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Mastering food and beverage packaging

How to achieve financial and sustainability goals through holistic packaging optimization

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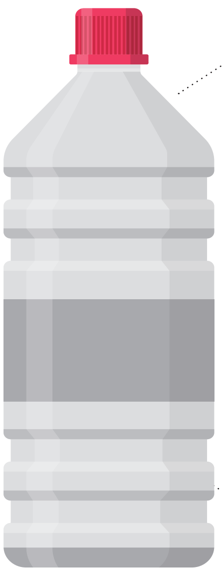
EXECUTIVE SUMMARY

The food and beverage (F&B) industry has experienced turbulent times in recent years. Economic and geopolitical challenges including high levels of inflation have caused costs to skyrocket. Add to this increasingly stringent regulation, consumer demand for sustainability, supply shortages, and more — all while consumer buying power is dropping. F&B companies are truly facing unprecedented pressures. Rethinking packaging can help ease this pressure.

Over the past three years, costs for packaging materials such as glass and plastic have increased by ~24% and ~35%, respectively.[1] Higher raw material costs are passed on to consumers, with a negative impact on demand. Since packaging within F&B accounts for ~10-20% of a product's price and, as a byproduct, is mostly thrown away, it is an excellent target for cost reduction.[2]

Additionally, packaging has a significant environmental impact along the value chain, ranging from plastic waste, raw material and water use to greenhouse gas (GHG) emissions in production and transportation. Typically, packaging accounts for ~25-35% of a F&B company's total GHG emissions.[2] Leading F&B companies are responding to increasing stakeholder demands and regulation by setting ambitious sustainability targets for packaging.

1 Raw material price indices as of June 2023 vs. June 2020 (Source: FRED Economic Data)
2 Based on prior project experience by Strategy&



Product price split

50-55%	Raw materials (product)
10-15%	Production
7-10%	Packaging material
6-13%	Packaging process
6-12%	Administration
5-15%	Transport
5-5.5%	Margin

Holistic packaging optimization along the entire value chain can reduce packaging costs by up to 30% across different material types while simultaneously reducing environmental impact, for example in the form of GHG emissions reductions.[2] Companies can no longer afford to neglect packaging optimization, otherwise they risk being left behind.

For this report, we analyzed 20 of the largest F&B companies worldwide from the retail and CPG space on their individual packaging sustainability efforts. We examine the driving factors and regulatory requirements for packaging today, highlight the gap to close between sustainability targets and regulatory requirements, and how they can successfully transform packaging strategy to deal with internal and external pressures. Case examples show how best-in-class players address the topic. This first article will be complemented by individual deep dives on specific aspects of packaging optimization as part of a series on F&B packaging. Among other things, we will look at optimization levers for specific material types and at opportunities to "close the loop".

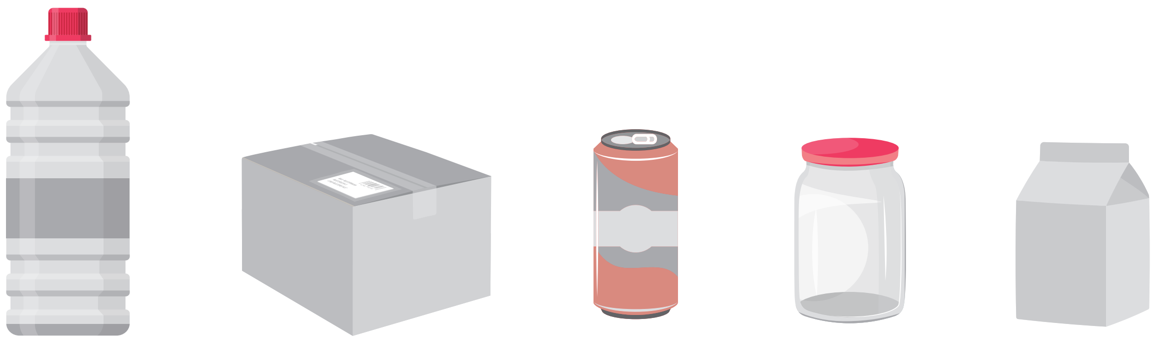
> "Companies have only just begun to realize the economic and environmental potential of packaging optimization."
>
> **Harald Dutzler, Partner and R&C Practice Lead (Strategy& Europe)**

SECTION 1

What are the driving factors for F&B packaging?

