suppliers long term, as having joint projects strengthens the relationship between businesses and introduces additional incentives for finding joint, mutually beneficial solutions.

The sustainability-linked supply chain finance program implemented by Coca-Cola Europacific Partners (CCEP) in cooperation with Rabobank, a food and agri bank headquartered in the Netherlands, is an example of this kind of support. The [program incentivizes and rewards suppliers for improving their ESG performance](#), thereby supporting CCEP in its ambition to reduce GHG and reach net zero. This kind of program helps beverage companies reduce their large portion of scope 3 emissions from suppliers while enabling vendors to finance their ESG initiatives.

Figure 4

**Various GHG reduction methods can be implemented across the value chain**



Notes: GHG is greenhouse gas. EV is electric vehicle. DC is distribution center.  
Source: Kearney analysis

## Internal enablement

While it is crucial for beverage companies to communicate their efforts toward GHG reduction to consumers, internal adaptation is equally important. This includes aligning overall company strategy and targets with GHG emission targets to establish clear internal guidelines that facilitate prioritizing and decision-making. By aligning their goals with GHG emission targets, beverage companies can develop comprehensive plans to reduce their carbon footprint. This not only contributes to their sustainability efforts but can also generate cost savings in the long run.

Companies also need to ensure that their capabilities, processes, and governance are aligned with ambitious GHG reduction targets. This may involve investing in new technologies or updating supply chain processes. To support these efforts, data management tools must be put in place, which can help identify areas where GHG emissions can be reduced and track progress toward emission targets. Finally, it is important for beverage companies to establish a culture that supports sustainability efforts, with the right people and leadership driving the organization toward ambitious GHG reduction targets.

By taking a comprehensive approach to GHG reduction, beverage companies can create a sustainable future while simultaneously benefiting their business. There are several reduction methods that are specific to parts of the value chain.

## Raw materials

Beverage companies can implement several methods to reduce emissions tied to the raw materials they use, including improving crop characteristics, changing crop growing and harvesting practices, and improving soil health. Changing crop growing and harvesting practices is essential to make a step toward sustainable farming practices for farmers.

Crop yield and resilience are the key factors needed to improve crop characteristics. By developing more pest- and disease-resistant crops, beverage companies can reduce the need for synthetic pesticides and fertilizers, which, in turn, leads to lower GHG emissions. Improving crop resilience also reduces crop loss. This lowers the need for replanting and improves the carbon footprint.

Digital solutions such as the [app of German start-up Klim](#) are available to help farmers develop and support regenerative farming practices.<sup>4</sup> Another way to reduce emissions is to “greenify” the resource base, including fertilizers. Current market solutions include alternatives to nitrogen fertilizers, such as [Kula-N](#), which don’t carry the environmental risks and trade-offs associated with traditional products.

The automation of resource use to increase efficiency, such as precision irrigation and fertilization, can help reduce fertilizer and water use. For that, companies can employ IoT solutions, such as those that companies like [Irriot](#) or [CropX](#) offer. Increasing the longevity of agricultural products, through special preserving coatings, can help reduce product waste in transit to beverage producers, contributing to an overall decrease in operational waste, increased efficiency, and a carbon footprint reduction. One example of this is [Apeel’s](#) core product offering, a plant-based coating, which can allow produce to stay fresh longer, directly decreasing the waste volume generated by the industry.

Improving soil health is also essential for reducing emissions. Healthy soil can store more carbon, which helps reduce emissions in the atmosphere. By introducing regenerative practices, such as cover cropping and crop rotation, beverage companies can improve soil health and increase carbon storage. Using analytics for tailored soil care can also help optimize their use of inputs such as fertilizers and water, which can lead to reductions in carbon emissions associated with them.

<sup>4</sup> For more on this and the current market situation in Germany, see the latest edition of [konsum](#).



