



Unleashing Sustainable Value in Food & Agriculture

Comprehensive report

October 2024

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Foreword



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Sustainability is crucial for the food and agriculture industry, which plays a vital role in feeding the world's population. However, the sector faces significant challenges such as environmental degradation, resource depletion, and social inequities, all of which contribute to thin profit margins and increasing volatility. Currently, agrifood systems consume 70% of the world's freshwater¹ and generates one-third of global greenhouse gas emissions.² At the same time, there exists growing demand for sustainable products and increasing concerns about well-being. Together, these factors highlight the urgent need for meaningful change. The complexity of supply chains, interconnected food systems, and escalating climate impacts make the current pace of change inadequate. Addressing these challenges through sustainable practices will be essential for the planet's health, human well-being, and the long-term viability of businesses in this sector. By integrating sustainability into core business strategies, organizations can unlock growth opportunities, enhance resilience, and mitigate risks. Our research helps clarify the value provided by sustainability strategies to help organizations across the food value chain increase investments and accelerate change.

The New York University Stern Center for Sustainable Business (CSB) and Deloitte believe in empowering organizations to make a measurable and attributable impact. CSB enables current and future business leaders to unleash the transformative potential of business to solve societal challenges at speed and scale. Deloitte is committed to helping organizations address significant challenges and accelerate transformative solutions, helping pave the way for a more equitable and purposeful future. CSB and Deloitte bring their combined expertise and shared vision to drive meaningful change in the food and agriculture sector, fostering a more equitable future while maximizing financial value.

This joint report details how sustainability investments drive financial value in five key areas: **processing, manufacturing, food services, restaurants, and retail**. Our initial Executive Summary publication released in March 2024, [Unleashing Sustainable Value in Food & Agriculture](#), highlighted the business benefits of sustainability strategies, presenting research findings, key themes, and actionable steps to capture value potential. In this comprehensive report, we revisit the key content from the Executive Summary and delve deeper into the unique aspects of each of the five in-scope value chain segments. We share key trends and insights into the specific strategies and types of value chain collaboration that help drive greater financial value for each segment. We also offer actionable steps that organizations within each segment can take to capture greater financial value.

Our research findings demonstrate that there is a clear business case for investing in sustainability strategies across the food and agriculture value chain, especially when we take the time to consider the holistic value impact. Our findings also reveal that there is not a one-size-fits-all approach to implementing sustainability strategies, as there are important nuances depending on where an organization sits along the value chain. **Our hope is that through this research, organizations will better be able to invest with confidence and drive action forward to build more resilient and sustainable food systems to feed future generations, while also enhancing their financial performance.**

Summary

Nearly all respondents we surveyed reported that they realized financial value from their investments in sustainability; however, financial benefits are affected by where a company sits on the value chain

To better understand the financial drivers for investing in sustainability strategies across the food and agriculture value chain, CSB and Deloitte used CSB's [Return on Sustainability Investment \(ROSI™\)](#) methodology and framework. The study focused on 12 ROSI™ sustainability strategies (summarized in figure 3) and included a 25-question survey completed by 350 executives from five value chain segments: processing, manufacturing, food services, restaurants, and retail. This work was also supplemented with interviews with food and agriculture companies for further insights, along with additional ROSI™-related research and case studies.

The research illuminated insights on financial benefits across the value chain and found that value creation opportunities differ based on where a company sits on the value chain. We analyzed the following value chain segments:



Processors

Convert raw materials (e.g. cattle, grains) into ingredients or intermediate products



Manufacturers

Convert ingredients into branded food products that are sold through multiple channels including food service, restaurants, and retailers



Food Services

Buy ingredients from for processors and/or manufacturers and store, prepare apportion, transport, and/or package food to be consumed typical in institutional settings



Restaurants

Prepare and serve food and drinks to be consumed on premise, through take-out, or via delivery services including quick service restaurants (QSRs) casual, full-service, and gourmet



Retailers

Source products, typically from manufacturers to sell to businesses or directly to customers (includes traditional grocery stores (e.g. supermarkets) and non-traditional grocery store (e.g. wholesale)



High-level findings for each value chain segment analyzed

Processors

Processors see higher revenue growth and can charge more for sustainably produced commodities. Specifically, 83% of processors reported at least 2% revenue growth from sustainability efforts, making them the second-highest segment after food service providers. Additionally, 22% of processors reported more than 5% revenue growth, the highest among all segments analyzed. These impressive growth rates are likely due to the limited supply of sustainable products, their ability to charge higher prices, and the consolidation of processing companies. Moreover, processors have found that engaging more with the value chain and using better technologies to track and verify outcomes can significantly speed up the adoption of regenerative agriculture practices. The processors surveyed mentioned various strategies that added financial value, including managing food waste and loss, energy management, and sourcing sustainably and responsibly.

Manufacturers

Manufacturers appear to achieve lower rates of revenue growth and cost reduction compared to other value chain segments. They constituted the smallest proportion of respondents in each of the following categories: realizing at least 2% cost reduction; more than 5% cost reduction; and more than 5% revenue growth. Notably, only 5% of manufacturers reported capturing more than 5% revenue growth, the lowest proportion reported among all segments analyzed. Manufacturers reported the second-lowest proportion of respondents reporting at least 2% revenue growth, with 80% of respondents (only higher than restaurants, at 65%). These low rates of revenue growth and cost reduction may be due to the challenge that manufacturers face of being both a business-to-business (B2B) and business-to-consumer (B2C) company. Having to address the sustainability goals of retail and restaurant customers, along with those of end consumers, can be difficult to manage especially given the high capital investments required by manufacturing. Additionally, manufacturers may pay a price premium to processors for sustainable products but may be unable to pass the cost along to downstream customers, who may have varying needs. That said, manufacturers surveyed reported a variety of strategies that helped them generate financial value, including those related to animal welfare and sustainable sourcing.

Food service providers

Food service providers appear to achieve relatively high rates of revenue growth compared to other segments, with mixed results for cost savings. With 86% of food service providers reporting at least 2% revenue growth, they outpaced all other roles for this statistic. However, only 11% reported revenue growth of more than 5%, which is in the mid- to lower-end compared to other value chain segments. Food service providers had the second-highest proportion of respondents (77%) reporting at least 2% cost savings, only second to retailers (80%). They are unique in their heavy resource use, for instance in energy use for cooking and refrigeration, and in water use for cleaning and serving. Programs that reduce resource footprints drive both revenue and cost savings through operational efficiencies. Food service providers highlight sustainable supply chain sourcing, energy management, and water stewardship as top revenue-driving strategies that also cut resource use. Co-investment is crucial for food service companies, especially when it comes to aligning with their customers on energy and water management at customer facilities. Food service providers reported financial benefits from sustainable sourcing programs, with 29% of respondents identifying it as a top revenue-generating strategy. They also achieve revenue and cost savings through resource reduction initiatives, particularly in energy and water management.



Restaurants

Restaurants report value creation from similar strategies as food service providers, but their closer proximity to end consumers creates unique advantages around monitoring and responding to consumer demands and trends. However, despite these advantages, they face significant social sustainability challenges such as high turnover, low productivity, and low customer satisfaction which may be due to low pay and poor working conditions for frontline workers. Notably, restaurants were the only value chain segment that highlighted investing in employee well-being as a top revenue-driving strategy, with 26% of survey respondents identifying it as such. That said, restaurants captured the lowest rates of revenue growth across value chain segments analyzed, with only 65% of respondents reporting at least 2% revenue growth and only 12% reporting more than 5% revenue growth. Restaurants operate in a highly competitive industry with low barriers to entry, leading to market saturation in many areas. This landscape and dynamic often makes it difficult for restaurants to drive new customer acquisition. Despite their lower rates of revenue growth, restaurants reported significant cost savings, with a relatively medium to high proportion (75%) of restaurants realizing cost reductions of at least 2%. Restaurants identified sustainable and responsible supply chain sourcing as a top cost-saving strategy.

Retailers

Retailers appear to achieve high rates of both revenue growth and cost reduction, with 82% of respondents reporting at least 2% revenue growth and 80% reporting at least 2% cost reduction. Additionally, 20% of retailers reported more than 5% revenue growth, the second-highest proportion reported (only behind processors). Retailers' direct access to consumer purchasing trends and consumer interaction not only helps drive revenue growth, but also drives cost savings because they can quickly adapt to optimize offerings, reducing costs by streamlining product offering or services, and enhancing those that perform well. Retailers surveyed reported strategies related to sustainable packaging, verifiable sustainability claims, and sustainable sourcing as key revenue drivers.



Guidance on navigating this report

The findings presented in this report builds upon the key themes and insights previously shared in our initial Executive Summary publication. This report resurfaces those findings, as you will see in the **Key themes across the value chain** and **Path forward across the value chain** sections on page 14 and page 75, respectively. It then builds upon those initial findings to provide value chain segment deep-dives with detailed insights and actionable steps for each segment.

Each value chain segment analysis details trends, insights, and top strategies associated with revenue growth and cost savings. It also outlines findings around co-investment and the types of value chain collaboration that drive value, and analyzes the motivations that each segment had prior to investing in sustainability strategies compared to the value realized after investing. Toward the end of each value chain segment analysis, we offer actionable “path forward” steps that companies in that particular segment can take to drive value from their sustainability strategies, including the following:

- Act & adapt
- Drive progress in the face of uncertainty
- Invest in your enabling environment and establish key partnerships
- Pursue collaboration and co-investment opportunities

Each deep dive offers specific actions for each respective value chain segment analyzed in the **Act and adapt** step. Our **Path forward across the value chain** section starting on page 75 shares broader recommended actions that companies, regardless of where they sit on the value chain, can take to drive value.

By embracing the insights offered in this report, fostering collaboration, and taking decisive action, companies across the food value chain can take the unprecedented opportunity to not only secure their own future success but also contribute to more sustainable, resilient, and thriving food systems.





Key themes overview

We identified the following seven key themes relevant across all five in-scope value chain segments.

Figure 1: Key themes

For more details, please refer to the Key themes and insights section.



Investing in sustainability strategies has demonstrated a strong, positive business case.



The cost of inaction through lost revenue and/or higher costs comes from delaying or withholding sustainability investment.



Opportunity-related benefits were discovered by many companies that originally focus their sustainability strategies on risk mitigation.



Financial benefits are affected by where a company sits on the value chain.



Realized financial benefits from sustainability investments don't fully mollify uncertainty about future value of such investments.



Benefits from sustainability investments are often unidentified or undervalued due to difficulties in measuring progress and value.



Collaboration brings even better results within the interconnected food system.

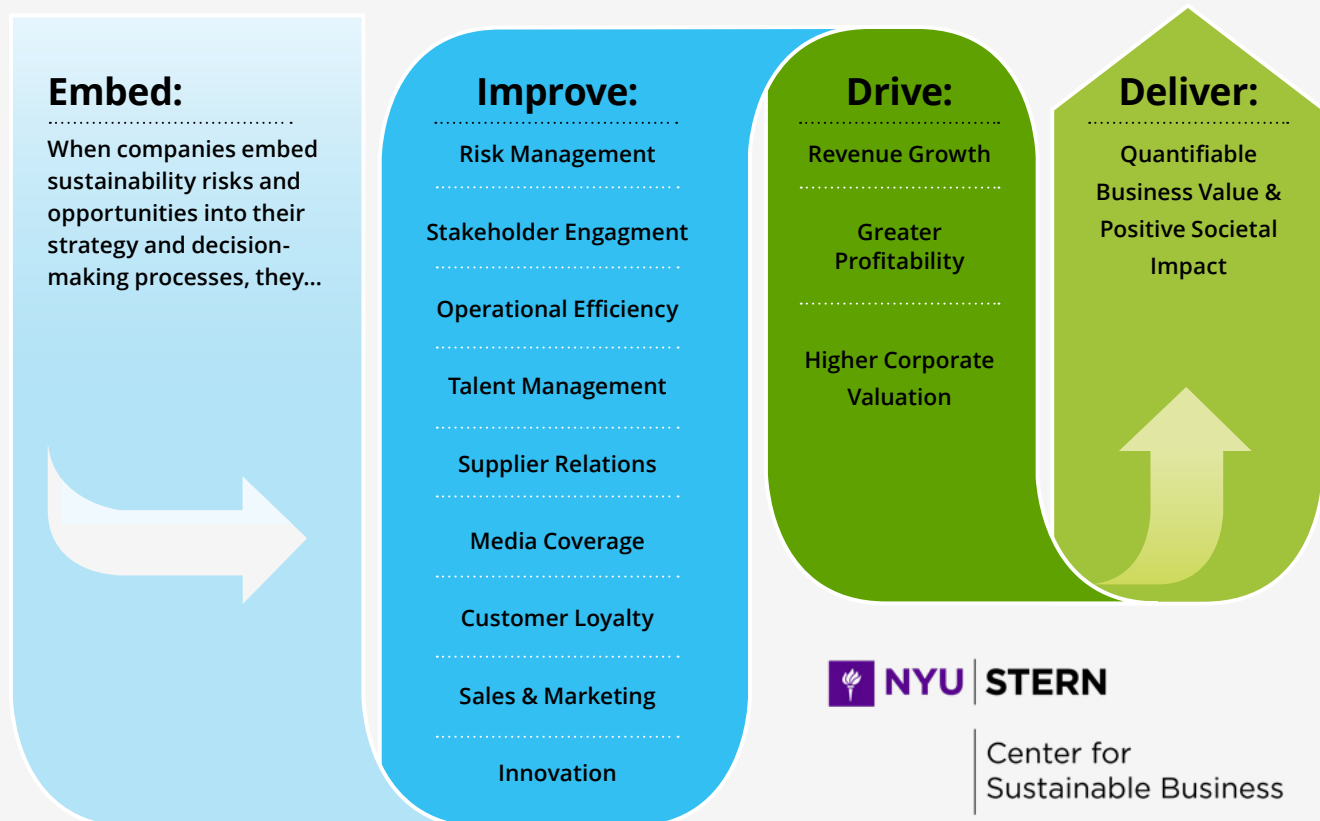
ROSI™ methodology and the food and agricultural framework

The **Return on Sustainability Investment (ROSI™)** methodology, developed by NYU Stern CSB, bridges the gap between sustainability strategies and financial performance, helping to build a better business case for both current and planned sustainability initiatives. For corporate management, ROSI™ can improve corporate strategy and decision-making by accounting for and quantifying the full range of costs and benefits, including intangibles. For investors, ROSI™ improves decision-making, valuation, and communications assessing where relative value exists in corporate strategies and investments and better integrating, measuring, and reporting on financial performance driven by sustainability strategies.

Figure 2: ROSI™ framework overview

Return on Sustainability Investment (ROSI™) Framework

Sustainability Drivers of Financial Performance & Competitive Advantage



Sustainability strategies

Based on the ROSI™ methodology, NYU Stern CSB developed a framework for the food and agriculture value chain³ that identifies 12 strategies that drive value and measure the financial impacts to develop more resilient organizations and unlock financial value. The strategies are summarized below with detailed narratives found on the [CSB website](#).

Figure 3: ROSI™ sustainability strategies

1. This strategy includes energy management and buy and/or sell insets/offsets, which were included in the survey.
2. This strategy was not included as a stand-alone option for respondents to select in the survey but is referenced in the paper as it relates to each strategy.