Four packaging materials are most prevalent for F&B packaging: plastic, paper, metal, and glass. Plastic had almost 50% market share in 2020 (~26% for flexible and ~21% for rigid plastic) due to its durability, design malleability and low cost. Paper and cardboard follow at 32% market share, being mostly used for dairy products, dry goods (e.g., pasta, cereals) and secondary packaging. Metals, including aluminum and steel cans, have a share of ~11%. Finally, glass represents the fourth-largest material category with ~7%.[3]

3 Source: 'Food Packaging Market: Global Industry Analysis, Trends, Market Size and Forecasts up to 2027' (Infinium Global Research, June 2022)



Packaging material	Plastic	Paper	Metal	Glass	Others
Market share (2020)	47%	32%	11%	7%	3%

To achieve financial and sustainability objectives through packaging optimization, F&B companies need to consider eight internal and external factors that affect decision-making.

From an internal company perspective, F&B companies have to find a way to balance four key factors when optimizing packaging. These boil down to a firm's individual trade-off between the added value to resilience or sustainability from each additional unit of spend. At the same time, companies need to consider external factors when optimizing packaging, which offer opportunities for innovative solutions while staying within the confines of regulation. Two external factors are worth taking a closer look at in the current market: Stakeholder demands and regulation. On the stakeholder side, we observe fundamental changes in attitudes toward sustainability, particularly among consumers. Regarding regulation, global efforts to reduce emissions and plastics waste may lead to binding laws; while in Europe, directives currently being discussed could have far-reaching effects on F&B packaging.

Consumer willingness to pay for sustainable packaging is limited

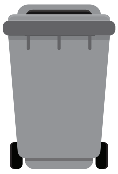
Consumer attention is primarily focused on saving money, producing less waste, and supply chain sustainability.[4] In general, sustainable packaging claims typically do not drive purchasing behavior until a "100% recycled" or similar claim is made. There is a competitive advantage in driving change to achieve this target. In the journey to 100% recycled packaging, with limited cost pass-through potential, working with other players in the value chain is crucial to achieving sustainability objectives in a cost-efficient manner.

4 Source: 'Effective Sustainability Communications' (NYU Stern Center for Sustainable Business, June 2023)

Regulatory landscape for packaging is evolving, with a suite of regulation expected in Europe

Environmental, Social and Governance (ESG) regulation has become increasingly important for how companies design their products and processes. Indeed, understanding and dealing effectively with this new regulatory landscape can be costly for F&B companies – especially, if required competences are missing. However, packaging laws are far-reaching, and companies that are slow to act will likely struggle to comply and could fall behind the competition. When it comes to packaging, three regulations are most significant in Europe:

Packaging and Packaging Waste Directive (PPWD)

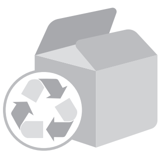


According to the PPWD, packaging in the EU must meet certain recovery and recycling targets. These targets are specified at a material level and include overarching targets for all packaging waste. For example, on average, in the EU packaging waste needs to fulfil recycling rates of 65% from 2025 onwards (70% from 2030, respectively), whereas plastic packaging must meet rates of 50% from 2025 (55% from 2030, respectively). In 2022, the European Commission published a proposal for Revision of the EU legislation on Packaging and Packaging Waste (PPWR). Its main objectives include a 15% reduction in packaging waste by 2040, increasing the role of re-useable and refillable packaging, addressing clearly unnecessary packaging, making packaging fully recyclable by 2030, setting mandatory recycled content rates for new plastic packaging, and providing specifications for biobased, biodegradable, and compostable plastics.