Dealing with cattle requires more complex solutions. Methane causes 25 times the environmental damage of CO<sub>2</sub>, and since methane emissions are a natural by-product of the livestock life cycle, there are no direct ways to “decarbonize the process.” New approaches to end run nature include feed additives, such as seaweed or essential oil, which reduce methane output from cattle, and sequestration methods, to avoid emission to the atmosphere. [Mootral](#), a British–Swiss agritech company, has developed a feed supplement that significantly reduces methane emissions from cattle by using natural sources such as garlic and citrus extracts.

CCEP Ventures is funding several research projects to further reduce CO<sub>2</sub>e emissions, including working with the University of Berkeley on finding a way to extract carbon dioxide from the air and convert it into sugar.

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### Packaging materials

When looking at packaging materials, reduction methods can be clustered into three categories: reduce, redesign, and reuse.

First, packaging can be reduced by changing the way the product is delivered to the customer. Water makes up a large portion of many beverage products. Since it is readily available to most households or at the point of sale, beverage products could be shipped to stores and consumers in the form of powder, concentrated cubes, or syrup.

Second, redesigning packaging can be done in multiple ways. We’ll look at some of the most impactful. The choice of materials for the packaging of your products is one of the most profound and visible changes you can make. Typically, the GHG balance gets worse in the following order of packaging materials: glass, cans, PET, carton. However, we want to highlight that in addition to sustainability interests, topics such as practicability, brand equity, and costs should play a role in the choice of packaging for a beverage company. Other reduction methods include light-weighting packaging; including recycled material in the packaging, consequently reducing the usage of virgin materials; and designing for circularity by adapting the color and shape to less GHG intense ways. The carbon footprint of the “circularity” value chain is key. If it is based on fossil fuels, the “juice may not be worth the squeeze.”

One example for redesigned packaging comes from KHS, one of the largest suppliers in the beverage industry (see full interview on pages 12–14). For a wide range of customers, secondary packaging solutions were switched from virgin to PCR (post-consumer-recycled) plastics, reducing CO<sub>2</sub>e-emissions per pack by up to 65 percent. Replacing plastic film with paper solutions such as KHS’s Nature MultiPack reduces plastic waste by up to 80 percent.<sup>5</sup>

Third, reusing packaging can be implemented by migrating the product mix toward reusable packaging such as aluminum bottles which consumers can refill, or selling returnable packaging. This is a common practice on the B2B market. Successful implementation will require both a change of consumer mindset and a strong reverse logistics network from the beverage provider. Other alternatives include using hardened PET or glass packaging in products that could then be refilled several times by the consumer at the point of sale.

<sup>5</sup> Read more about KHS’s efforts and view on the market in the full interview on pages 12–14.

## Operations

Potential operations emission reduction options can be clustered into three categories: enhancing efficiency (producing more with less), electrifying (move to electric assets powered with renewable energy), and moving to green assets or lower-emission alternatives (move to zero-emission alternatives, such as hydrogen, or lower-emission alternatives, like natural gas).

First, by optimizing and upgrading or replacing existing buildings and equipment, beverage companies can lower their energy consumption and reduce their overall GHG. Implementing energy-efficient solutions, such as better insulation, LED lighting, and energy management systems, can optimize the performance of buildings and equipment.

Completing the framework, when electrification is not possible due to cost or technological limitations, multiple green assets can be considered. Moving to lower-emission alternatives such as natural gas can be complemented by locating carbon capture mechanisms on the exhaust, enabling commercial opportunities from the commercialization of CO<sub>2</sub> as in the case of the cement industry's raw material. Other nascent technologies, such as green hydrogen that transforms to water after combustion, could be viable alternatives in the near future.

Finally, reduction of GHG emissions can also be achieved by focusing on reducing employee commuting and business travel. Beverage companies can keep business travel at a minimum and encourage video conferencing as an alternative to in-person meetings. Promoting sustainable ways of transportation, such as offering company bikes, providing subsidies for electric vehicles, or encouraging public transportation use, can further decrease the carbon footprint related to employee commuting.