**Climate Change
Mitigation & Adaptation¹**



Soil Health



**Biodiversity &
Ecosystem Conservation**



Chemical Management



Sustainable Sourcing



Animal Stewardship



Food Waste



Water Stewardship



**Employee &
Supplier Wellbeing**



**Food Safety &
Nutrition**



Sustainable Packaging



**Brand Marketing &
Communications²**

Figure 4: ROSI™ Sustainability strategies overview and key value drivers

| ROSI™-identified sustainability strategy | Why it's important | Key value drivers* |
|--|--|---|
| Climate change mitigation and adaptation: Actions taken to reduce carbon emissions including energy management, decreasing deforestation, adopting agroforestry projects, carbon capture and storage, buying and/or selling insets/offsets | Climate change negatively affects crop and animal productivity, water availability, and food availability, which increases supply chain instability and negatively affects human health and well-being. ⁴ It exposes companies to transition risk (associated with policy and market changes that may increase costs) and physical risks due to extreme weather, causing asset impairments and supply disruptions, and raising costs and input prices. | <ul style="list-style-type: none"> • Risk management: reduced loss of productivity, regulatory requirements, carbon taxes • Operational efficiency: energy savings • Supplier relations: engagement on scope 3 emissions |
| Soil health: Improving soil health with climate smart agriculture | Soil fertility is critical for crop productivity and health, yet approximately one-third of the world's cropland soil is degraded due to erosion, nutrient depletion, acidification, and salinization. ⁵ Improving soil health can protect against drought; fend off plant disease, weeds, and pests; drive increased yields; and restore the soil's carbon sequestration properties. | <ul style="list-style-type: none"> • Risk management: reduced productivity, regulatory risk, volatility of supply • Operational efficiency: water savings, lower insurance costs • Supplier relations: improved farmer productivity |
| Biodiversity and ecosystem conservation: Protect and conserve biodiversity and ecosystems | Declining biodiversity negatively affects ecosystems by making crops more susceptible to pests and disease and increasing the threat of species extinction (e.g., declining number of pollinators necessary for producing fruits, vegetables, and nuts). ⁶ EU passed the first-ever national restoration law to restore ecosystems, habitats, and species across the region. ⁷ Similarly, the USDA is taking a voluntary approach to conservation by funding conservation projects under the Regional Conservation Partnership Program. ⁸ | <ul style="list-style-type: none"> • Risk management: risk of reduced productivity (e.g., farming dependent on pollinator and soil microfauna) • Sales and marketing: customer promotion • Media coverage: positive coverage |
| Chemical management: Reduce the use and misapplication of harmful chemicals | Chemicals misused in food production (fertilizers, pesticides, herbicides, and fungicides), ⁹ food packaging, and food processing (to preserve quality, improve texture and appearance, extend shelf life) can have significant environmental and health consequences. ¹⁰ | <ul style="list-style-type: none"> • Risk management: reduced regulatory fines • Operational efficiency: lower input costs • Sales and marketing: organic price premium |
| Sustainable sourcing: Sustainable and responsible supply chain sourcing | Ensure the supply chain is producing or procuring products and ingredients in a manner that is socially and environmentally responsible, for example, sustainably farmed (using regenerative agriculture, deforestation-free, limited chemical use) and protecting worker welfare (no use of forced or child labor, offering living wages). | <ul style="list-style-type: none"> • Risk management: reputational risk, regulatory risk, operational risk (supply disruptions) • Sales and marketing: customer loyalty • Supplier relations: supplier resiliency, profitability and market access |
| Animal stewardship: Raise, treat, and/or source animals responsibly | Animals subject to stress and pain are more prone to disease and produce lower-quality meat, milk, and eggs. ¹¹ Some grazing practices lead to deforestation, soil degradation, and pollution of streams and waterways. ¹² Animal feed can lead to excess greenhouse gas emissions, ¹³ while the excessive use of hormones and unnecessary antibiotics for animal growth can result in human health issues. ¹⁴ | <ul style="list-style-type: none"> • Risk management: reputational and regulatory risk • Operational efficiency: improved animal productivity, use of byproducts • Sales and marketing: price premium |

* List includes key value drivers most commonly associated with each strategy and is illustrative, not exhaustive

| | | |
|---|---|---|
| Food waste reduction: Improve food loss and waste management | Roughly one-third of food produced for human consumption is lost or wasted globally with 14% of food produce lost between harvest and retail. ¹⁵ This degree of inefficiency has significant economic, social, and environmental impacts resulting in economic losses of approximately \$1 trillion. ¹⁶ | <ul style="list-style-type: none"> • Risk management: regulatory risk • Operational efficiency: use of byproducts and waste • Supplier relations: help upstream and downstream partners reduce waste • Sales and marketing: increased revenues |
| Water stewardship: Invest measures to reduce water use and improve water quality | Water is essential for growing and processing food with approximately 70% of groundwater withdrawals used to irrigate food, fiber, and industrial crops, and for livestock. ¹⁷ The United Nations estimates there will be a 40% shortfall of the available global water supply by 2040 if current consumption and production patterns do not change. ¹⁸ | <ul style="list-style-type: none"> • Risk management: reduced water access and license to operate • Operational efficiency: water cost savings • Stakeholder engagement: improved community engagement |
| Employee and supplier well-being: Invest in employee well-being to promote healthy and equitable working conditions | Food companies depend on the knowledge, skills, creativity, and productivity of their employees and supply chain workers. Regulations exist to protect employees from discrimination based on race, gender, or disabilities; injury (OSHA) and cost of related health care; human trafficking; abuse of migrant workers; environmental impacts (EPA); hate crimes; and loss of privacy. Challenges within supply chains include labor shortages, reliance on temporary workers, job safety, poor worker living standards, low wages, and exploitation (including sexual harassment and forced and child labor). | <ul style="list-style-type: none"> • Risk management: reduced employee lawsuits and human rights litigation • Operational efficiency: better productivity • Media coverage: positive coverage • Talent management: better retention and recruitment |
| Sustainable packaging: Implement sustainable packaging solutions to minimize environmental impact | Packaging represents 5% of the energy used in the life cycle of a food product, making it a significant source of greenhouse gas (GHG) emissions. ¹⁹ Approximately 36% of all plastics produced are used by the food industry, including single-use plastic products for food and beverage containers, approximately 85% of which ends up in landfills. ²⁰ | <ul style="list-style-type: none"> • Risk management: regulatory risk • Operational efficiency: light weighting, lower costs due to substitution or reuse • Sales and marketing: appeals to customers looking for sustainable packaging |
| Food safety and nutrition: Provide healthy nutritious food products and ensure safe food products | The requirement that food is safely produced, packaged, and delivered to avoid illness or adverse health impacts is table stakes for food companies. Consumers are taking a greater interest in ingredients that offer a health boost beyond basic nutrition and seeking out products distinguished by health claims. | <ul style="list-style-type: none"> • Risk management: regulatory and reputation risk • Innovation: new products • Sales and marketing: customer loyalty through belief in the safety of the brand and potential health benefits |
| Brand marketing and communications: Communicate credible sustainability initiatives and product attributes | Research shows that products marketed as sustainable are growing at a faster rate than conventional products and, on average, sell at a premium price. ²¹ To achieve a sales uplift from sustainable marketing, companies need effective communication to deliver sustainability as a driver of consumer preference. Research shows that while category claims are paramount, certain sustainability claims expanded brand reach by 24–33 percentage points above a category claim alone. ²² | <ul style="list-style-type: none"> • Sales and marketing: appeals to customers' sustainability interests • Media coverage: positive coverage |



Key themes across the value chain

Leveraging survey data, stakeholder interviews, secondary research, and the Return on Sustainability Investment (ROSI™) framework pioneered by the NYU Stern Center for Sustainable Business (CSB), our research has revealed the following key findings that were cross-cutting across all value chain segments analyzed:

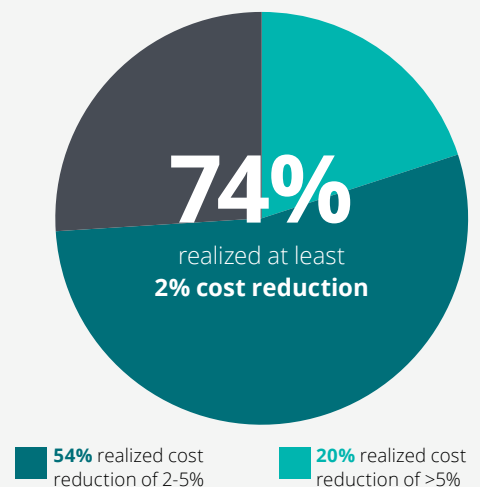
Investing in sustainability strategies has demonstrated a strong, positive business case. Nearly every respondent reported that investing in sustainability strategies has helped their organization realize financial benefits. **Of the 350 global food and agriculture executives surveyed, 99% reported experiencing revenue growth and 98% reported cost reductions in the three years prior** to the survey as a result of their investments in sustainability strategies. Further demonstrating the scale of these benefits, 79% of total respondents achieved at least 2% revenue growth and 74% realized at least 2% cost reduction.

When looking across the value chain segments, there was not one clear strategy that rose to the top for contributing to the greatest revenue increases or cost reductions, but when we look at each node in the value chain, the difference in effectiveness of each strategy becomes apparent. For example, when ranking top strategies that contributed to revenue increases, processors selected improving food loss and waste management, and retailers selected sustainable packaging solutions. Respondents were also asked to rank the top strategies that contributed to decreases in costs—food service providers selected energy management, while manufacturers selected raising, treating, and sourcing animals responsibly. *For details on top value-driving strategies for each value chain segment, refer to our “Value chain deep-dive” sections.*

Figure 5: Revenue growth of surveyed respondents



Figure 6: Cost reduction of surveyed respondents





The cost of inaction through lost revenue and/or higher costs comes from delaying or withholding sustainability investment. Failing to take sustainability action can be costly for both businesses and the planet alike. Although nearly all survey respondents reported that they realized financial benefits from the sustainability strategies they implemented, the majority shared that they also lost value due to delays in or a lack of additional investments in sustainability initiatives. This was found in the form of revenue loss for 57% of respondents (e.g., due to customers switching to other companies or brands and in the form of cost increases for 68% of respondents (e.g., due to increased regulatory costs, stranded assets, reduced access to and/or increased cost of capital. Companies must take quick and decisive action on sustainability strategies to maximize potential opportunities and avoid the cost of inaction. For example, CSB's annual analysis of consumer purchasing of consumer packaged goods in the United States finds that sustainable milk consumption is growing exponentially while conventional milk consumption is in deficit growth. In 2019, the first year we analyzed that data, the two largest dairy producers in the United States (Borden and Dean went into bankruptcy. They struggled to evolve fast enough to keep up with changing consumer preferences.

Opportunity-related benefits were discovered by many companies who originally focused their sustainability strategies on risk mitigation. Many companies expressed that managing downside risk was a primary motivator behind their decisions to invest in sustainability strategies. In our interviews, cost avoidance (a form of risk mitigation emerged as a key incentive for companies; a significant proportion of respondents cited brand and operational risk management as main motivators for investing across their own operations (41% and in their supplier operations (42%. However, when asked about benefits realized

“If we don’t implement practice changes for lower-carbon milk, then our long-term penalty would be much greater because there won’t be a place on shelves for our product.”

– Tim Leviny (Senior Vice President Dairy Foods GDI & International, Land O’Lakes)

after implementing these same sustainability strategies, there was an increase in responses for additional areas such as sales and marketing, operational efficiency, and supplier relations. Rather than solely focusing on managing downside risks, companies can capture greater value by taking a more holistic view and anticipating potential opportunity-related benefits when evaluating and deciding on their sustainability investments.

Financial benefits are affected by where a company sits on the value chain.

The value generated by investments in sustainability strategies is unevenly distributed across value chain segments. There exists continued supply limitations or shortages for sustainably produced inputs that translate to upstream organizations such as processors holding greater negotiating power. According to our survey, processors and food service providers²³ were the best performers for revenue growth, while retailers, food service providers, and restaurants²⁴ were the best performers for cost reduction.

In contrast, midstream companies such as manufacturers have struggled to realize the same level of return on their investments; they face challenges getting access to upstream supply of inputs and are pulled in multiple directions by various downstream customers who have different needs. In many cases, upstream organizations such as processors reap the benefit of capturing price premiums on sustainable products sold; manufacturers pay this premium to processors but often cannot pass the cost along to their customers. In our survey, across both revenue and cost-saving metrics, manufacturers realized lower rates of revenue

“Modeling conducted by third-party economists on the cost-benefit ratio of ag climate initiatives for McDonald’s US found that every dollar invested in mitigation generated nearly three dollars of benefits resulting in enhanced supply chain resiliency.”

– US Sustainability Lead, McDonald’s

growth and cost reduction compared to other value chain segments.²⁵ Our work in the food value chain has shown that improving energy management and investing in water stewardship are high value-driving and cost-reducing strategies throughout the agricultural supply chain and particularly for manufacturers; however, we did not see that reflected in the survey results. Only 25% of manufacturers identified improving energy management and 15% identified investing in water stewardship as top financial value-driving strategies,²⁶ and only 21% and 14% identified these strategies as their top cost-reducing strategies,²⁷ respectively. Possible explanations behind this finding include that there may potentially be a lack of clarity among manufacturers on which strategies drive the most value, they may be balancing a proliferation of needs upstream and/or downstream, or they may potentially not have the resources to implement value-driving strategies.

Case study:

Sourcing sustainable palm oil is a strategy companies implement to avoid deforestation and labor exploitation in their supply chains. Violations can lead to nongovernmental organizations’ (NGOs) pressure campaigns and possible supply disruptions, making risk mitigation the key motivating factor for companies. A large food processor using the ROSI™ methodology to measure the benefits of its no deforestation, peat destruction, or exploitation of labor (NDPE) programs identified sales and marketing benefits (ability to sell to higher-margin customers focused on sustainable inputs), operating efficiencies (lower costs related to reduced customer grievances), and improved employee relations (improved retention and productivity) in addition to risk mitigation benefits, resulting in a 10-year NPV of \$72 million.

Compared to upstream players, downstream organizations such as retailers can more quickly adjust their product mix and sourcing strategies to respond to customer needs. Manufacturers' operations are often capital-intensive, and greater upfront investment is needed to make changes to product formulations or to introduce new sustainable products, limiting their flexibility to adapt quickly to changing market demands. When manufacturers are unable to promptly respond to consumer preferences, they miss out on revenue opportunities. Despite the complex dynamics associated with their position in the value chain, manufacturers have significant opportunities to reap benefits from investing in sustainability—in some cases, these benefits may not be directly tied to only explicit revenue increases or cost reductions but may also include more intangible benefits, as outlined in the McCormick case study spotlighted.

“Retailers serve as a catalyst for change. When consumers demand more sustainable products, they don’t start at the farm – they start at the store. At the same time, it is our responsibility to stimulate behavior change – like what we are doing in Europe with our plant-based protein target.”

– Grant Sprick (VP of Climate & Environment, Ahold Delhaize)

Case study:

McCormick was considering adopting a sustainable sourcing program for its iconic spices (black pepper, cinnamon, oregano, red pepper, and vanilla) but was concerned about potentially facing increased costs in doing so. The company used the ROSI™ methodology in 2020 to identify and monetize the following potential benefits: 1) preserve/improve market share, sales, and profitability; 2) increase brand value resulting in lower cost of capital; 3) reduce risk and avoid associated costs; and 4) increase earned media coverage. Results showed benefits of \$6 million in the first year, with the potential to increase by 60%–70% over six years, as well as net benefits in NPV terms of \$3.7 million and a return on investment (ROI) of 11%.





Realized financial benefits from sustainability investments don't fully mollify uncertainty about the future value of such investments. Although companies are already realizing value from their sustainability investments, some leaders are skeptical about the ability to garner and measure future returns. Our survey found that even though the majority of respondents (60%) expect value from sustainability strategies to increase²⁸ in the next two years, a significant portion (40%) report that they expect value to either remain the same or to decrease.²⁹ This stands in contrast to nearly all respondents experiencing revenue increases and cost reductions from sustainability strategies in 2022.³⁰ This uncertainty reflects concerns of diminishing marginal returns on current strategies, particularly from “low-hanging fruit” initiatives, and the need to address more complex strategies to make progress toward stated sustainability goals and objectives. Furthermore, businesses tend to evaluate sustainability efforts over a three- to five-year time horizon, yet the benefits of sustainability investments will continue to accrue over a much longer duration. As initiatives become more complex, investment in some strategies (e.g., improving soil health with climate smart agriculture, water stewardship, and biodiversity conservation) inherently presents greater risk and opportunity but requires a longer timeline to realize benefits; as solutions continue to scale, they will be better able to unlock future value. Withholding investments from longer-term plays can lead to undervaluing and underinvesting at best, and doing so can threaten a company's license to operate. As the word “sustainability” suggests, these types of investments inherently have a lasting, long-term focus. Better measurement and collaboration can help mitigate risks and boost confidence about future returns.