Single-Use Plastics Directive (SUPD)

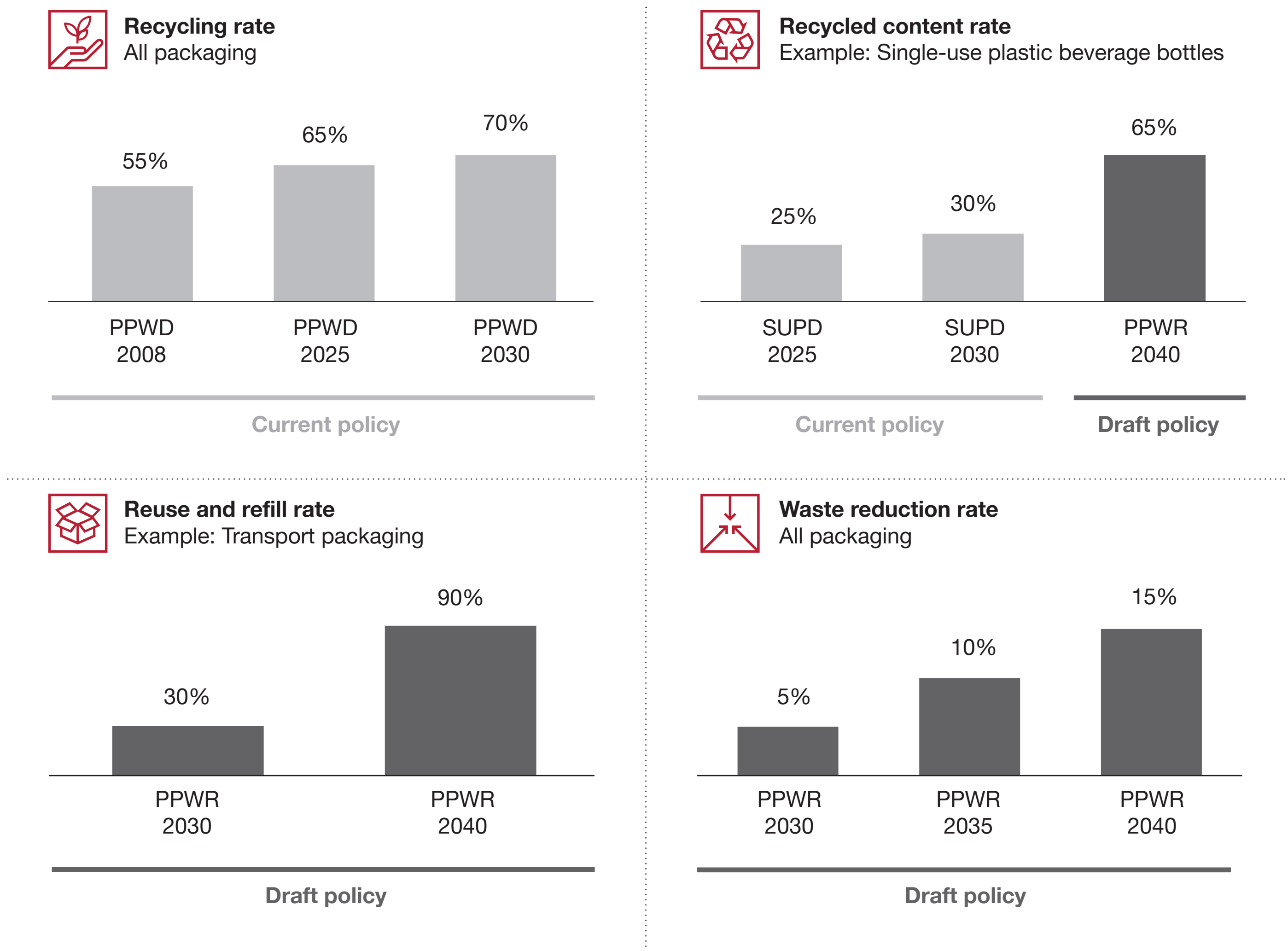
The SUPD prohibits nine types of single-use plastic products and requires a reduction in the consumption of certain single-use plastic products by 2026. In addition, it imposes mandatory recycled content rates of 25% from 2025 for PET bottles and 30% from 2030 for all plastic beverage bottles.