## Transportation

Transportation emissions can be greatly reduced if beverage companies employ one of three key levers, either independently or in collaboration with suppliers and partners: increase average transportation volume per vehicle, optimize transportation routes, or reduce the fleet's GHG intensity.

Maximizing fleet utilization and increasing the maximum fleet capacity allows beverage producers to transport larger volumes in fewer trips, which leads to overall emissions reduction. This can be achieved through more sophisticated planning approaches, including use of AI-assisted tools and analytics, as well as investing in larger-capacity vehicles.

Local sourcing and optimizing transportation routes also present opportunities to lower emissions. Beverage companies need to rethink delivery patterns and frequencies to further optimize routes, consolidating deliveries and adopting more efficient schedules. Additionally, developing new infrastructure, such as distribution centers and warehouses, can enable shorter routes or adoption of less GHG-intensive transport options.

Finally, reducing the fleet's GHG intensity leads to substantial emission reductions. Where feasible, beverage producers should switch to less GHG-intensive modes of transportation such as rail or water transport. Replacing combustion engine vehicles with lower-emission fuel alternatives or electric vehicles further reduces emissions, while also providing long-term cost savings, as seen by [AB InBev's collaboration with Volvo Cars](#) to electrify its fleet of delivery trucks.

## Consumption

Consumption is the last step of the beverage value chain and an area in which companies can take several steps to reduce greenhouse gas emissions.

Beverage industry consumption patterns are influenced by a crucial element in the beverage value chain—the use of instore coolers to promote immediate consumption. One of the most effective methods is to upgrade or replace these coolers with more efficient versions. Enabling merchants to adopt renewable energy solutions is the end game of scope 3 consumption emissions. Large beverage companies can use their size and negotiating power to help their retail partners with cost-effective renewable energy contracts or assets, even if it means they absorb part of the retailer’s cost.

Outdated coolers may also work with high-emission factor refrigerant gases (normally based on fluorocarbons) while new alternatives are based on CO<sub>2</sub> and propane, with more than 1,000 lower emission factors. The disposal of the “traditional” refrigerant gases is crucial, as they need to be adequately removed and stored to avoid releases and then handled through the appropriate process. It’s important to remember that propane is a flammable gas, and the equipment that operates needs to be properly designed to avoid the risks. The Colombian start-up [NanoFreeze](#), for instance, is working on new ways to drastically reduce the energy consumption of beverage coolers.

## Transversal reduction methods

Given their complexity, most scaled supply chains are transversal—that is they span multiple functions and management practices. As a result, they aren’t always best managed by a traditional top-down hierarchy and function model. Since these measures are implemented across an entire supply chain it is crucial to secure agreement from, and coordinate with, a diverse set of stakeholders.

## Portfolio design

Beverage companies need to include GHG emissions holistically from their decision-making at the product development phase to portfolio management decisions. Product choice (dairy vs. dairy alternative, carbonated or still drinks, and so on), formula, and packaging design allow producers to avoid emitting large portions of GHG before a product is even being produced.

## Waste management practices

Beverage companies also need to avoid waste production as much as possible across the value chain and deal with inevitable waste in the least GHG-emitting form feasible. In parallel, the share of recycled materials—especially relevant in packaging materials, avoidance of using virgin plastic, and so on—should be increased by encouraging governments to establish national recycling infrastructures and practices such as those in place in Germany, South Korea, and Slovenia, or establish/support private initiatives in countries where there is no functioning recycling system.<sup>6</sup>

ReciVeci in Quito, Ecuador, is one example of a private initiative designed to work together with some of the largest international beverage companies to enable recycling. The company was founded as a neighborhood waste collecting community and quickly expanded, developing an app to help Quito citizens collect and deliver recyclable plastic waste. [ReciVeci](#) has already started expanding to other countries in South America.<sup>7</sup>