Benefits from sustainability investments are often unidentified or undervalued due to difficulties in measuring progress and value. Our survey results and interviews with stakeholders revealed that many face difficulties in measuring and tracking value from sustainability strategies. When asked about the challenges faced in operationalizing sustainability claims, 41% of respondents identified difficulties in measuring, monitoring, reporting, and verifying sustainability claims as a top-three potential impediment to meeting demand for products with such claims. Not quantifying value can make it hard to secure, continue, or grow investment, especially when risk avoidance and intangible benefits are overlooked.

Measurement is important but difficult to do. Many variables drive revenue increases and cost reductions, making it challenging to isolate a single strategy as the main driver of value creation; all of our survey respondents reported a myriad of sustainability

“There are a lot of assumptions around customer loyalty, brand, operational risk management, and stakeholder engagement. Anecdotally it helps, but we struggled to comprehensively quantify that value.”

– Cargill

strategies. Additionally, some strategies and results are difficult to measure at scale. For example, quantifying the impact of investments in biodiversity depends on tracking small microorganisms and migrating birds, and connecting changes to crop yield.

Even for things that we can measure and account for, such as carbon, it is hard to do so with sufficient credibility. Existing frameworks can help, such as monitoring, reporting, and verification (MRV) for carbon credits or insets, or disclosures recommended by the Taskforce on Climate-related Financial Disclosures (TCFD) and CDP. Organizations that are successful in developing a robust measurement framework work extensively across functions and with third-party advisers, including NGOs, to ensure credible measurement of benefits.

Case study:

A privately held company providing food services to operators and in-store bakeries applied the ROSI™ methodology to quantify the benefits of renewable energy strategies to achieve the company's GHG emissions reduction targets. Key benefits identified were: (1) reduced regulatory risk, (2) reduced market risk, (3) increased sales to existing and new customers, (4) increased revenue from price premiums, and (5) reduced hiring costs. Based on planned projects in place, the cumulative benefits were estimated at approximately \$700 million over five years.

Collaboration brings even better results within the interconnected food system.

Companies understand that value chain cross-collaboration and co-investment can help increase value from investing in sustainability strategies. Today we are seeing more collaboration to implement sustainability strategies, particularly those addressing water and climate change. Our survey found that the vast majority (84%) of respondents are currently co-investing with organizations across the food value chain³¹ to fund their sustainability

“Supply chain, regenerative agriculture, food waste, and balanced portfolio all depend on our capability to evolve and engage the stakeholder ecosystem, including suppliers.”

– Maud de Meynard (CSR Performance & Transformation Manager, Groupe Bel)

strategies. Of respondents who reported that they participate in co-investing, 43% are doing so with upstream suppliers in their supply chain, which in some cases entails co-investing with farmers, ranchers, and producers. The survey data also revealed a statistically significant positive association between companies that reported engaging in pre-competitive collaboration and/or external partnerships and those that achieved revenue growth of more than 5%; companies that participate in advanced forms of collaboration are reaping more value.

While farmers, ranchers, and producers were not in scope for the survey, they were involved and considered in the creation of the ROSI™ and the food and agriculture framework. They play an important role as the first link in the food value chain, and collaboration with them is critical. Some of the of greatest sustainability impacts can come from initiatives at the farm and ranch level—as such, farmers, ranchers, and producers need to be provided with the right support, incentives, and risk mitigation mechanisms to implement management changes. The case study below featuring Mars demonstrates how collaboration up and down the value chain can provide valuable returns.

Case study:

CSB and Mars built a model to measure the benefits to Mars' suppliers (large intermediary off-takers) of investing in a fund to support farmers in sustainable practices. The fund works with smallholder farmers to restore degraded natural ecosystems, build sustainable supply chains, and improve the livelihoods of rural communities. The analysis showed that stable, sustainable supply chains can improve operating efficiency by increasing the number of suppliers that are professional commercial partners (mitigating price volatility through price transparency) and farmers adopting sustainable practices (reducing risk of crop loss by sustainable farming practices) and gaining direct connection to groups of farmers/suppliers with fewer intermediaries. Assuming an investment of US\$1 million to US\$3 million for an off-taker in its coconut supply chain, and using conservative assumptions, the ROI ranged from 20% to 33%.³²



Reflection on key themes

These findings are from a point in time and reflect an evolving space. Future perceptions and actions will be shaped by changing regulations, the trajectory of climate change impacts, new technologies, shifts in consumer preferences, and an evolving competitive landscape. Carbon reduction goals are widespread across the food and agriculture value chain as a strategy to mitigate climate change; more than 95% of survey respondents report that their companies have GHG reduction targets for scopes 1 and 2, with 46% of all respondents also including scope 3. Going forward, organizations in the industry are encouraged to expand their focus beyond only carbon and greenhouse gases; industry players can consider addressing other areas of concern including biodiversity and ecosystem conservation and water stewardship. It will be interesting to see how companies will approach nature more broadly in their sustainability strategies. This shift in focus is on the horizon, with about one-third of survey participants pursuing strategies to both protect and conserve biodiversity and invest in water stewardship in their own operations,³³ along with the recent disclosure recommendations from the Taskforce on Nature-related Financial Disclosures (TNFD) and science-based targets for nature from the Science Based Targets Network (SBTN). For insights and findings specific to each of the value chain segments, read onwards to the next section which contains deep dives into each segment analyzed.

Please refer to the Survey and interview scope and approach section in the *appendix for details on the approach and methodology on the research survey and interviews conducted.*

Value chain segment deep dives



Processors

Convert raw materials (e.g. cattle, grains) into ingredients or intermediate products



Manufacturers

Convert ingredients into branded food products that are sold through multiple channels including food service, restaurants, and retailers



Food Services

Buy ingredients from processors and/or manufacturers and store, prepare, apportion, transport, and/or package food to be consumed typical in institutional settings



Restaurants

Prepare and serve food and drinks to be consumed on premise, through take-out, or via delivery services including quick service restaurants (QSRs) casual, full-service, and gourmet



Retailers

Source products, typically from manufacturers to sell to businesses or directly to customers (includes traditional grocery stores (e.g. supermarkets) and non-traditional grocery store (e.g. wholesale)

Processors

Processors have a unique position in the value chain as the conduit between the farmgate and branded food manufacturers. In this central role, they are both major buyers of agricultural commodities and critical suppliers of food products to downstream companies. They create value by working with farmers to ensure sufficient availability of sustainable products and by partnering with customers to meet demand for new sustainable products and ingredients. With connections upstream and downstream, processors can drive sustainable strategies throughout the value chain, allowing them to experience resulting revenue growth and cost savings.



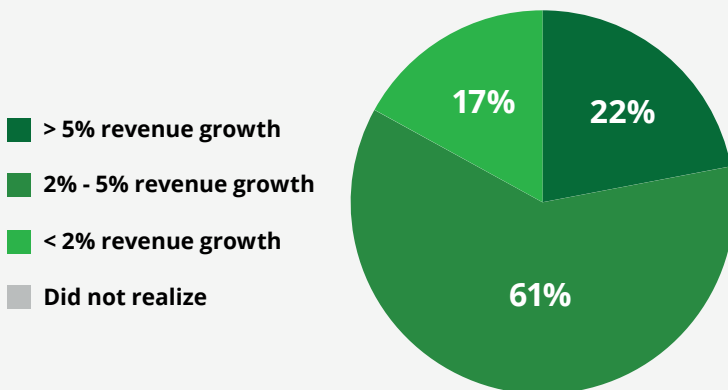
Processors

Convert raw materials (e.g. cattle, grains) into ingredients or intermediate products

Revenue growth overview

83%

of respondents saw at least 2% revenue growth from investing in sustainability strategies



*Percentages may not total 100% due to rounding



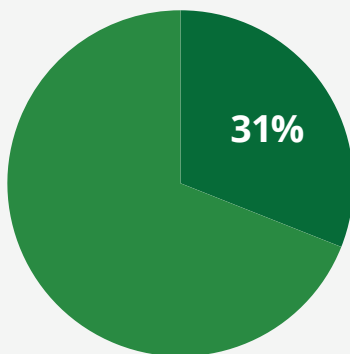
Processors experience highest rates of revenue growth

According to the survey, processors had the largest portion of respondents (22%) experiencing more than 5% revenue growth³⁴ compared to other value chain segment analyzed. These high rates of revenue may be attributed to multiple factors such as supply constraints and the consolidation of processing players. Given that processors hold the supply of sustainably produced inputs amid continued supply limitations or shortages, processors tend to hold greater negotiating power and can charge price premiums to downstream players. Additionally, the processing node in the food value chain is highly consolidated compared to other

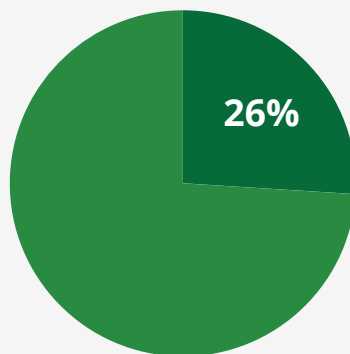
nodes, meaning that there are a few large companies that dominate and control a large share of the market, therefore influencing pricing, availability, and market trends. Additionally, high consolidation can create barriers to entry for new players given the large amounts of capital and scale required to compete effectively. Such dynamics may contribute to the overall finding that processors experience the highest rates of revenue growth among value chain segments.

Revenue-driving strategies

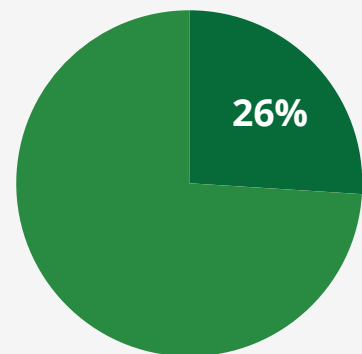
Top 3 revenue-generating strategies selected by processors



Improve food loss and waste management



Improve energy management



Improve soil health with climate smart agricultural

How sustainability strategies drive value for processors

As critical partners to downstream companies, processors can implement sustainability strategies throughout the value chain and leverage various sustainability initiatives to generate increased revenue. In the survey results, top strategies that led to revenue increases for processors, included **improve food loss and waste management** (31%), **improve soil health with climate smart agriculture** (26%), and **improve energy management**, (26%).

Improving food loss and waste management in the supply chain can be achieved by finding alternative uses for food waste at the farm level and within their own operations. Converting waste to animal feed or biofuels can give processors access to new markets and can drive incremental revenues. Processors can also utilize anaerobic digestors to convert waste products into biogas, which not only reduces environmental impact, but can also open new revenue streams through the sale of renewable energy. Utilizing such waste products has the overall impact of reducing the carbon intensity of products used in the supply chain relative to generating inputs from scratch — further improving the sustainability of a processors' operations. Additionally, by ensuring proper storage of crops and ingredients post-harvest, processors can reduce product waste, therefore having more inventory available to sell and thus improving their margins.

Energy management was indicated as a top revenue-generating strategy, reported by 26% of processors as one that drove revenue growth. Improving energy efficiency and adding more renewables to the energy mix can lower a company's carbon footprint and create a commercialization opportunity, such as selling excess renewable energy back to the grid or marketing low-carbon products at a premium. This, in turn, can make an organization's products more attractive to its customers, representing a pathway to reduce the customer's scope 3 emissions.

Energy management has also been leveraged as a cost-saving strategy. Facility and equipment energy usage is often a large driver of operational expenses, and lowering energy consumption can help achieve lower operating costs. In an interview, Brian Nash, VP of Corporate Sustainability at Ingredion noted, "Utilities can make up a significant portion of a company's operating expense. In this case, achieving even something like a 10% reduction could also mean tens of millions of dollars."³⁵

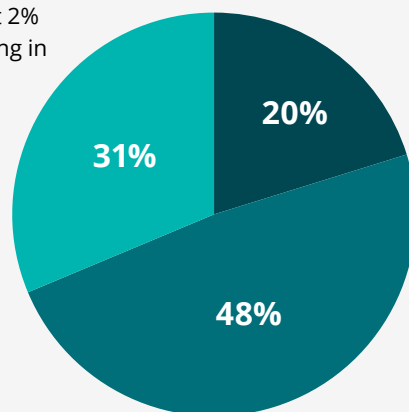
Improving soil health with climate-smart agriculture was also selected as a top revenue-generating strategy, selected by 26% of processors. Improved soil health can be achieved through programs that incentivize farmers to adopt practices to improve land use, productivity, and nutrient management such as cover crops or reduced tillage. An example of this is the LGS Sustain initiative within the Local Grain Services (LGS) program from Tyson Foods.³⁶ While LGS supports direct sourcing from corn farmers local to Tyson operations, the LGS Sustain initiative helps farmers adopt climate-smart practices by offering technical assistance, education, and pay-for-practice incentives including cover crops and reduced tillage. Tyson as a processor can then use this corn to ensure chickens are fed the highest-quality local grain. Similarly, Cargill announced the RegenConnect program in 2021. The program is a voluntary, market-based regenerative agriculture initiative that pays farmers for improving soil health, while also connecting farmers to consumer packaged goods (CPG) companies seeking to buy carbon insets or offsets.³⁷ RegenConnect incentivizes farmers to implement sustainable practices that reduce emissions, improve water quality and use, increase yields, and build soil resilience. RegenConnect was recognized by the prestigious 2023 Edison Awards™ for its innovative approach to creating a more resilient and secure food system.³⁸ Both of these examples show how processors can strengthen supply chain resiliency and add financial and non-financial value to their supply chains, while making progress toward their own sustainability goals.

Cost reduction overview

69%

of respondents saw at least 2% cost reduction from investing in sustainability strategies

- > 5% cost reduction
- 2% - 5% cost reduction
- < 2% cost reduction
- Did not realize



* Percentages may not total 100% due to rounding

Processors capture higher cost savings than other value chain nodes

Processors’ central position in the value chain enables them to implement sustainability strategies both upstream and downstream that can lead to both revenue growth and cost savings. According to the survey, processors realized significant cost reductions, with 20% experiencing cost reduction greater than 5% and 48% seeing cost reduction between 2 and 5%. While some value chain nodes saw higher proportions of greater than 5% cost savings (restaurants with 24% and retailers with 23%), processors reported higher cost savings than manufacturers (16%), and food service providers (18%).

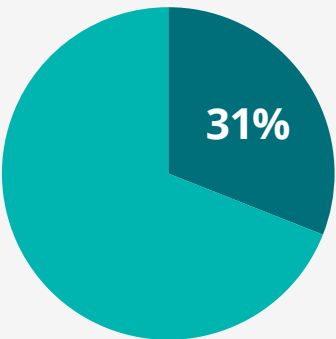
The relatively high rates of cost savings achieved by processors compared to manufacturers and food service providers can likely be attributed to technological advancements and process optimization. Technology can help processors reduce costs by reducing error (human or other manual processes) or increasing the speed of production. Automation can help processors significantly reduce labor costs while also allowing facilities to operate continuously, both increasing the time plants can run and decreasing downtime in between product runs. Additionally, processors can leverage process optimization to increase outputs and improve product quality. Methodologies such as Lean Manufacturing, Six Sigma, and Total Quality Management can all lead to streamlining operations, improvements in run time, reducing waste, and optimal resource usage.

Some value-driving strategies also function as risk-mitigating practices

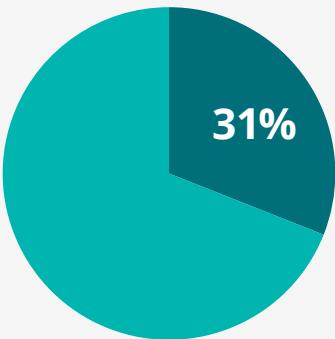
Risk mitigation is an important consideration for all value chain segments, but especially for processors. Regulatory violations around food safety can result in material economic losses. In 2017, several meat processors in Brazil were charged with bribing inspectors, changing expiration dates, altering appearance, and using chemical products to seek the resell of spoiled meat.³⁹ One large meat processor was fined \$3.2 billion for its role in bribing politicians.⁴⁰ Additionally, nongovernmental organizations (NGOs) particularly target food processors for sourcing in regions with deforestation and/or labor exploitation issues creating potential negative impacts on a company’s reputation.