Extended Producer Responsibility (EPR)



The EPR scheme requires producers to bear the financial and organizational responsibility for waste management (including return and collection, as well as reuse and recycling of the collected packaging product and waste). A few European markets, such as the Netherlands, have already implemented EPR schemes (Afvalfonds or "Packaging Waste Fund"). Similar schemes are likely to be implemented across Europe (beginning end of 2024). These schemes require producers in the packaging value chain to work closely with retailers and the waste industry to ensure targets are met.

EXHIBIT 1
Overview regulatory packaging landscape



Source: Strategy& analysis

> There is currently a great deal of uncertainty in the market with regard to the upcoming packaging regulations; companies are trying to determine a compliant and economically sensible packaging type on a country-specific basis."
>
> **Alastair Scott, Partner and ESG Expert (Strategy& UK)**

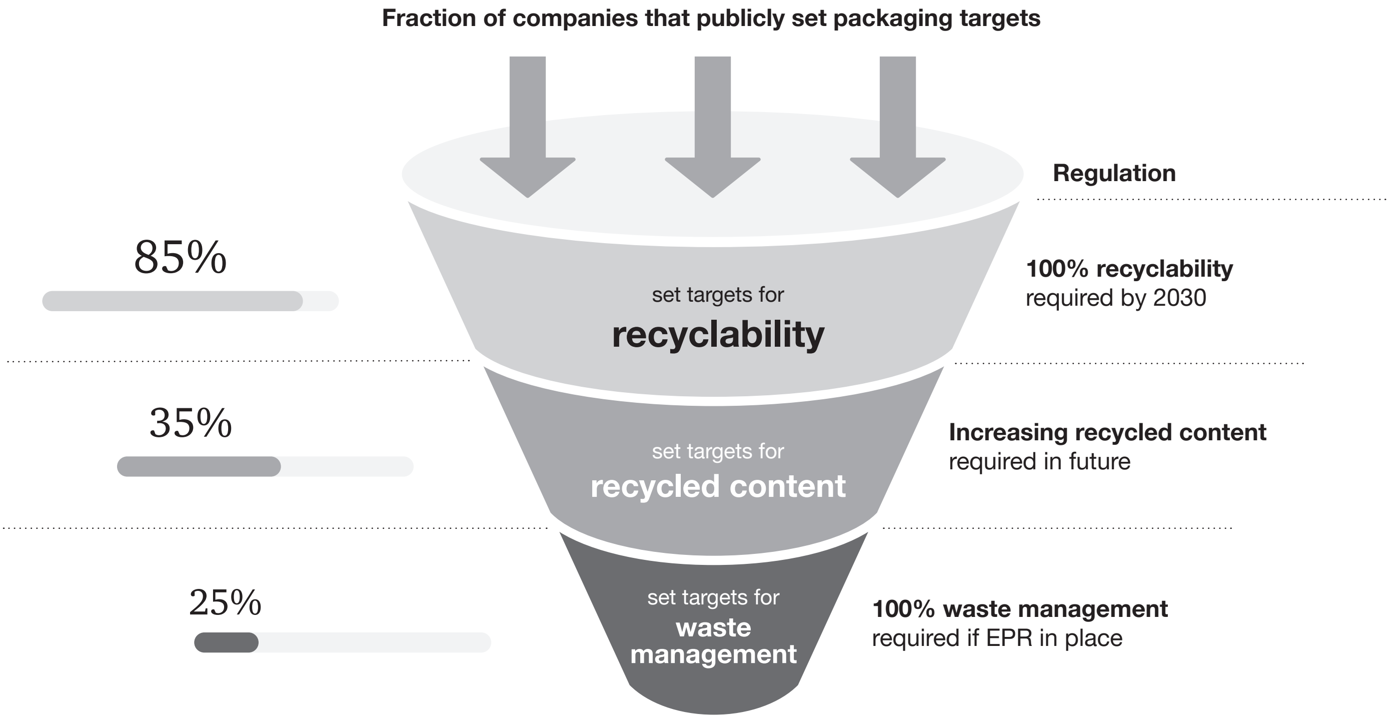
SECTION 2

How do F&B company targets compare to regulatory requirements?

In light of these increasing regulatory requirements, we analyzed 20 of the largest F&B companies with a focus on different packaging materials such as beverage companies, convenience food producers or retailers, on their published targets (10 retailers and 10 CPGs). All have put in place some form of sustainable packaging targets. However, it is evident that only few have anchored these in specific packaging regulation at this stage.[5,6]

5 Evaluated 10 food and beverage manufacturers include: Coca-Cola Co., Nestlé S.A., Heineken N.V., Unilever Plc, PepsiCo Inc., Danone S.A., Ferrero SpA, Mondelez International, Mars Incorporated, and Kellogg's. Evaluated 10 retailers include: Schwarz Group, ALDI (Süd + Nord), REWE, Edeka, Tesco, Carrefour, E. Leclerc, Les Mousquetaires, Sainsbury's, and Auchan
6 Company targets partially set specific targets depending on material or product category. For reasons of simplification, specific targets were accounted for, when calculating averages, implying that overall targets may be lower than displayed

EXHIBIT 2
Overview F&B company targets (as of 2023)



Source: Strategy& analysis

Recyclability targets