## Usage of sustainable energy

Prioritizing the use of renewable energy sources for themselves and their suppliers, thereby reducing their reliance on fossil fuels and decreasing their carbon footprint, is the most effective lever for beverage companies to reduce their greenhouse gas emissions. Many beverage companies have already taken steps in this direction, with some investing in their own PV plants to complement or substitute their energy sourcing. This approach not only reduces GHG emissions but also has the potential to generate cost savings over time as renewable energy becomes more accessible and affordable. Moreover, sourcing energy from green sources sends a positive message to consumers about the company’s commitment to sustainability, which can further enhance the company’s reputation and brand value.

<sup>6</sup> OECD statistics for 2019

<sup>7</sup> Website currently only available in Spanish

## Carbon offsets

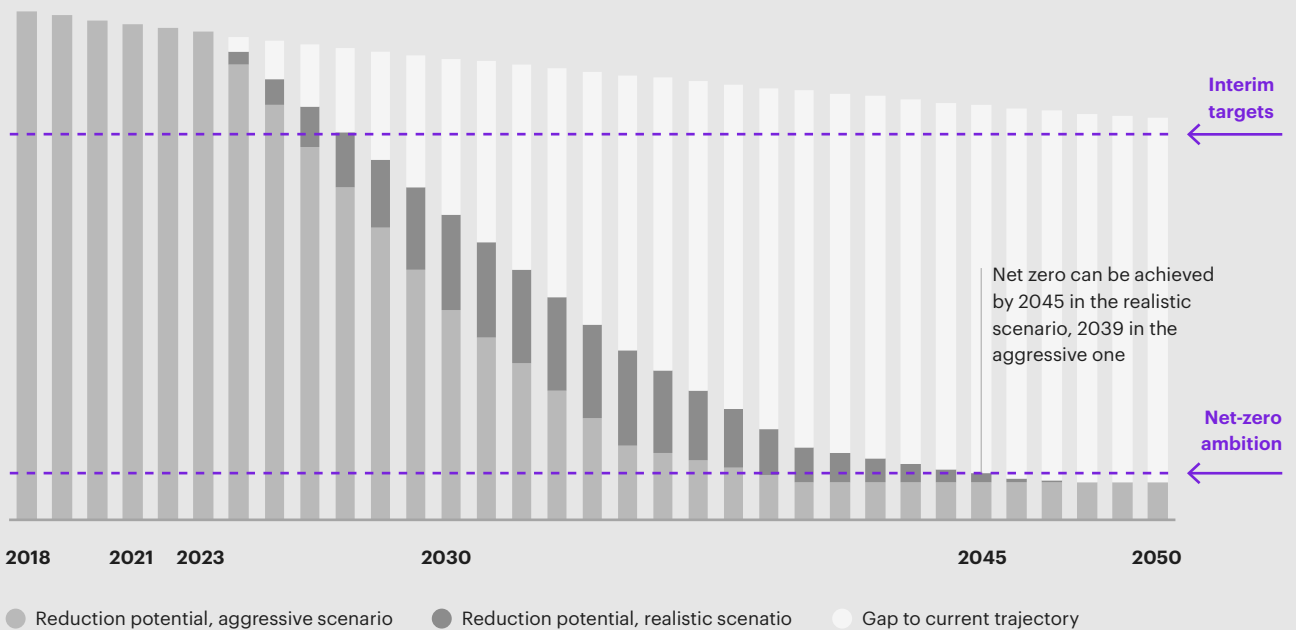
Finally, beverage companies should use carbon compensation schemes and direct air capture methods to actively reduce emitted GHG to mitigate unavoidable GHG emissions. Carbon compensation involves offsetting the carbon emissions produced by investing in projects that reduce or remove carbon from the atmosphere, such as reforestation or renewable energy initiatives. Direct air capture involves using technology to physically remove carbon dioxide from the air and either store it underground or use it in other industrial processes. Both methods offer advantages. Carbon compensation provides a more immediate and cost-effective solution while direct air capture has the potential to be a long-term and scalable option for carbon reduction.