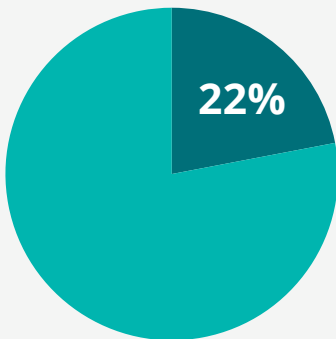
Top 3 cost-saving strategies selected by processors



Sustainable and responsible supply chain sourcing



Buy and/or sell insets and/or offsets



Reduce use of harmful chemicals

Top cost-reducing strategies implemented by processors

As input purchasers, processors can leverage sustainability strategies to drive cost reductions, providing them with a unique avenue to enhance their competitive advantage and profitability. This hypothesis, based on several ROSI™ research projects, is substantiated by our survey results. Some cost reduction results are tied to the value drivers unlocked by implementing top strategies such as **sustainable and responsible supply chain sourcing, buying and/or selling insets and/or offsets, and reducing the use of harmful chemicals**.

Although **sourcing from sustainable and responsible suppliers** in some cases may increase per-unit costs, doing so can significantly reduce total costs for processors. These cost advantages may be driven by the unique value propositions that sourcing from responsible suppliers may entail, including more stable supply, fewer supply disruptions, and improved risk mitigation around regulatory non-compliance and negative publicity. Such benefits can, in turn, drive cost competitiveness going forward. The case study on sustainable palm oil featured illustrates multiple benefits that processors may be able to reap by implementing a sustainable palm sourcing strategy.

Additionally, pursuing strategies to improve soil health, a form of sustainable sourcing, is significantly correlated with cost reductions of greater than 5%, likely due to fewer disruptions resulting from yield declines and related cost efficiencies. These programs, such as Cargill's RegenConnect, are likely to scale over time and generate greater value for processors.

Case study:

Using the ROSI™ methodology, one major food processor found value from investing in sustainable palm oil sourcing. By working with mill and regional landscape programs to ensure compliance with the No Deforestation, No Peat, No Exploitation (NDPE) policy and human rights standards, and by providing traceability of sustainably sourced supply, the company realized risk mitigation benefits, along with sales and cost efficiency. The total value identified by implementing these practices amounted to a 10-year net benefit of \$72 million.



Buying or selling insets and offsets through projects that reduce emissions in the supply chain, can generate cost savings through a range of outcomes. In the survey, 31% of processors selected this method as one of their top cost-saving strategies, far outpacing the other value chain nodes (23% of manufacturers, 20% of retailers, 15% of restaurants, and 14% of food services).

Many carbon inset-generating projects (excluding the outside sale of carbon offsets) are based in regenerative agriculture practices and implemented upstream within a company's own value chain. By generating and selling carbon insets, processors are not only able to generate additional revenue, but also can achieve secondary benefits around cost reductions through increased supply chain resilience, improved supplier relationships, and risk mitigation.

Implementing such carbon inset projects greatly increases the adoption of regenerative practices, with nature-based, scalable climate solutions driving valuable co-benefits beyond cost reduction. These co-benefits include positive impacts on biodiversity, reduced deforestation, and improved water quality from decreased chemical runoff.

Chemicals, many of which can be harmful, are often used in food processing to preserve quality, improve texture and appearance, extend shelf life, or protect against pathogens and naturally occurring contaminants. By **reducing the use of harmful chemicals**, processors can realize financial benefits directly through decreased material costs by purchasing fewer chemicals, reduced waste disposal expenses, and avoided regulatory penalties from harming the soil or other associated resources. For example, Ingredion, a large international food and beverage ingredient provider, offers an "ultra-performance" line of proprietary plant protein concentrates and flours that allows manufacturers to produce better-tasting, plant-based food and beverages, without chemicals or additives. It also uses significantly less water and energy than traditional pulse protein concentrate production.⁴¹ In doing so, Ingredion has been able to reduce its costs through reduced chemical, water, and energy usage.

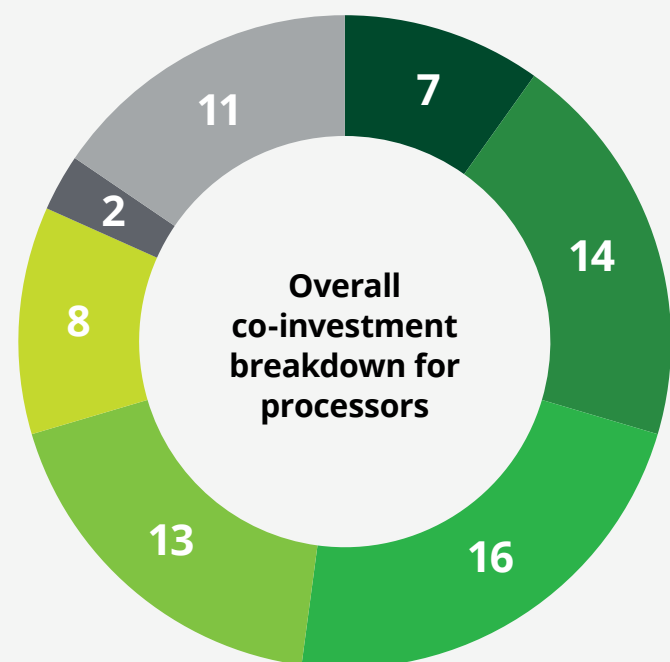
Additionally, processors may see "clean label" customer initiatives as related to reducing chemical use and part of their food safety and nutrition strategy. Clean labeling refers to assigning products easy-to-understand labels, with listed natural ingredients and minimal artificial additives. For companies to stay competitive, clean labeling is becoming more of a necessity than a trend in the United States and across the world.⁴² For example, Ingredion recently provided its customers with a substitute for titanium dioxide, a common whitener that was recently banned in the European Union. When providing the option to substitute it with rice starch and rice flour, Ingredion noted that customers were willing to pay a premium for a product with reduced chemical usage.⁴³

Case study:

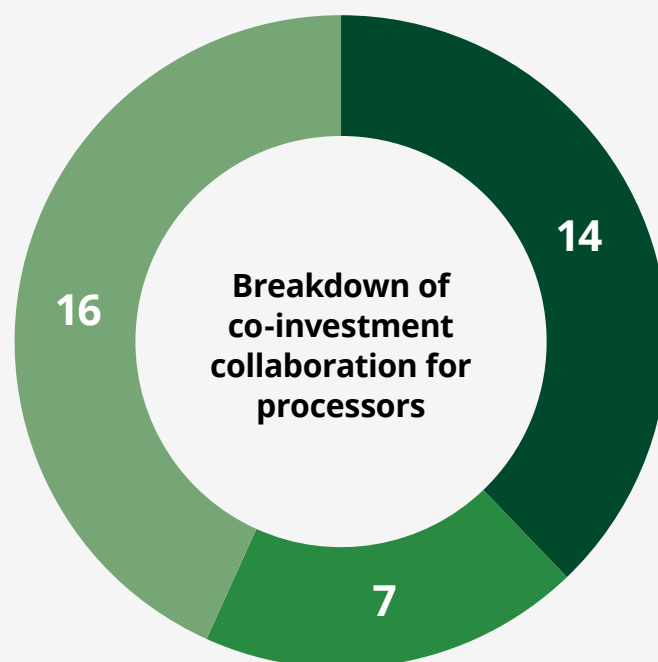
CSB and Mars built a model using the ROSI™ methodology to measure the benefits to processors (off-takers) related to investing in their Livelihoods Fund for Family Farming (L3F). The fund works with smallholder farmers to restore degraded natural ecosystems, build sustainable supply chains, and improve the livelihoods of rural communities. Twenty-two potential benefits for processors were identified across five categories including ensuring a stable supply chain, mitigating price volatility through price transparency, reducing risk of crop loss and price volatility through sustainable farming practices, and gaining a direct connection to groups of farmers / suppliers. The model was tested by Franklin Baker, an off-taker participant in the coconut supply chain. Assuming a price premium (an off-take fee) was paid to L3F for long-term contracts (e.g., 10 years) to buy raw materials from recruited farmers and to sell processed materials to Mars and others, a \$1 million to \$3 million investment returned between 20 and 33%. This range was considered as a lower bound because only five of 13 prioritized benefits were quantified (due to lack of historical data). Additionally, the off-taker reported that having a long-term contract in place with Mars itself was another key benefit.

Co-investment

How collaboration and co-investment on sustainability drives value for processors



- Collaboration with upstream suppliers
- Collaboration with downstream companies
- Precompetitive collaboration and with parties outside the value chain
- Government incentives and grants
- Green bonds
- Internal carbon pricing mechanisms
- General operating funds, capital and debt instruments



- Collaboration with downstream companies
- Collaboration with upstream suppliers
- Precompetitive collaboration and with parties outside the value chain

* The number represents actual no of participant responses

Co-investment refers to shared financing or funding between multiple groups towards an activity that will provide sustainability benefits. Co-investment can vary in size and scale, ranging from establishing joint ventures to project-specific funding to other forms of collaboration.

The survey found that organizations across the value chain engage in significant levels of co-investment trends across various sectors, highlighting the interconnected nature of the food system. Processors, given their central position in the value chain, are able to co-invest with both upstream and downstream companies on

sustainability strategies, as illustrated in the case studies spotlighted on pages 26 and 27. Nearly 53% of the financing vehicles used by processors to fund sustainability strategies involved some form of co-investment. On both the cost and revenue sides, processors who engaged in co-investing experienced a notable lift: 91% and 64% of those co-investing reported achieving at least 2% revenue growth and cost savings, respectively. Similarly, 32% and 14% achieved greater than 5% revenue growth and cost savings, respectively.

Of the processors that engaged in co-investment, the most common approach was pre-competitive collaboration (working with two



or more companies outside the value chain, in the same industry and function), with 43% selecting this approach. This popularity may be driven in part by the value created through this investment strategy. The survey results showed that among the processors that reported capturing the highest rates of revenue increases (greater than 5% growth), 83% of those processors reported engaging in pre-competitive collaboration with parties outside the value chain.

Co-investment collaborations can drive cost savings and expand the reach and scope of projects by leveraging industry players, local organizations, and NGOs to share learnings, capabilities, and the costs of projects. An example of co-investment includes the Tropical Forest Alliance, a multi-stakeholder group dedicated to transitioning to a deforestation-free supply chain, and its facilitation of 14 agri-commodity traders to develop an Agriculture Sector Roadmap to 1.5°C, which is a roadmap for accelerated action within supply chains to halt deforestation.⁴⁴ This program facilitates the creation of landscape programs involving multiple stakeholders, including local municipalities that enable scalable change. By working together, processors can tackle large-scale issues that would be

time- and cost-prohibitive to address individually, while benefiting from the initiatives in a multitude of ways, including improved brand image, reduced greenhouse gas (GHG) emissions footprint, and lowered risk profiles.

Another common vehicle that processors took on was **co-investing with downstream companies**. Twenty percent of processors surveyed reported engaging in collaboration with downstream companies, versus only 11% to 17% for other value chain segments. This avenue for co-investment, which often involves carbon-insetting programs, helps drive greater revenue growth. In the survey, 58% of processors that reported experiencing revenue growth greater than 5% had also reported collaborating with downstream players, suggesting that collaborating with downstream companies could potentially help increase revenue for processors

Motivations vs. value realized

Engagement with sustainability value drivers showed unexpected returns across processors' own and their supplier operations

In the survey, value chain participants were asked what value drivers had initially motivated them to invest in sustainability strategies, then were asked in which of those areas they realized value after investment. We compared the percentage of respondents who reported expecting each value driver to the percentage of respondents who realized it. In doing so, we were

able to identify any value drivers that may have been unexpected by respondents and compared these results for each value driver. Additionally, we compared these results across the value drivers in their own operations, as well as in their suppliers' operations.

For processors, the largest discrepancy was seen with **supplier relations** in their own operations, with only 28% motivated by it prior to investment and 41% identifying it as value realized after investment. This represents a 14 percentage point (pp) gain from

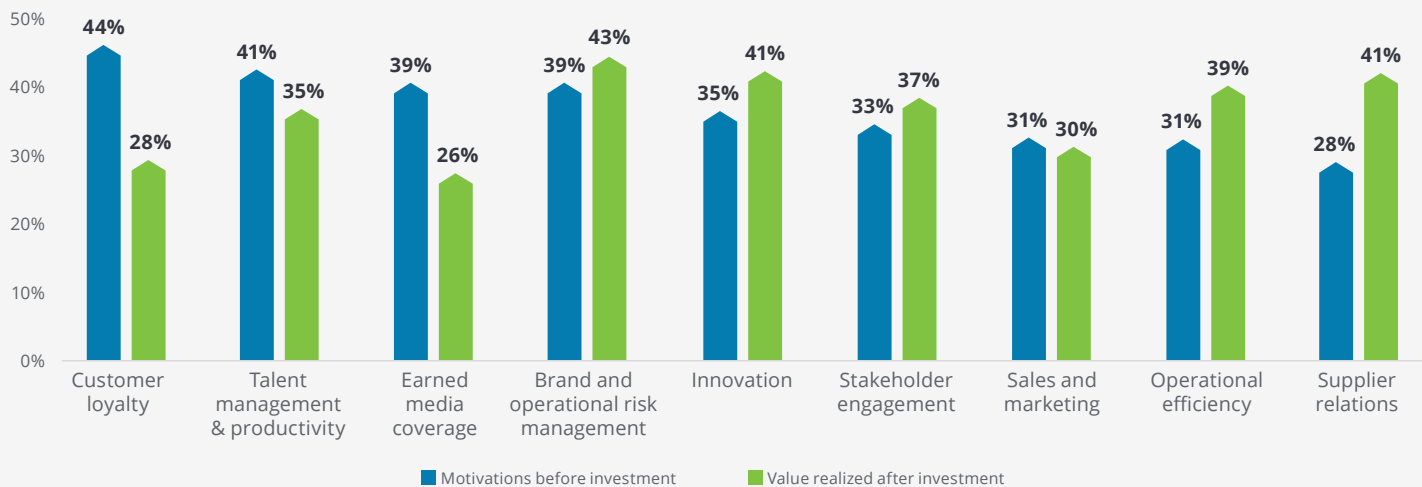
expectations. This could reflect the higher level of engagement with suppliers throughout the implementation of sustainability strategies, with the added stakeholder management potentially driving closer business relationships.