85% of the analyzed companies publish targets for the recyclability of packaging, implying the large majority understand its importance. However, considering that PPWR stipulates a quota of 100% by 2030, this still leaves a gap to fill. In 2022, the share of recyclable packaging at companies with published targets was, on average, 81% – meaning there is an ongoing need for action. A key starting point for recyclability is shifting form multi- to mono-material packaging, which can additionally reduce complexity and therefore costs.

Leading the way: Many companies are striving towards full recyclability. One example is Italian-based Ferrero Group that is actively pursuing the goal of achieving 100% reusable, recyclable, or compostable packaging by 2025. The group aims to achieve this goal by, among other efforts, using the concept of a new eco-designed box for Ferrero Rocher. It is made from polypropylene and requires less plastic. Once rolled out across the product portfolio, the company foresees a plastic reduction of ~10,000 tons annually, yielding an additional ~€6 million in cost savings.[7]

Recycled content targets

Only about one-third of the analyzed F&B companies set specific targets on recycled content in packaging, despite regulatory obligations. On average, these companies had a recycled content rate of 38% in 2022 – a considerable gap to the stipulated 50%-100% targets proposed by regulators by 2030. However, this gap is not surprising.

When it comes to plastic, for example, recycled plastic remains more expensive than virgin plastic. There are several reasons for this, including the shortage of waste plastic stock and the high cost of recycling processes (which is aggravated by high energy prices today). On the other hand, increasing recycled content in metal packaging can help reduce costs and GHG emissions. This is because less energy is required in re-melting metals such as steel than in primary production processes. In either case, companies need to secure access to recycled feedstock and avoid being left behind when the laws are in force.

Leading the way: US-based Mars Inc. released its new “KIND” packaging in 2022 that is not only recyclable but replaces virgin plastic with recycled content. In developing this packaging, Mars took a holistic perspective and collaborated with five players across the value chain, ranging from recycling to packaging companies. The result is a flexible plastic packaging for its snack bars that consists of virgin-quality food-contact approved recycled polypropylene.