## Conclusion

If beverage companies continue their emission reduction journeys at the current pace, they will fail to achieve their targets. However, by implementing proposed reduction methods, they can achieve their net-zero targets by 2039 in our “aggressive” scenario, or by 2045 under a more realistic, less stringent timeline (see figure 5). Accelerated, aggressive sustainability agenda implementation of the proposed levers would also enable companies to successfully achieve their interim 2030 objectives ahead of plan, by 2028 in some scenarios.

Figure 5

**Using the available emissions reduction levers, the beverage industry can achieve both the interim and net-zero targets ahead of time—by 2045 at the latest**



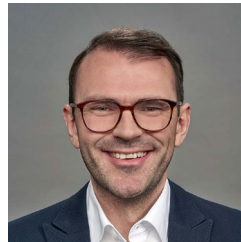
Source: Kearney analysis

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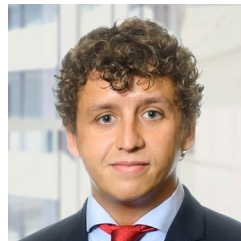
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## How KHS is helping the beverage industry become more sustainable

### **KHS is one of the biggest suppliers to beverage producers. How interested are your customers in a more sustainable product?**

The interest of our customers in sustainable products from KHS continues to grow. In regard to our lines and machines, this is particularly reflected in the desire for greater energy efficiency and media savings during their ongoing operation. One key focus of the new and further development of our plant engineering thus lies in saving energy. KHS's range of services—which includes more than 130 modernization measures (upgrades) a year—also contributes to this. The demand—especially for options like these—has noticeably increased in conjunction with the energy crisis and the disruptions in supply chains worldwide. Furthermore, the issue of water is also a top priority for our customers. Many of them feel that responsible water management is just as important as avoiding or further reducing CO<sub>2</sub>/greenhouse gases.

KHS has also been questioned about how our machines are assembled, in regard to their recyclable content and thus the carbon footprint of prime materials such as the stainless steel or plastic built into our machinery.

### **Do sustainability issues such as reducing greenhouse gases play a major role in a client's decision to buy?**

As mentioned above, this aspect is of increasing relevance to KHS and takes on various forms. Firstly, these consist of short- and long-term group-wide targets and measures aimed at reducing greenhouse gases. Secondly, it refers to the specific systems and solutions we already provide our customers. With this, we're making our own contribution to the planned reduction path in striving for net zero by 2045, which our parent company Salzgitter AG committed to in 2022 by joining the Science Based Targets initiative. KHS is currently working on this task and on implementing measures to reach this target. In addition, for almost 10 years now we've issued a regular voluntary report on our commitment to sustainability and have successfully completed the EcoVadis sustainability audit every year since 2015. This gives our customers and stakeholders a comprehensive picture of our activities and projects.