On the other side, 44% of processors were motivated by **customer loyalty** within their own operations prior to investing, yet only 28% identified it as an area in which value was realized after investment. Their initial motivations may have been in part by customers transitioning to sustainably sourced products, partially in response to greater awareness driven by NGO campaigns related to topics such as biodiversity loss, deforestation, fair trade practices, and

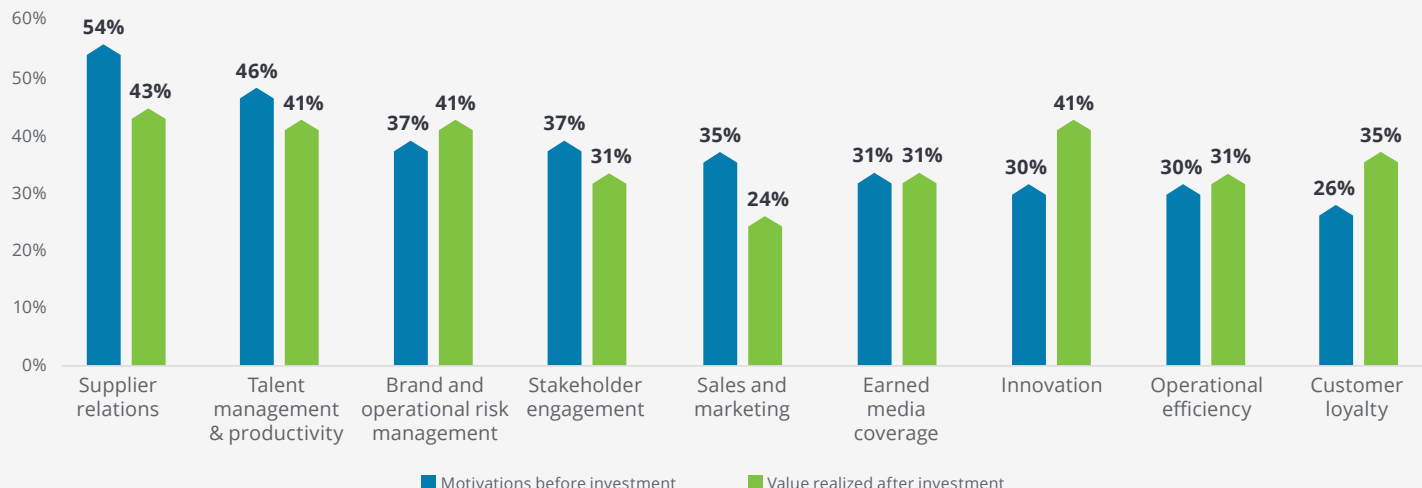
unfavorable working conditions. Yet, their value with customer loyalty did not materialize to the degree they had hoped, potentially stemming from their upstream position in the value chain.

The survey also showed that processors realized other benefits in their own operations that they may not have initially anticipated — in particular, improved **operational efficiencies** (an 8 pp gain), and **innovation** (a 6 pp gain). In their suppliers' operations, we again saw that processors realized value after investing in sustainability strategies to a degree that they may not have initially anticipated, such as **innovation** (an 11 pp gain) and **customer loyalty** (a 9-basis point gain).

Motivations versus value realized in own operations for processors



Motivations versus value realized in suppliers' operations for processors



* The values shown on the bar graphs indicate the percentage of respondents that selected each category

Path forward for processors

Act and adapt

Looking ahead, processors have the opportunity to build on the progress of the sustainability efforts made throughout their value chain. As the gatekeepers to commodities generated by food producers such as farmers and ranchers, processors can help accelerate the transition to sustainable food systems by embarking on regenerative agriculture initiatives with their partners. Various pilot initiatives are underway throughout the processing landscape, but keeping up with new technologies to capture, monitor and verify carbon outcomes to achieve these piloted results at scale will be challenging for processors alone. By establishing partnerships between processors and other downstream companies, better incentive programs can be activated to accelerate the adoption of regenerative agriculture practices to drive scale and create financial value.

In addition to functioning as a core partner to the producers, processors act as crucial suppliers to manufacturers. Their central role in the value chain not only facilitates higher revenue growth and reduced costs, but also enables them to drive sustainability initiatives both upstream and downstream. Processors have shown that they are adept at capturing financial value from implementing sustainability strategies, and this ability will be critical to the success of their endeavors in the future.

Please refer to the overarching **Path forward across the value chain** section on page 75 for additional actions that companies across the value chain can take related to the following actions: **drive progress in the face of uncertainty, invest in your enabling environment and establish key partnerships, and pursue collaboration and co-investment opportunities.**

Geographic deep dive:

In the United States, the food processing sector is notable for its robust growth driven by sustainability investments. Our survey data reveals that 26% of US processors reported experiencing greater than 5% revenue growth as a result of their investments in sustainability strategies. This trend is supported by the fact that 71% of processors surveyed in the United States and the Netherlands have achieved at least 2% cost reduction, nearly 10% higher than their counterparts in Germany and the United Kingdom. This suggests a strong emphasis on innovation and efficiency within the U.S. market, likely propelled by new product development, sustainable processing techniques, and the creation of value-added products.

The growth and innovation in the US food processing industry is significantly influenced by government policies and initiatives that foster collaboration across the food value chain and promote technological advancements. A prime example is the USDA's Meat and Poultry Processing Expansion Program,⁴⁵ funded through the American Rescue Plan Act. This initiative is designed to expand processing capacity by offering grants for construction, expansion, and equipment acquisition. By incentivizing technological innovation and sustainable practices, the program addresses key challenges in the food supply chain and promotes a more equitable and efficient food system.

In contrast to the United States, European processors (particularly in Germany and the United Kingdom) show more conservative rates of sustainability-driven cost reductions and revenue growth. Since these regions are known for their stringent regulatory environments and high standards for sustainability, the lower rates of cost reduction reported in the survey may be because European processors were already further ahead in sustainability initiatives than their US counterparts and had already captured significant cost reductions from "low-hanging fruit" initiatives. These cost reduction rates may also reflect differing market dynamics or regulatory challenges that impact the pace of adoption for innovative and sustainable practices.

Manufacturers

As central players in the value chain, manufacturers' core function is to transform processed products into branded goods, which are then sold to customers through one of the key three distribution channels: retailers, restaurants, and food service providers. While the manufacturer segment primarily consists of branded food companies such as Nestlé or Anheuser Busch, it also encompasses the co-packers and co-manufacturers engaged to produce final food products. This node in the value chain is a complex one, as manufacturers often work directly with other players across the full value chain.



Manufacturers

Convert ingredients into branded food products that are sold through multiple channels including food service, restaurants, and retailers

As manufacturers are positioned between processors and distributors, they primarily function as B2B entities that both sell to and buy from other businesses. Yet, their responsibility for product development also entails taking on some attributes of B2C companies, such as brand messaging, which plays a large role in their potential success. The layering of B2B and B2C relationships often leads to competing interests for manufacturers. In their B2B operations, manufacturers are largely driven by the interests of downstream companies such as retailers. However, in their B2C operations, manufacturers must also focus on their sustainability messaging and overall brand messaging that will reach end consumers.

These overlapping functions lead to manufacturers getting pulled in multiple directions by various downstream customers that have different needs. In many cases, upstream organizations, such as processors, reap the benefit of capturing price premiums on sustainable products sold; manufacturers pay this premium to processors, but often cannot pass the cost along to their customers. These complexities are important to consider when examining manufacturers' sustainability strategies.

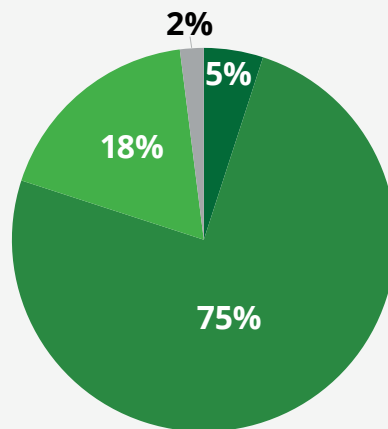
Additionally, the materiality of various sustainability issues for manufacturers can vary greatly by company and sector. For instance, water stewardship is critical to beverage manufacturers and those with operations in water-stressed areas. Sustainable sourcing is critical for manufacturers of coffee and chocolate, for which supply is sourced from regions that are often negatively impacted by climate change and have a history of destructive land-use practices and/or exploitative labor practices.

Revenue growth overview

80%

of respondents saw at least 2% revenue growth from investing in sustainability strategies

- > 5% revenue growth
- 2% - 5% revenue growth
- < 2% revenue growth
- Did not realize



**Percentages may not total 100% due to rounding*



Manufacturers see moderate revenue growth impacts compared to other value chain nodes

According to the survey, manufacturers appear to see more moderate rates of revenue growth from their sustainable strategies compared to other nodes in the value chain. Based on the survey results, manufacturers are the segment with the lowest proportion of respondents experiencing greater than 5% of revenue growth from investing in sustainability strategies (only 5% of manufacturers compared to 22% of processors, 11% of food services, 12% of restaurants, and 20% of retailers). However, 80% of manufacturers saw at least 2% growth, in line with the other value chain segments.

There are several reasons that manufacturers may realize lower rates of revenue growth from implementing sustainability strategies compared to other value chain nodes. First, manufacturers often need to procure commodities for their products, the prices of which are subject to factors outside of their control, such as weather conditions, changes in global supply and demand, or political instability. Price fluctuations can lead to thin margins, making sustained revenue growth challenging. Second, manufacturers typically have high capital expenditures due to the equipment, technology, and facilities needed to produce products. High upfront and ongoing maintenance costs can tie up cash flow and limit the ability of manufacturers to invest in growth opportunities. Finally, manufacturers are often removed from direct consumer interaction. This delays the time to realize and adapt to changing consumer preferences, potentially slowing down their ability to innovate and capture new revenue opportunities.

Case study:

CSB's Sustainable Market Share Index™ (SMSI)⁴⁶ tracks actual consumer purchasing of CPG products marketed as sustainable within the United States. The SMSI™ has found that year over year, sustainability-marketed products have been growing nearly twice as fast as conventional products (with food and beverage sustainability marketed products growing 1.2 times as fast) and at an average price premium of 28% in 2023. Its research indicates that sustainability-marketed food and beverage products earned average price premiums higher than the overall premium for CPG by close to 10%, with specific products such as coffee and yogurt commanding price premiums of 60% and 46%, respectively. Additionally, in 2022, sustainability-marketed products represented about 39% of new food and beverage products introduced to the market, further providing evidence that there is rising consumer demand for sustainable food products.

NYU Stern Center for Sustainable Business (CSB) ROSI™ studies and other consumer research suggest the lack of focus on the consumer benefits surrounding sustainable production and consumption may be limiting their value creation opportunities. Therefore, one possible explanation for manufacturers not seeing the full value of their sustainability investments and their relatively lower projections about the future value of sustainability could be due to a lack of fully understanding consumer demand, willingness to pay premiums, and be loyal to sustainable brands. This limitation could be compounded by manufacturers' unique positioning as a B2B company with some B2C responsibilities, namely product positioning. While their products are sold indirectly to consumers, if the manufacturers do not focus on messaging, they could miss the opportunity to increase growth through sustainability-minded consumers.

Despite rising consumer demand for sustainable products in general, companies that do not fully understand consumer demand may be communicating their products' sustainability message ineffectively. CSB and Edelman partnered with nine iconic consumer brands, including several in the food and beverage space such as Dove Chocolate and Hellmann's to test over 30 marketing claims. The goal of this effort was to equip brands with the most effective communication strategies to refine positioning and empower marketers to deliver sustainability as a driver of consumer preferences. The research report, *Effective Sustainability Communications*,⁴⁷ found that category claims (e.g., that food products taste good and laundry detergents effectively clean clothes) are paramount, but that certain sustainability claims (e.g., locally sourced dairy) expanded brand reach by 24% to 33% above a category claim alone. High-performing sustainability claims indicate that consumers tend to be ego-centric and respond best to messaging regarding "my health, my wealth, my world." For example, top claims include those related to consumers and their families' well-being and saving money, followed by local farmers, children and future generations, and animal health.

Manufacturers may not fully capture the value of their sustainability strategies if they are not fully embedded in their company's business processes to enable optimal investment decisions. The need for business unit collaboration is evidenced in the ROSI™ work performed for Hero Group, a mid-sized food company that sells baby foods, jams, and snacks globally to "delight consumers by conserving the goodness of nature."⁴⁸ Several forces prompted the company to explore the value of promoting sustainable farming practices to protect biodiversity. One such example is protecting bees, which are negatively affected by the loss and degradation of natural habitats due to urbanization; intensive agriculture leading to a lack of diverse and resilient flora, food, and nesting sources; and pesticides and other pollutants that are harmful to pollinators. The first force came in June 2022, when the European Commission adopted a proposal for the Nature Restoration Law, which includes reversing the decline of pollinator populations by 2030. Secondly, awareness of consumer interest in sustainability products has been growing. CSB's SMSI™ found that sustainability-marketed products represent 18.5% of overall CPG product sales in the United States as of 2023 (and represents a similar share for food and beverage categories). In fact, these edible categories have grown nearly one percentage point over the past five years, with growth outperforming conventional products, albeit at a less aggressive rate than non-edible products. And thirdly, to meet their carbon reduction targets, collaborating across the supply chain is critical for manufacturers, as scope 3 emissions represent the majority of their carbon footprint, often accounting for 70% of the carbon footprint of manufacturers.⁴⁹

Case study:

Schwartauer Werke (SW), Hero Group's German subsidiary, surveyed its current growers on their use of "Bee Friendly Farming" (BFF) practices (e.g., the introduction of bee hotels, reducing or banning harmful pesticides, and using organic fertilizers), as well as processes to assess farmer interest in adding pollinator habitats (e.g., planting bee buffers and wildflowers alongside farmlands and protecting nesting areas). Using ROSI™, CSB worked with SW to understand the benefits of BFF practices to growers and how engaging with growers to support a "sustainably sourced" product line could lead to revenue growth, cost savings, and competitive advantages.

By implementing the ROSI™ methodology, the identified benefits included:

- Increased pollination and higher yields through BFF practices, leading to reduced price volatility (and a more stable supply of locally grown fruit;
- Ability to reduce scope 3 emissions through carbon sequestration on crop land⁵⁰ and sustainable practices such as agroforestry⁵¹ in a cost-effective manner and without the need to buy carbon offsets in the future;
- Increased penetration of consumer segments and retail channels by identifying products as sustainably sourced through the "Bee Friendly" certification (third party or company defined);⁵² and
- Higher employee retention and productivity from better alignment of values.

The total estimated value of the benefits was conservatively estimated at €3.5 million (10-year NPV before costs) with an average annual operating income impact of €650,000. After accounting for a program cost estimate, the results showed an estimated return on investment of 33%.

A challenge to approving and implementing such strategies is that doing so often requires alignment across the organization. For example, the product development team needs to assess the benefits of locally -grown versus imported fruit and measure impacts on both taste and product quality. Procurement must set standards, engage with growers to adopt the strategies (including any grower incentives), and track compliance. Operations must assess the implications of buying more local and less imported fruit on operational efficiencies. And the sales and marketing teams need to understand consumers and the competitive business environment, as well as position the messaging to achieve the desired sales uplift. Alignment across these various teams in the organization (which can be driven by setting sustainability compensation targets, or incorporating sustainability into financial processes, such as strategic and operational plans) is necessary to fully embed sustainability into an organization's business operations before optimizing the value generated.

Investing in employee well-being is a strategy that has been shown to address key challenges faced by manufacturers. According to research by Bristol Associates, as many as 73% of food and beverage manufacturers are experiencing difficulty in finding talent.⁵³ In its 2022 survey of manufacturers, respondents reported they frequently lost applicants to other job offers, or they had an insufficient number of high-quality applicants.⁵⁴ These talent and recruiting-related issues can introduce multiple challenges to manufacturers, such as meeting production quotas, keeping costs down, and maintaining food and beverage product quality and safety. Focus on employee well-being is essential to driving productivity, developing products to meet changing consumer demands, and protecting against health and safety risks. These benefits are often difficult to measure and require tracking relevant data, but they can be monetized as shown in the Greyston Bakery case study.