Waste management targets

As few as one-fourth of the firms included in our study have set targets linked to packaging waste management. At the same time, the forthcoming PPWR could potentially compel a 15% reduction in packaging waste by the year 2040. It also becomes evident that the economic potential of specific waste streams remains largely untapped by F&B companies.

Leading the way: The German Schwarz Group is a pioneer in this area. As the owner of the Lidl and Kaufland supermarket chains and recycling company PreZero, the group has vertically integrated packaging disposal and recycling, ensuring material availability through a closed-loop system for single-use packaging, enhancing its waste-management capabilities. Among other things, this has enabled Lidl and Kaufland supermarkets to sell products made with 100% recycled plastic supplied by PreZero.

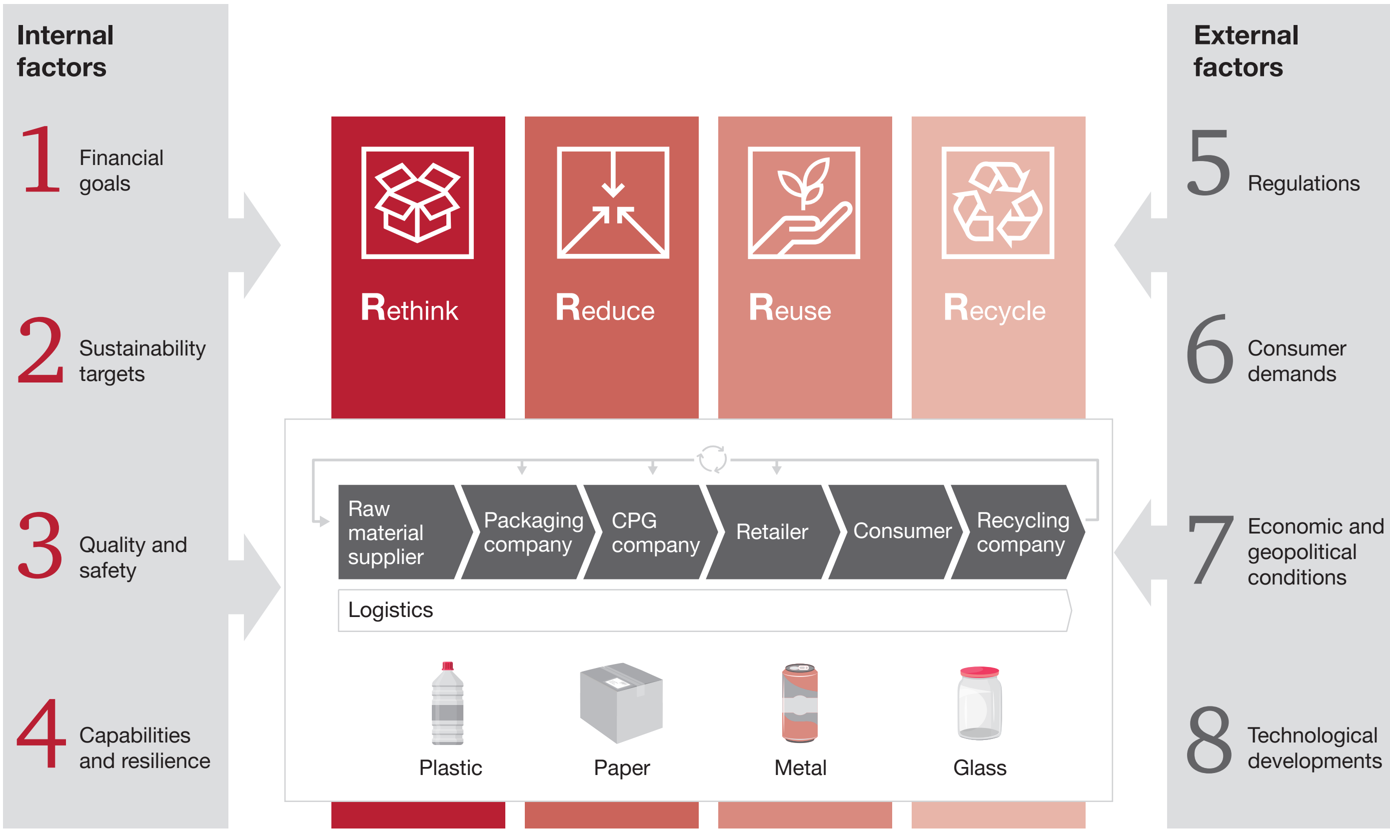
7 Estimate based on September 2023 primary plastic price with average of €0.60, based on research conducted by Plasticker (2023)