### **How much does reducing greenhouse gases play a role when you develop new products?**

In packaging, KHS is able to specifically reduce greenhouse gases for our customers. We do this with the help of life cycle assessments drawn up according to ISO 14067, which we use in customer consulting and which permits us to offer our clients an independently validated CO<sub>2</sub> equivalent broken down to a single type of packaging. Customers can factor this information in when planning to invest in a new machine or replace or expand their plant. Regarding the actual machinery, this issue is much more complex. We're also already highlighting this issue in the use of process media, for example, where we've been able to cut the amount of CO<sub>2</sub> used in the low-oxygen filling of beer into glass bottles by more than 50 percent. Substitution is also an option: we can already completely replace the CO<sub>2</sub> used for the pressurized filling of soft drinks into [r]PET with sterile air, for instance. What's more, a number of new concepts also help to cut energy consumption considerably, such as the double gate on our stretch blow molders used to make [r]PET containers or our Airback<sup>Plus</sup> air recovery system that we've had on offer for many years now. To date, energy was the main focus of our efficiency measures for our lines and machines. This issue—which of course continues to be important—is now becoming just as significant as greenhouse gas emissions. Aiming for a form of operation that's as economical as possible is becoming increasingly governed by growing regulatory or financial market pressure and corporate interest in producing in a manner that's gentle on our environment and climate. KHS also enables its customers to continuously adapt or expand their machines to meet the changing demands made of beverage production. If they wish, they can switch from a packaging system that uses shrink film to one based on paper, for instance. By doing away with the shrink tunnel, operators make considerable savings in energy and thus cut their greenhouse gas emissions. Whether expansion, replacement, or modernization, these measures are an investment in the value retention of the machinery, thus prolonging its life cycle. Reducing and avoiding greenhouse gas emissions plays a central role in the new and further development of a machine system. This will therefore become a composite part of our product development process in the near future.

### **Do you also confer with manufacturers of packaging materials (such as cans and glass bottles)?**

We work in close cooperation with numerous packaging manufacturers, for each optimization of a style of packaging in relation to the selected packaging material and possible further material savings potential results in a lower packaging weight. This alone also helps to reduce greenhouse gases per container or pack. Moreover, lighter packaging consumes less energy in the filling and packaging process, which in turn avoids further emissions.

### **Generally speaking, which do you think are the biggest levers KHS can use to help reduce greenhouse gases in the beverage industry?**

In the short term, energy-related modernizations and packaging systems with a low climate impact, plus line audits at customer sites with a view to identifying possible greenhouse gas savings throughout the production process. Depending on the country, customers can themselves also generate some short-term leverage when it comes to low-emission operations if they use green electricity in production. In the medium term KHS can further drive the lowering of greenhouse gas emissions throughout the entire value creation chain by providing product-related information on the carbon footprint. This helps everyone: our suppliers, KHS, and our customers.

**Many customers feel that responsible water management is just as important as avoiding or further reducing CO<sub>2</sub>/greenhouse gases.**

### **How happy are you with the progress made over the past few years?**

With respect to packaging, KHS has launched a vast number of new products to market and provides future-proof solutions that cater for countless customer requirements—especially fast systems, such as the one that switches from virgin film to film with a high post-consumer recyclate or PCR content for use in secondary packaging. Just this allows up to 65 percent CO<sub>2</sub> equivalents per pack to be saved on existing setups. There are also paper systems that provide an alternative to plastic film or our Nature MultiPack that KHS presented at drinktec, the world's largest trade show for the beverage and liquid food industries, back in 2013. Thanks to the dots of adhesive that hold the containers together, the pack now does without any outer packaging whatsoever. This means up to 80 percent less plastic waste and a very small carbon footprint for this type of secondary packaging. In the [r]PET segment our customers can easily change from virgin PET to recycled PET. Preforms made of recyclate plus less material results in an attractive container system that also has an extremely small carbon footprint. KHS has long provided comprehensive expert advice in this field with its more than 40 years of [r]PET expertise. The most recent result of this is the KHS Loop LITE bottle introduced at the last drinktec show in 2022. Where our machines are concerned, KHS is preparing to devise a process for calculating the product carbon footprint and to firmly cement this topic into the new and further development of our lines and machines—not least because this will make a considerable contribution to creating a real circular economy. In doing so, KHS is also following the group strategy approved by Salzgitter AG last year. Moreover, the digital product pass proposed by the EU just recently shows that clear demands will be made of industry in the near future by means of a regulation or possibly even a law.

### **What are your ambitions for the next few years?**

KHS is setting itself clear targets for reducing the greenhouse gas emissions generated both by the company itself and throughout the entire value chain. Here, we want to take a look at our supply chains in the sense of the emissions we buy in. These issues are also always inextricably linked to other environment-related topics such as habitat and human rights. KHS tackles these concerns in context. We also need to shed even more light on a product's end of life. We want to find out more about the scrapping process and where KHS and the customer can retain the most value. KHS must and increasingly will place its products and system solutions under the motto of the circular economy. We're already looking at which form this will take.