While **investing in water stewardship** was not identified by survey respondents as one of the top three revenue-increasing or cost-reducing strategies, 38% of manufacturers reported it as a strategy that they implemented. Water scarcity is a substantial risk for many manufacturers, especially beverage manufacturers. Constellation Brands, maker of Corona and Modelo beers, experienced some challenges while constructing a large brewery in 2018 in Mexicali, an area dependent on the water-stressed Colorado River. Due to local concerns about water access, the company faced some opposition, including a public referendum that ultimately led to the company not receiving a water permit. As a result, in 2022 Constellation began to wind down its operations at the site, resulting in a notable asset impairment charge.⁵⁶ However, as part of its ongoing commitment to environmental stewardship, Constellation shared in its 2023 ESG impact report⁵⁷ that it surpassed its target of restoring 1.1 billion gallons of water withdrawals back to local watersheds, and increased its target to 5 billion gallons by 2025. The company has also worked with local authorities and community members in multiple cities neighboring its brewery in Nava, Mexico, to build infrastructure that significantly enhanced residents' access to quality water. Constellation acknowledges the critical risk water poses to its operations, as its President and CEO Bill Newlands stated, "Water is one of our planet's most precious natural resources, and a critical resource for our business. As such, we continue to prioritize efforts to improve water availability and resilience for communities where we operate."⁵⁸

Case study:

Through its Open Hiring™ program, Greyston Bakery measured the benefits of investing in its people. The program employs people who may typically be excluded from companies' hiring processes, such as those with a history of incarceration, drug use, or houselessness. New hires enter a six- to 10-month apprenticeship program, which offers job-specific training and general life skills, such as effective communication, for long-term success. Graduates of the apprenticeship program have an annual turnover rate of 33%—notably lower than the 42% average turnover rate across all industries and job levels in the United States. The program also reduces overall hiring costs in future years, since fewer employees need to be replaced. Additionally, the program improves operational efficiency for Greyston Bakery, as inexperienced new hires make up a smaller percentage of the overall workforce in future years. The federal government's Work Opportunity Tax Credit paid Greyston about \$2,300 per qualified apprentice from "groups with significant barriers to employment."⁵⁵



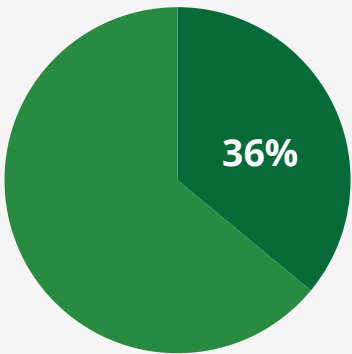
Continued population growth and climate change will likely continue to exacerbate water availability and quality issues. Water stewardship practices can protect against droughts and reduce the risk and mitigate the impacts of water restrictions. Arca Continental (AC), the second-largest Coca-Cola bottler in Latin America, worked with ALO Advisors, an environmental consulting firm, and used the ROSI™ methodology to identify the costs of different scenarios to decide on a strategy to address potential water-related risks in the company's sugar supply chain. Monetizing the potential impacts such as irrigation costs, crop yield changes, and costs of supplier substitution—and based on current and future climate trends—its water risk exposure was classified as nonmaterial. However, it provided a clear roadmap to increase its supply chain resiliency.

With this information, AC can expand the ROSI™ analysis to evaluate interventions such as diversification of water sources, increases in irrigation efficiency, and water reuse practices. Results of the evaluation will enable the development of an integrated water plan with key stakeholders in the region.

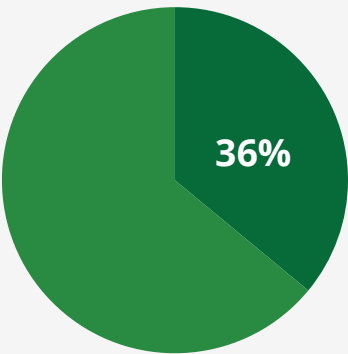
In a separate project, CSB approximated ROSI™ benefits for a bottled water company interested in pursuing a new consumer-facing water stewardship certification. Using a canned fish category marine certification and the certification sales responsiveness as surrogates, CSB approximated the benefits to the bottled water company. CSB's analysis projected a potential return on investment (ROI) of more than 61%, with the adoption of the certification as the main contributor to ROI.

Revenue-driving strategies

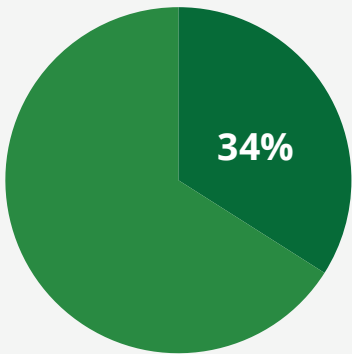
Top 3 revenue-generating strategies selected by manufacturers



Raise, treat, and/or source animals responsibly



Ensure safe food products



Reduce use of harmful chemicals

How sustainability strategies drive value for manufacturers

With manufacturers' key role in developing consumer-facing product messaging, all the top revenue-driving strategies reported had strong consumer implications. The top three strategies selected included **were raise, treat, and/or source animals responsibly; ensure safe food products;** and **reduce use of harmful chemicals**. The strategies around animal welfare and reduced chemical usage can be more directly tied to consumer-facing sustainability claims, such as cage-free eggs or pesticide-free products. Ensuring safe food products, however, is more closely linked to consumer trust in larger manufacturers' brands. This reinforces the role that manufacturers play with consumers, despite the sales interactions happening more indirectly, via distributors; while these strategies highlight the revenue that has been realized by manufacturers, the inability to fully capitalize on these strategies could stem from their inability to pass all added costs of sustainability premiums along to consumers.

A key strategy driving value for manufacturers is increasing positive animal welfare practices, including **raise, treat, and/or source animals responsibly**; the survey found that 36% of manufacturers identified this strategy as a revenue booster, and 38% identified it as

a strategy that decreased costs. Applegate Farms, a company that produces natural and organic prepared meats and cheese, was able to expand its revenue potential through the introduction of a new product, Applegate Naturals™ frittata bites—Certified Humane® frozen egg bites.⁵⁹ This certification confirms that the chickens used in production have access to a pasture with space to perform natural behaviors, such as pecking for seeds and bugs, which is not necessarily the case for cage-free or free-range labeled products.⁶⁰ Improperly managed behavior in hens brings stress to birds, increases dietary energy and nutrient requirements, and, in turn, reduces the profitability of producers.⁶¹

In the dairy industry, animal welfare and sustainability claims have had a significant impact on the overall product assortment. The dairy sector has the highest percentage of products marketed as sustainable, with greater than 50% of milk and greater than 70% of yogurt products sold claiming sustainable attributes, outpacing all other categories in CSB's SMSI™ research. These claims include labels such as non-GMO, grass-fed, no growth hormones, and organic. The emphasis on sustainable messaging highlights dairy companies' success with launching and selling products featuring improved animal treatment.

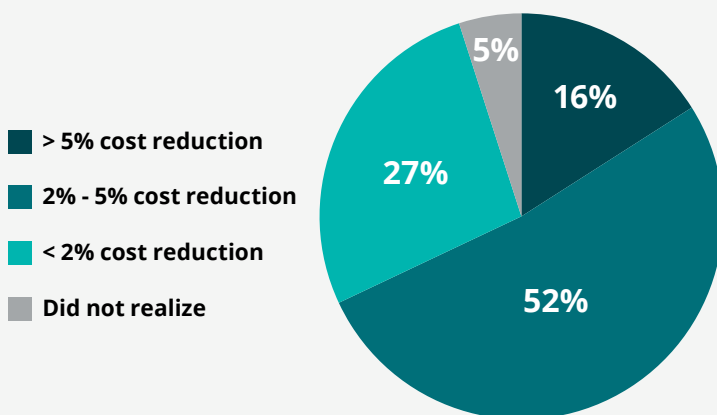
To meet the needs of their customers and, ultimately, end consumers, manufacturers must also **ensure safe food products**, which was the second top strategy identified by manufacturers and was also noted as a driver of revenues (36%) and cost savings (25%). Safety violations can be costly for manufacturers, as a major food manufacturer found in 2022 when a fatal outbreak of E. coli linked to flour contamination was reported at a pizza factory in Europe.⁶² The company incurred costs from having to recall products, halt factory production, and pay legal fees, including a settlement with affected consumers.⁶³ The factory was ultimately closed due to falling sales overall, which were exacerbated by the scandal.⁶⁴ While ensuring safe food products has been identified as a key value driver for manufacturers, it should be called out as a table stakes practice given the clear consequences if the strategy is not enacted. Indeed, if the food produced is not safe, manufacturers lose the central value proposition that they offer, regardless of any other sustainability initiatives or strategies they may enact.

Our survey also found **that reducing the use of harmful chemicals** was noted as a strategy that drove both revenue increases and cost savings. Some manufacturers may be acting in response to recent research findings that consumers are more

Cost reduction overview

68%

of respondents saw at least 2% cost reduction from investing in sustainability strategies



*Percentages may not total 100% due to rounding

concerned than ever about the chemicals in their food. A 2021 consumer survey found 54% of respondents say that it's important that the ingredients in their food do not have "chemical-sounding names," and about half of respondents care about having only ingredients they consider healthy or ingredients they recognize.⁶⁵ The corporate response to these consumer preferences includes "clean labeling" and creating product reformulations to eliminate unnatural ingredients and artificial additives.

Additionally, through reducing harmful chemicals in their supply chains, manufacturers can launch new product categories that command a price premium. Organic, non-GMO, and pesticide-free labels denote food production practices such as reduction of harmful chemicals and increased sustainable food production, thereby increasing value for associated products produced. In working with farmers to enact these practices, manufacturers are able to drive revenue by appealing to consumers who are willing to pay more for sustainably labeled products, as shown in the highlighted case study.

Case study:

A ROSI™ analysis for Natra, a private-label chocolate product producer and distributor, illustrates the potential for higher growth and pricing. Natra's sustainability commitments are centered on responsible sourcing, environmental protection, support of Natra employees grounded in a people-focused healthy work environment, concern for the community, and healthy nutrition. More simply, Natra aims to assist its customers in achieving their own sustainability goals. The company currently sees growing customer demand for sustainable, organic, and/or fully traceable cocoa and palm oil. The ROSI™ analysis shows that Natra can acquire a higher wallet share of sustainability-focused customer business by achieving satisfactory delivery of "Identity Preserved" (based on Rainforest Alliance guidelines) cocoa chocolates; progressively shifting product mix from conventional towards certified or sustainably procured cocoa; focusing on product categories with higher contribution margins; and capturing market share in high-growth segments such as edible chocolate tablets made from organic/segregated sustainably procured cocoa. The analysis showed that Natra can potentially earn incremental profits (through higher contribution margins) over a four-year period of approximately €2.4 million (PV).⁶⁶



Manufacturers experience lower rates of cost reduction compared to downstream value chain nodes

Compared to more downstream players, manufacturers saw lower rates of cost reductions from investing in their sustainability strategies. While 68% of manufacturers reported realizing cost reductions of at least 2% (roughly level with processors at 69%), downstream organizations saw significantly higher reductions (retailers at 80%, food services at 77%, and restaurants at 75%). This could stem from manufacturers' limitations in controlling the upstream supply of inputs, or because manufacturers generally face multiple constraints that can limit their ability to realize cost savings.

As mentioned previously, manufacturing is capital intensive, requiring ongoing investments in equipment and facilities that require regular maintenance. These costs, including any unexpected maintenance costs, can divert funds from potential cost-saving

initiatives. Manufacturing also has high fixed costs, limiting the budget for taking on new cost-saving opportunities in general. Finally, manufacturing is energy intensive, and while energy efficiency can reduce costs, the baseline energy requirements to operate are still significant and are a relatively fixed expense.

While downstream players saw higher reported cost reductions in comparison, this is not to say that manufacturers didn't see significant cost benefits from their sustainability strategies. In the survey, 16% of manufacturers reported realizing greater than 5% in cost reductions, highlighting that manufacturers are still able to capture cost benefits from their investments in sustainability.

Some value-driving strategies also function as risk-mitigating practices

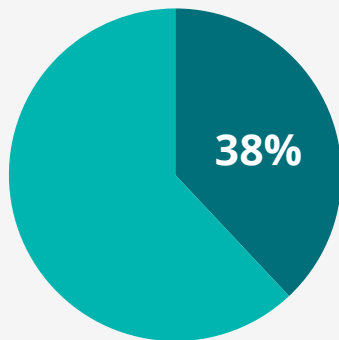
In the survey, manufacturers identified select strategies as overall value drivers, but they did not identify those particular strategies as ones that specifically drove revenue increases or cost savings. These strategies included **investing in employee well-being** and **investing in water stewardship**. Without the correlation between these strategies and revenue-driving or cost-reducing types of value, these practices likely act as risk-mitigating mechanisms.

Both employee well-being and water stewardship have serious implications if an issue is experienced in these areas. For example, employee safety issues could result in a shortage of workers needed to keep operations running and could even result in a lawsuit. Water shortages could lead to a complete halt in production.

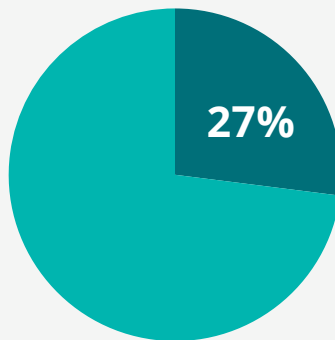


Cost-saving strategies

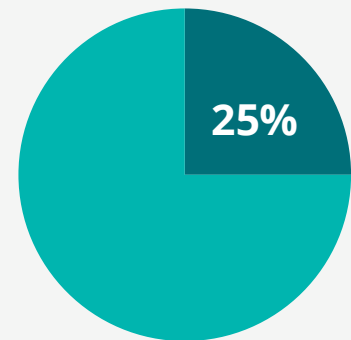
Top 3 cost-saving strategies selected by manufacturers



Sustainable and responsible supply chain sourcing



Buy and/or sell insets and/or offsets



Reduce use of harmful chemicals

The top strategy reported, **sustainable and responsible supply chain sourcing**, was more commonly selected than the other strategies by a significant margin (38% seeing cost reduction through sustainable sourcing, with the next strategy reporting nine percentage points lower, at 27%). When sustainable production practices are implemented upstream of manufacturers, the overall supply chain can become more stable and resilient, resulting in operating and administrative efficiencies for the manufacturers that source inputs. An example that illustrates this dynamic includes producers that implement regenerative agriculture practices, especially amid extreme weather events. Because extreme weather events such as droughts or floods can reduce crop yields and thus increase commodity prices, implementing regenerative agriculture practices can help producers build a more stable and resilient supply.

Additionally, producing palm oil with sustainable and responsible practices can help reduce supply chain disruptions, promote the livelihoods of local communities, and reduce consumer protests. By sourcing sustainable and responsible products, manufacturers can reduce reputational and regulatory risks and save costs on risk-mitigating measures.

More than a quarter (27%) of manufacturers also reported **buying and/or selling insets and/or offsets** as a top cost-saving strategy. While the strategy was highly ranked, it is important to distinguish the specific actions that are possible within the overall

practice. Buying carbon offsets would involve purchasing credits for actions taken outside of a manufacturer's operations (such as another company restoring seagrasses) and are used to offset emissions produced by the manufacturer in its operations. Selling carbon offsets would involve initiating carbon abatement projects, such as planting trees outside manufacturing plants that they own, then selling the offsets to businesses outside their value chain.

Manufacturers can benefit from carbon insetting by implementing measures in their own supply chain or operations to reduce their carbon footprint. This could include implementing solutions upstream such as regenerative agriculture, reforestation, or renewable energy. With select solutions, such as regenerative agriculture, manufacturers can see cost savings, for example through implementing regenerative agriculture practices upstream that entail decreased fertilizer use, reduced pesticides, and improved crop yield and quality. These insetting projects also have several advantages over carbon offsets for the manufacturers: they offer direct emissions reduction within their own supply chains, have positive impacts for their communities and stakeholders, and build stronger relationships with their suppliers.

Lastly, **reducing the use of harmful chemicals** was cited as both a revenue-driving and cost-saving strategy by manufacturers, with 25% of manufacturers reporting its use as a cost reduction method. As a strategy, manufacturers can benefit from the practice both within their own operations and their supply chain. Within

their own operations, they can see results through decreased material costs, reduced waste disposal fees, and the avoidance of potential regulatory penalties. Additionally, through collaborating with suppliers to reformulate the ingredient production process, manufacturers can save costs through outcomes ranging from reducing processing requirements to limiting the chemicals needed for manufacturers to finish goods.

Another reason that reduced chemical use is an important strategy for manufacturers is it can help avoid costs associated with regulations. For instance, in September 2023, the California Legislature passed a groundbreaking bill, the California Food Safety Act, which bans four harmful chemicals from candy, cereals, salad dressings, and other processed food.⁶⁸ Anticipating new regulations can help manufacturers avoid incurring costs related to production delays and potential plant shutdowns, avoid costly ingredient substitutes, and reduce sale losses to competitors that are better positioned when the legislation is enacted.