SECTION 3

How can F&B companies win with packaging?

To increase profitability and fulfil mandatory as well as voluntary targets, companies need to optimize packaging in an economic and sustainable way. In this respect we consider four action fields: Rethink, Reduce, Reuse, and Recycle.

EXHIBIT 3
Holistic and sustainable packaging optimization action fields



Source: Strategy& analysis, Ellen McArthur Foundation

Rethink

The first action field necessitates a fundamental rethinking of product and portfolio design, business processes, or even the overarching business model itself. Often, this requires F&B companies to be open to structural changes to address profitability and improve sustainability. It could require CPGs to reshape long-standing product designs for better packaging utilization or retailers to reconfigure known procurement processes to engage directly with packaging companies. To ensure long-term material access and a lasting competitive advantage, F&B companies may need to expand into other segments of the value chain such as the recycling market and think about which capabilities to build up in-house versus outsourcing.

1

Reduce

Reducing resource consumption is a strategic lever for F&B companies aiming to realize cost savings while fulfilling sustainability metrics. The most obvious approach focuses on reducing packaging material itself, as done through lightweighting or new designs with less material. In addition to lower volumes, the reduction of energy requirements, transportation needs, and waste related to packaging are on the agenda. This can be achieved, for example, through innovative packaging materials with higher shares of recycled content, optimizing inefficient packaging dimensions or poor planning processes. F&B companies need to act fast here, especially since this lever to reduce costs and associated GHG emissions is often within their direct control.

2

Reuse

Packaging designed for multiple uses, such as refillable containers or returnable crates, can reduce volumes of single-use waste. Reuse approaches are also an opportunity towards closed-loop systems that have the potential to strengthen bonds with consumers and improve a company's market position. However, it is crucial to assess whether reuse is feasible and beneficial in each specific instance. Reuse can be challenging due to logistical issues, for example, the need for a reverse logistics system to collect and sanitize packaging, or safety and hygiene requirements. In other situations, reusable packaging may unlock additional revenues through extended product offerings. With careful planning, F&B companies have a chance to capitalize on the potential for long-term cost savings and a reduced environmental footprint.

3

Recycle

The pivotal role of recycling is widely known; doing it correctly remains an important pillar. A major aspect is the usage of materials that are readily recyclable and support existing recycling infrastructure. Additionally, the increase of recycled content in packaging contributes to a circular economy, with recycled material facilitating waste reduction and resource conservation. While this focuses on the environmental aspects, companies also need to assess what economic benefit they see in recycling. Not only is there potential value in waste streams – ensuring access to recycled content can help mitigate raw material shortages and price volatility. These aspects require companies to address the question of how they can participate in these benefits. The possibilities range from engagement with packaging converters, to offtake agreements with recycling companies, to acquisitions and financing recycling technology developments.

4

Value chain collaboration as key to lift the full potential in packaging optimization

Across the four action fields, F&B companies need to take a holistic perspective along the entire value chain. Along each step of the value chain, packaging-related costs and GHG emissions emerge. To achieve real progress, collaboration with other players is essential. To ensure meaningful outcomes, this requires combining the differing backgrounds of stakeholders in a meaningful way and utilizing their expert knowledge. For example, CPGs should collaborate more closely with the packaging or even raw materials processing industries to develop the most efficient packaging. At the same time, retailers need to be involved to ensure that packaging dimensions also enable efficient transport and shelf utilization. Finally, companies should consider extending beyond their direct value chain to the broader packaging ecosystem, drawing on start-ups and NGOs to create new solutions. Together, players can pool resources to find cost savings and reinvest them to achieve packaging targets, which often require investment to realize sustainability gains. The four levers presented can rarely be considered in isolation – intensive value chain collaboration allows maximizing their potential.