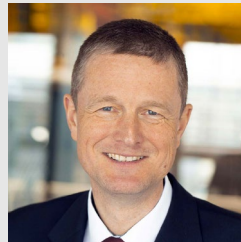
## How can beverage producers help to achieve these ambitions?

It's important that we keep up the dialog with our customers and adopt new perspectives in the context of decarbonization. This exchange helps us to see the fundamental changes against the backdrop of climate change as an opportunity and to be open to new thoughts and ideas. Through this, we can also better understand what drives and motivates our customers. We can thus reflect on our own actions and ask ourselves whether we're on the right track, whether we're still making suitable offers that also comply with beverage producers' climate goals. Concerning digitalization, for example, the Internet of Things is a promising topic yet it also requires us to see inside our customers' production processes and request specific information that can help KHS to make its own products even more efficient. Above and beyond this, with this information we can react much better to individual service scenarios, provide proactive support, and in this way prolong the life cycle of our systems and retain their value.

## Which role can the state or consumers themselves also play here?

The state is pushing ahead at great speed with lots of changes needed to protect our climate. However, uncertainties remain. Regarding its own corporate decarbonization measures, for instance, KHS can't accurately foresee how the energy markets are set to develop both in Germany and outside it, nor forecast what the related availability and infrastructure will look like when we invest in future-proof measures. Funding opportunities are also not always easy to fathom. Which options are there? How quickly can funds be provided? What are the possible scenarios for facilities located outside Germany? We need to see the whole picture—in the EU and beyond. Irrespective of this, however, we also want to seize this opportunity and ourselves stay committed as we have a responsibility of our own and our own levers we can use. I'd like to cite a current example of our understanding of sustainability here, namely the solar cooperative set up just recently by a group of KHS employees. The first photovoltaic plant will go into operation at our headquarters in Dortmund very soon. Thanks to this marvelous commitment, in the future we can procure self-generated renewable electricity from the cooperative on very favorable terms and at the same time strengthen the cooperative, as further production sites are to follow.

From consumers we need a more differentiated view on environmentally friendly packaging, one that's less emotional and more science based. This means that we need to provide even more information on which packaging system is most favorable in regard to its carbon footprint and other environmental aspects—depending on the application and local disposal structures, of course. There isn't a global standard answer here. It's good when consumers check to see if the packaging they buy is already made of recycled materials and can preferably also be returned to a closed loop ([r]PET recycling systems for non-returnable or NRET containers or returnable PET containers). Returnable or RET glass containers are a two-edged sword for these are often individualized, meaning that a brewery from Bavaria that markets its products nationally needs all of its glass bottles returned to its site. This can clock up hundreds of kilometers for the transportation of the empties, usually by truck. As a first step it's therefore better to drink regional beers or other regional beverages out of RET bottles. The recycling system for NRET [r]PET bottles also needs to be further expanded Europe-wide. Here in Europe, too, this is still very much a patchwork system, although the EU is demanding a return rate of 90 percent in all of its member states by 2029. This topic needs to be addressed more strongly in schools and companies (after all, we're all consumers) and carbon-intensive products possibly need to be clearly identified as such in stores—but if so, this must be according to strict regulations and not using labels fabricated by individual stakeholders to undermine greenwashing.



### Kai Acker

After training as an energy electronics specialist, Kai Acker studied general electrical engineering at RWTH Aachen University and went on to obtain a Master of Business Administration (MBA) from the Technical University in Munich, Germany. After working in the chemical industry and various other sectors, during which time he spent several years in Indonesia, he held managerial positions at Kronos and Leoni. In 2018 he was made CEO of KHS and in 2019 he also became a member of the group management of Salzgitter AG as head of the Technology Business Unit.



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