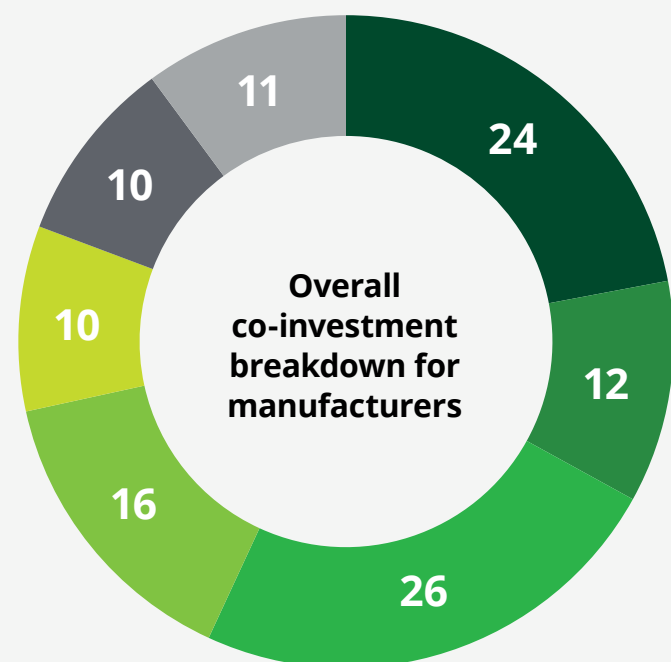
Case study:

Anheuser Busch (AB) promotes and implements nutrient management practices throughout its barley supply chain. By applying the right type of fertilizer at an appropriate rate, time, and place, and pairing it with a nitrogen inhibitor, AB can improve grower efficiency, reduce fertilizer use, and lower carbon emissions. AB partners with its barley growers to encourage them to use specific seed varieties (often developed by the company itself) and contracts for 100% of the barley produced. According to our ROSI™ analysis, an expanded program to increase the adoption of nutrient management best practices, as well as associated product messaging related to the regenerative agriculture benefits, could generate financial benefits of about \$40 million (10-year NPV) from:

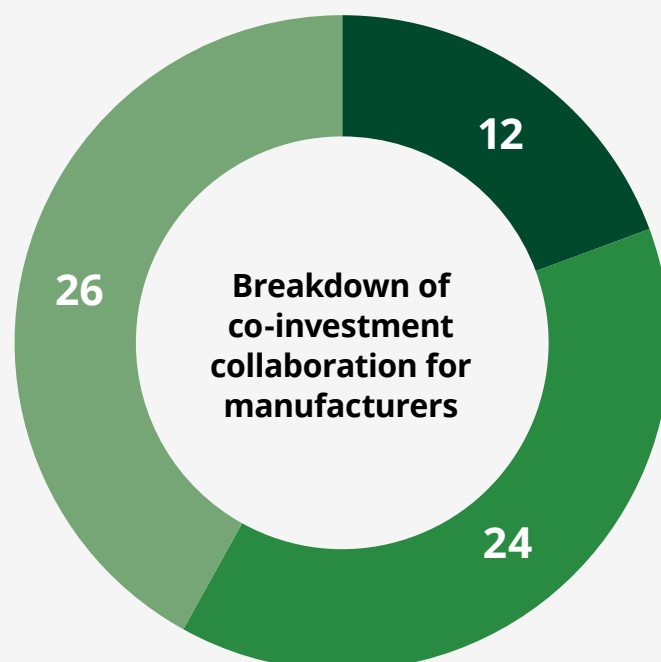
- Reducing high protein levels, which avoids longer processing times in the malthouses, resulting in lower processing costs and higher amounts of malt extract achieved (which reduces the need to procure third-party malt extract). Reduced high protein levels also avoids additional processing costs and inputs such as water, energy, chemicals, and yeast in the brewing process.
- Adopting 4R practices (right rate, source, placement, and timing)⁶⁷ and using a nitrogen inhibitor, which reduces scope 3 carbon emissions previously measured as a hedge against rising carbon costs in the voluntary market.
- Investing in a sustainably sourced product line, which reduces the risk of losing large clients focused on sustainability within their supply chains.
- Introducing a sustainably marketed product line, which can increase volumes sold and command a premium. The financial benefits of a sustainably marketed product line were modeled based on the market results associated with Michelob Ultra Gold, the first nationally available USDA Certified Organic beer. Additionally, greater adoption of regenerative agriculture practices can drive higher operating performance for the company. In fact, our survey results show that alcoholic beverage producers were 1.72 times more likely to have a higher level of revenue growth (greater than 5%) compared to other sectors.

Co-investment

How collaboration and co-investment on sustainability drives value for manufacturers



- Collaboration with upstream suppliers
- Collaboration with downstream companies
- Precompetitive collaboration and with parties outside the value chain
- Government incentives and grants
- Green bonds
- Internal carbon pricing mechanisms
- General operating funds, capital and debt instruments



- Collaboration with downstream companies
- Collaboration with upstream suppliers
- Precompetitive collaboration and with parties outside the value chain

* The number represents actual no of participant responses

Manufacturers are one of the most active value chain participants utilizing co-investment strategies, potentially due to their central position in the value chain. For example, more than 57% of the sources of capital to invest in sustainable strategies used by manufacturers were related to co-investment.

Co-investment with upstream suppliers was one of the most common funding sources for manufacturing companies that reported cost reductions greater than 5%. We found in our statistical analysis across all segments that co-investing with upstream suppliers is associated with cost reduction. An example that illustrates this concept is the partnership between Knorr

(a subsidiary of Unilever) and Spanish tomato supplier, Agraz. After Knorr and Agraz worked together to help farmers promote biodiversity and protect crops from the effects of decreased rainfall and depleted underground water reserves, Knorr noted that they “saw a reduction of costs, water usage, and use of fertilizers and pesticides.” Using cutting-edge sensors and soil probes that inform farmers about the exact amount of water needed, the new irrigation systems allow more precise water use, resulting in significant financial savings and a more resilient production system. There was a 173% increase in pollinators and 27% increase in wildflower diversity related to wildflower borders. The project also saw a 37% decrease in GHG emissions per kilogram of tomatoes after



implementation.⁶⁹ The work with farmers to improve their financial results along with the positive impact on pollinators (which, in turn, has a positive impact on yields⁷⁰) drives a more stable and efficient supply chain for the company, which can generate cost efficiencies.

Pre-competitive collaboration and investing with organizations outside the supply chain can lead to greater revenue growth: 66% of all manufacturers surveyed participated in pre-competitive collaboration. Moreover, more than half of manufacturers that collaborated in pre-competitive environments experienced revenue benefits greater than 2%. Sixty-eight percent of manufacturers also see cost savings greater than 2%. As an example, the SAI program is a non-profit network of more than 180 member organizations, including food and beverage manufacturers, working to collectively advance sustainable agriculture. SAI offers useful advice for sourcing raw materials that are produced responsibly for the environment, society, and economy. By increasing supplier

commitment, manufacturers can access more products that are grown sustainably, which can boost both revenues and cost savings.⁷¹ Diageo articulates the value of SAI Platform membership as a way “to learn from and engage with our peers to tackle shared problems ... [as it] provides opportunities to benchmark and harmonize our approach to sustainable sourcing with that of the wider food and drinks industry.” Diageo also mentioned that it is “able to reduce the financial and time burden on our supply chain partners [to drive] efficiency for our own business and ensures a consistency in the narrative shared with growers and food producers... The power of the collective offers further benefits in terms of leveraging greater resources for on-the-ground projects.”⁷² Ingredion echoed this sentiment, explaining that its SAI membership was a cost-effective means of engaging with farmers in Mexico on regenerative agricultural practices.

Motivations vs. value realized

Manufacturers saw sustainability strategies drive value with stakeholder engagement, yet expectations differed across stakeholder groups

The survey revealed that many manufacturers realized unexpected returns in several categories, with a much higher percentage reporting realized value after they invested in sustainability strategies. Within their own operations, manufacturers experienced a far greater increase in stakeholder engagement than they were expecting. While 38% reported it as a motivation for investing in sustainable strategies, 50% of respondents cited it as a value driver after investing in the initiatives, showing a gain of 12 pp from expectations to outcomes. In our interview with Maud de Meynard, CSR performance and transformation manager of Groupe Bel (a multinational cheese manufacturer), she noted that “Supply chain, regenerative agriculture, food waste, and balanced portfolio all depend on our ability to engage all our ecosystem of stakeholders, including suppliers,”⁷³ highlighting the strategies enabled by improved stakeholder management.

Stakeholders for manufacturers, and potential impacts of engaging with them, include financial institutions and their ability to enable sustainability-linked financing; NGOs and the diluted reputational issues through their participation; and manufacturers’ ability to retain high-level employees.

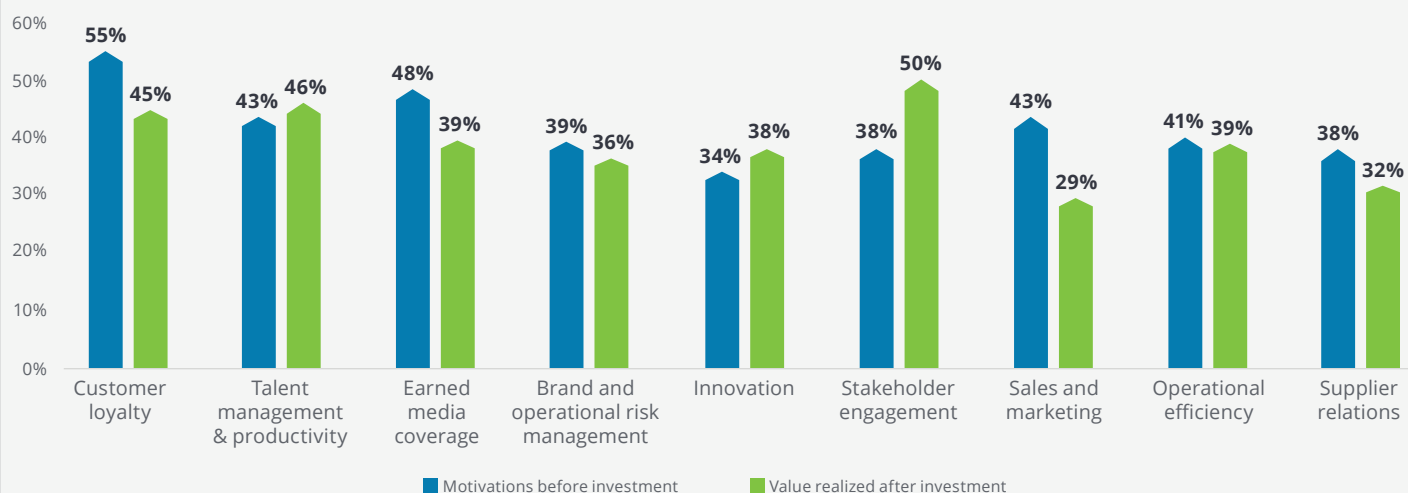
In their suppliers’ operations, many manufacturers realized greater value associated with talent management and productivity than anticipated, revealing the potential to reap benefits related to talent acquisition and retention with employees seeking companies aligned with their values. Prior to the investment, 34% of manufacturers reported it as a motivation behind the strategy; yet, after the investment, 52% cited it as a realized value. This gain of 18 pp gain was the highest of any category.

In contrast, many manufacturers were motivated by a potential increase in customer loyalty, yet fewer reported seeing these gains after the investments were made. In both their own operations and

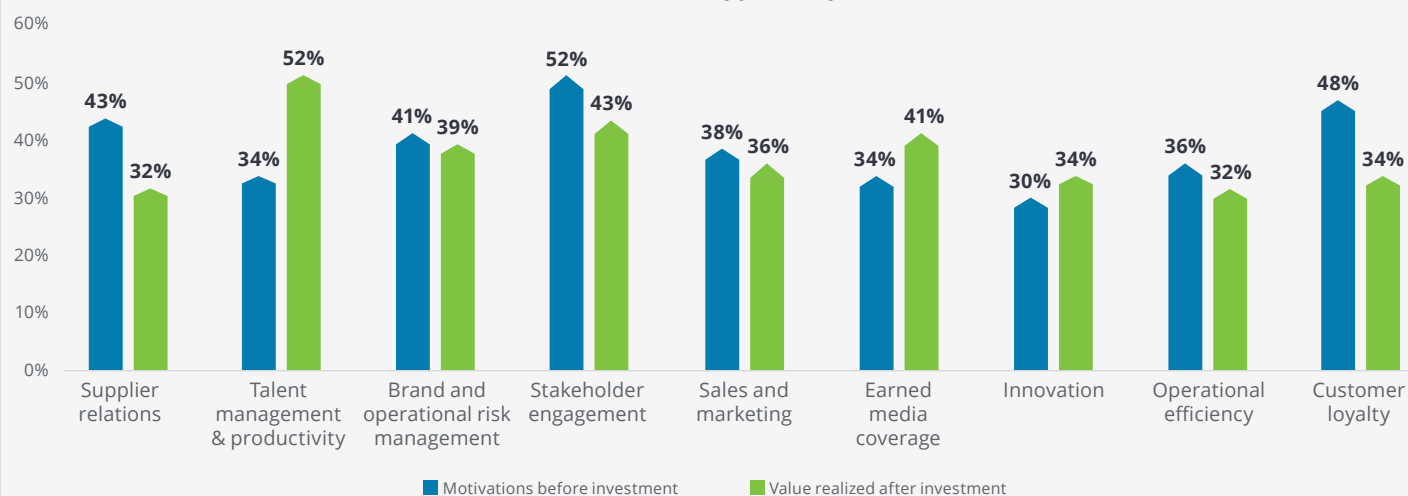
their suppliers, manufacturers didn't realize the expected customer loyalty gains by at least 10 pp. There may be several explanations for this discrepancy — perhaps other categories of value realized were more pronounced or maybe manufacturers couldn't capitalize on their sustainability investments if their consumers were unaware of these efforts. If consumers are not aware of nor able to understand the benefits of the sustainability efforts, then they wouldn't be able to factor them into their purchasing decisions. Additionally, if companies don't have clear tracking and data management systems in place to measure customer loyalty benefits tied to sustainability investments, they may find it difficult to measure such benefits.

In our stakeholder interviews, several companies shared a concern that consumers today may not yet be willing to pay for sustainable products. However, CSB's SMSI™ research on actual consumer purchasing at scale shows that, in fact, consumers are very willing to pay price premiums (28% on average in 2023 and as much [or more than] 100% for certain CPG categories) and the market share of sustainable products is growing year over -year. It is possible that manufacturers' inability to capitalize on these consumer shifts in preference may be attributed to manufacturers using ineffective messaging that therefore fell short on generating consumer awareness, as noted in CSB's recent research.

Motivations versus value realized in own operations for manufacturers



Motivations versus value realized in suppliers' operations for manufacturers



* The values shown on the bar graphs indicate the percentage of respondents that selected each category

Path forward for manufacturers

Act and adapt

With their central role in the value chain, and their mixed responsibilities between B2B and B2C functions, manufacturers face added challenges. However, there are a variety of actions that manufacturers can take to drive value and offset the complexities they face.

As the creators of products for consumption, manufacturers are encouraged to stay attuned to trends in consumer preferences and the evolving regulatory landscape. For instance, the shifting market and regulatory requirements are evident in the changes of avoided and allowable chemicals. By anticipating these changes, manufacturers can avoid unnecessary costs, foster innovation in product development, and gain a competitive advantage through enhanced sales.

Although manufacturers often do not have direct consumer interaction, they can work closely with downstream value chain partners such as retailers to gain a better pulse on consumer

behavior and preferences. In doing so, they can then create new products that adapt to emerging consumer trends (e.g., foods that are plant-based or have higher nutrient density) or update their product formulations (e.g., explore ingredient substitutions that do not compromise product quality). Manufacturers can also capitalize on brand-building efforts by investing in marketing and emphasizing sustainable product attributes to strengthen their brand image and better resonate with consumers.