Case study 1

Strategy& worked together with a global beverages firm to optimize procurement of their packaging material. Ambitious sustainability targets at the client, including scope 3 emissions, required looking into the 30% emissions at tier 2+ packaging suppliers. Moreover, the company was looking to improve cost and availability of its raw materials. This required mapping the value chains of key packaging materials and evaluating the cost and emissions drivers. An opportunity sizing to value CO_2 emission reduction through low CO_2 production and recycling was conducted. As new technical capabilities were required at the client to engage in raw material sourcing with tier 2 suppliers, an implementation roadmap outlined the knowledge and resource build-up.

Case study 2

With the Strategy& Value Chain eXcellence approach for intensive supplier collaboration we supported a F&B retailer in optimizing primary and secondary packaging for meat products. Joint workshop sessions combined with factory visits together with an external packaging expert resulted in dimension and filling quantity changes and print specification adaptations. Multi-usage of same-style secondary packaging led to volume-bundling effects, while the optimized dimensions allowed for better shelf utilization at the retailer. The efforts resulted in cost reductions up to 30% per packaging unit, plastic savings of approximately 15 tons per stock keeping unit and internal cost reductions through better use of pallets.

Case study 3

In supporting the client's sustainable packaging endeavors for their ready-made food section, Strategy& developed a reusable packaging system to fulfill both their sustainability goals and comply with Germany's single-plastics use regulation (§33 VerpackG). Employing a collaborative approach, a reusable packaging system provider and various stakeholders across the value chain were engaged, resulting in a user-friendly yet regulation- and retail-compliant system. This not only demonstrated a shared commitment to reducing environmental impact but also an optimized economic performance in the long run. With the enforcement of the EU's SUPD and anticipating a future price increase for single-use plastics, our strategic implementation of reusable packaging serves as a measure to mitigate potential cost escalations.

SECTION 4

What actions should F&B companies take right now?

The playing field for companies is diverse and ranges from quick wins to structural, long-term measures. In either case, an individually tailored approach to a company's product or business situation is essential. In many cases, companies lack a powerful internal stakeholder as well as the required capabilities to drive packaging optimization. While sustainability departments seem to be the first contact for this topic, in most cases, we observe that procurement or category management departments are often the driving force behind packaging optimization, primarily pursuing commercial aspects. To tackle the topic effectively, companies need to address the following aspects now, which sit at the intersection of commercials and sustainability:

1. Work cross-functionally	Set up a task force with a clear responsibility for packaging optimization. A multidisciplinary team led by procurement or category management, supported by sustainability, SCM, commerce, finance and packaging experts (potentially external) can prove most effective.
2. Integrate cost and sustainability packaging KPIs	The relevant sustainability KPIs need to be added to procurement or category management targets using a balanced score card. A pragmatic set of rules is required to give responsible teams guidance on how to balance sustainability benefits and additional cost.
3. Analyze and challenge your own portfolio	Assign the multidisciplinary task force to focus on high-volume products or suppliers. Base a structured optimization project on the four levers presented above and engage external packaging experts where required.
4. Engage in value chain and ecosystem collaboration	Collaborate with value chain players beyond tier 1 suppliers upstream and with downstream players to jointly identify packaging optimizations with a benefit for the value chain. Broader engagement (with e.g. government, NGOS, peers and others) is a necessity to achieve scope 3 emissions reductions and circular economy objectives, where the investment required to create change outstrips the capacity of one company to finance the shift.

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