Please refer to the overarching **Path forward across the value chain** section on page 75 for additional actions that companies across the value chain can take related to the following actions: **drive progress in the face of uncertainty, invest in your enabling environment and establish key partnerships, and pursue collaboration and co-investment opportunities.**

Geographic deep dive:

In the United Kingdom, manufacturers are benefiting significantly from sustainability practices, with robust regulatory frameworks such as Climate-related Financial Disclosures boosting transparency and consumer trust. These regulations, which set the United Kingdom ahead of peer nations such as the United States and European Union, went into effect in August 2022. Looking ahead, the United Kingdom is planning to pilot new sustainability labeling and disclosure requirements starting in 2024.⁷⁴ Enhanced reporting from these initiatives will improve the validity of sustainability claims, enabling manufacturers to command higher mark-ups on products developed with sustainable practices. Every UK manufacturer reported at least 2% revenue growth, with 29% experiencing growth rates greater than 5%. The outlook is also robust, with 100% of UK manufacturers optimistic about the demand for products with verifiable sustainability claims.

Conversely, in Germany, while all manufacturers also reported at least 2% growth, none achieved greater than 5%, reflecting a more conservative market response— with only 36% optimistic about future consumer demand for sustainable products. This trend of moderate optimism extends to the Netherlands and the United States, where 75% and 69% (respectively) of manufacturers reported at least 2% growth due to sustainable initiatives. However, the expectation for future demand is relatively subdued, with 42% of Dutch and 46% of US-based manufacturers optimistic about the market's response to sustainably verifiable products.

These regional insights highlight the crucial role of regulatory environments and consumer attitudes in driving the economic outcomes of sustainability initiatives. The United Kingdom's successful integration of policy and market dynamics serves as a benchmark, suggesting the need for Germany, the Netherlands, and the United States to potentially strengthen their regulatory and market engagement strategies to better leverage consumer interest in sustainability.

Food Services

Within the value chain, food service providers connect to consumers through institutional clients. Their role primarily consists of buying goods (produce, branded foods, cutlery, etc.) from processors and manufacturers, and then distributing and/or preparing them as ready-to-eat meals for consumers. Institutional food services consist of establishments that provide food in schools, public and private cafeterias, hospitals, and universities. Additionally, they include food service distributors that transport and supply food and non-food products to restaurants, schools, universities, hospitals, cafeterias, industrial caterers, and nursing homes.



Food Services

Buy ingredients from for processors and/or manufacturers and store, prepare apportion, transport, and/or package food to be consumed typical in institutional settings

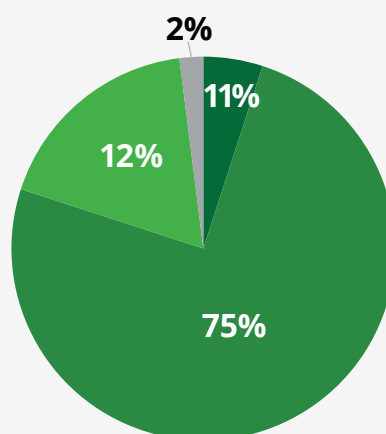
A distinctive aspect of food service providers is that they often operate at client sites, such as universities and hospitals, which have their own facilities. This proximity fosters a closer relationship with their clients' operations, presenting unique opportunities and challenges in implementing sustainability strategies. Some strategies, such as implementing operational changes to reduce energy use, are often more straightforward and easier to enact, as they are a direct cost saver for their clients. However, other strategies may require food service providers to convince their clients of the direct and indirect benefits, therefore making these strategies more challenging to implement.

Revenue growth overview

86%

of respondents saw at least 2% revenue growth from investing in sustainability strategies

- > 5% revenue growth
- 2% - 5% revenue growth
- < 2% revenue growth
- Did not realize



**Percentages may not total 100% due to rounding*



The majority of food service providers capture at least 2% growth

Food services experienced a relatively high rate of revenue growth compared to other value chain segments in 2022. With 86% of food service providers reporting at least 2% revenue growth, they outpaced all other roles, including processors (83%), manufacturers (80%), restaurants (65%), and retailers (82%). While food services experienced the highest rates that were at least 2%, only 11% of food service providers reported revenue growth greater than 5%, which is at the mid to lower end of the value chain roles.

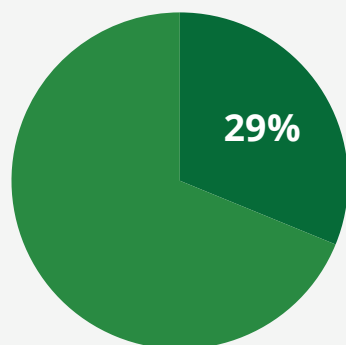
The relatively high rates of revenue growth of food service providers suggests that they may be able to better capitalize on their sustainability strategies, such as providing healthier or more sustainable food options. Given that the customer base for food service providers can include institutions such as universities, hospitals, and employee cafeterias, often the end consumers (students, patients, and employees) themselves can demand more sustainable or healthier food options. This dynamic can help influence food service providers to consider sustainability when deciding on products or vendors, as their decisions would have an impact on their institutional brand reputation. For example, recent initiatives by university student bodies have prompted institutions to adopt more sustainable dining options, therefore affecting decisions made by institutions when contracting with food service

providers.⁷⁵ The University of Michigan's dining services has been partnering with student-led programs, such as the UM Sustainable Food Program and initiatives like "Sustainable Mondays," to amplify their impact, demonstrating the power of informed student demand in driving institutional change toward achieving carbon neutrality.⁷⁶ Additionally, the introduction of carbon labels in 2022 marks a significant effort to promote sustainable food choices among students. UM Dining Director of Sustainability, Student & Community Engagement Keith Soster mentioned that "Michigan Dining is proud to support academic and student engagement through research collaborations that contribute to our campuses' sustainability goals."

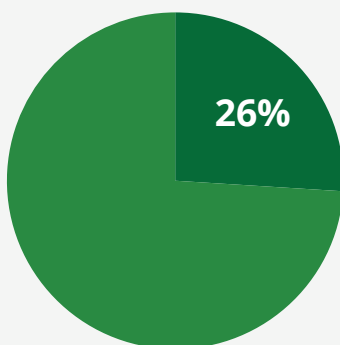
Universities outside the United States are also adopting sustainable cafeteria practices in response to student demands. UK student unions in Cambridge, Stirling, Birmingham, and London recently voted for vegan menus in their school cafeterias.⁷⁷ In Canada, students pushing for more environmentally friendly food has led the University of British Columbia's cafeteria menu to become primarily plant-based; the school plans to make 80% of its menu plant-based by 2025.⁷⁸ These examples all show the opportunity that the food services industry has to work with end consumers to implement and maintain sustainable strategies, creating value for not only food service providers, but also institutions and their end consumers.

Revenue-driving strategies

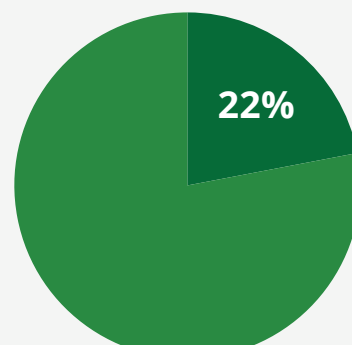
Top 3 revenue-generating strategies selected by food services



Sustainable and responsible supply chain sourcing



Invest in water stewardship



Improve energy management

How sustainability strategies drive value for food services

Food service providers reported **sustainable and responsible supply chain sourcing**, **invest in water stewardship**, and **improve energy management** as their top three revenue-driving strategies, though alignment proves to be lower with a range from 22% (improve energy management) to 29% (sustainable and responsible supply chain sourcing). The overall alignment on common strategies is similar to those reported by restaurants and retailers, but it lagged against manufacturers (ranging from 36% to 34%) and processors (ranging from 31% to 26%). This could point to a higher diversity of strategies employed across food services, restaurants, and retailers, with more options for sustainability initiatives present for these value chain roles.

Within the top strategies reported by food services, two have also been ranked as top cost-saving strategies (**sustainable and responsible supply chain sourcing** and **improve energy management**). The overlap points to a higher success with the strategies and their ability to implement them across the value-driving spectrum.

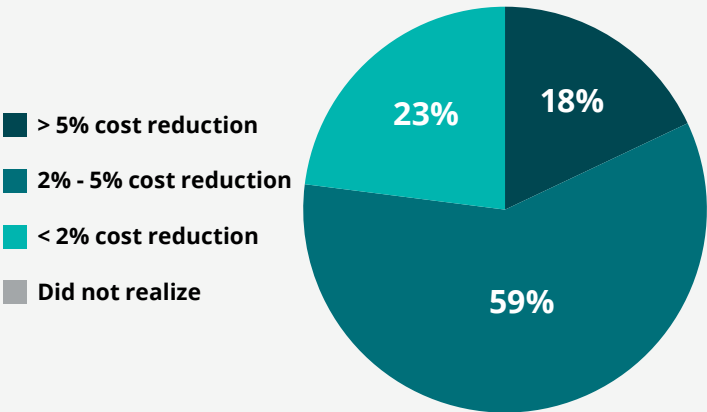
The top revenue-generating strategy, sustainable and responsible supply chain sourcing, was reported to drive value by 29% of food service respondents. The popularity of the strategy may be propelled by food services' position in the value chain, with close ties to both end consumers and their upstream partners. Upstream, processors and manufacturers are launching more sustainability features of their own, and this provides food services with increased options for how the industry sources sustainably. Downstream, sustainable sourcing could differentiate the food services in the marketplace and drive revenue from its ability to sell to institutional partners.

Additionally, downstream end consumers are willing to pay more for sustainable products, and this is propelling shifts in the marketplace. As an example, Sysco, the world's largest food distribution company, which distributes to food services and restaurants, committed to sourcing 75% of its coffee from certified or verified sustainable sourcing programs by 2025.⁷⁹ In fiscal year 2022, at least 2% of the US broadline Sysco Brand coffee pounds sold were certified fair trade and organic. CSB's Sustainable Market Share Index^{TM80} has found that market share of sustainable coffee has grown to 30% of the total, at a 6.5% premium on average, demonstrating the growth and potential upside that Sysco has in sourcing coffee sustainably.

Cost reduction overview

77%

of respondents saw at least 2% cost reduction from investing in sustainability strategies



*Percentages may not total 100% due to rounding

Improving energy management and **invest in water stewardship** have also been seen to drive revenue for food services. As food service companies often work out of customer-owned settings, such as schools and museums, working with their clients on such strategies is critical. By implementing these strategies clients are able to reduce their energy usage and water costs.

Outside of the top three revenue-driving strategies, developing **sustainable packaging** solutions has gained a lot of traction in the food industry space. While only 11% of food services reported implementing sustainable packaging solutions, there is a strong focus on the topic. This is highlighted by a global range of local and federal regulations mandating minimum recycled content⁸¹, limiting virgin plastic use,⁸² and increasing waste responsibility.⁸³ In addition to the regulatory requirements, customers, shareholders, and NGOs are driving food service companies to find sustainable packaging solutions. In 2023, Sysco Corporation saw 92% of its shareholders vote on a resolution for the company to substantially reduce its plastic packaging and be more transparent about the materials it uses.⁸⁴



Food service providers observe mixed results for cost savings

Compared to other value chain nodes, food service providers achieved one of the highest proportions of low- to mid-range cost reductions (less than 2% and from 2% to 5%, respectively), but the lowest proportion capturing the highest rates (greater than 5%) of cost reduction. With 77% of food services reporting at least 2% cost savings, they outpaced upstream value chain roles (69% for processors and 68% for manufacturers) and restaurants (75%), only to be outdone by retailers (80%). At the same time, only 18% of food services saw cost savings greater than 5%, which was lower than most other roles (20% for processors, 16% for manufacturers, 24% for restaurants, 23% for retailers).

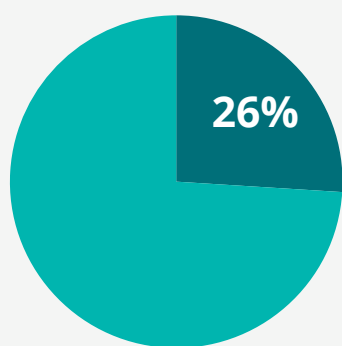
These mixed results on cost reduction may be attributed to multiple factors. Firstly, food service providers range dramatically in size and scale, which can influence their ability to leverage economies of scale, negotiate with suppliers, and invest in cost-saving technology. Larger food service providers may be able to achieve more substantial cost savings due to their purchasing power and broader operational efficiencies. Additionally, food service providers may face many different requirements from their various customers. They need to meet the needs of schools, hospitals, corporate cafeterias, and individual restaurants. Each environment has unique challenges and requirements that can limit cost-saving measures. For example, a hospital cafeteria may have strict health and safety regulations that can necessitate higher spending on compliance and training for food service staff.

Case study:

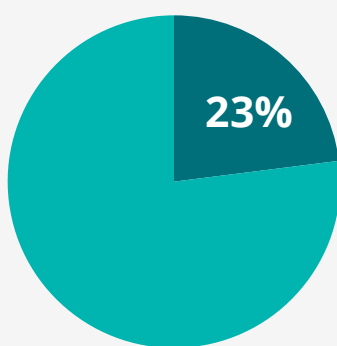
Sysco's efforts following its shareholder vote to reduce plastic packaging usage included sustainable packaging for its UK brand, M&J Seafood, to maximize shelf life, maintain food quality, and reduce both food and packaging material waste. The company discovered that the typical fishmonger's wax box and ice storage system led to excess waste and downstream disposal problems. M&J Seafood identified two potential solutions: a Promens tray⁸⁵ that could be implemented for most products right away and thermoformed packaging that could provide further benefits during the next step of packaging. The tray reduces the wax box's packaging materials to only two forms of easily recyclable plastic, and the thermoformed packaging uses up to 40% less plastic and is designed to enable portion control and a longer shelf life. The solution allows Sysco to "consolidate the delivery of fresh products from different categories into one delivery," which is "a far more convenient and cost-effective solution for our customers, and it also reduces the number of deliveries required,"⁸⁶ generating cost savings for the company. The survey found a statistically significant positive association between implementing sustainable packaging solutions and cost reductions greater than 5% for companies' suppliers' operations, consistent with the outcome in this example for Sysco and M&J Seafood.

Cost-saving strategies

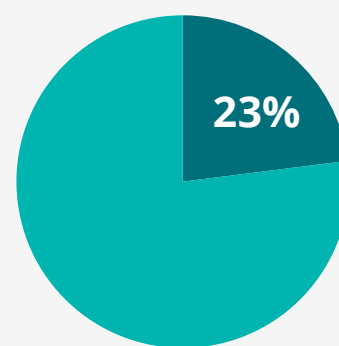
Top 3 cost-saving strategies selected by food services



Improve energy management



Provide healthy nutritious food products



Sustainable and responsible supply chain sourcing

The top three cost-saving strategies reported by food services include **improve energy management** (26%), **provide healthy nutritious food products** (23%), and **sustainable and responsible supply chain sourcing** (23%). As compared to other value chain roles, food services had limited consolidation with its top cost-saving strategies (23% to 26%). The low frequency recorded for each of the top three strategies could indicate a greater diversity of sustainable cost-saving strategies, with a wider range of successful endeavors.

Improving energy management is the top cost-saving strategy for food services, due to energy-intensive activities in the role. The value chain position of food services often involves activities such as cooking, refrigeration, transportation, and storage, which require high energy inputs. Energy-saving practices utilized include installing more energy-efficient equipment, decreasing energy-intensive preparation practices and technologies, and increasing use of renewable energy—all of which reduce operating costs. For example, Aramark—a leading global provider of food, facilities, and uniform service to operations that span across the education, health care, business and manufacturing, sports and leisure, destinations and parks, and corrections sectors—obtained an IMELSA ENERGÍA Green Label validating the use of 100% renewable electric energy in its Chile Alpes food production plant. Smart technology is playing a role in identifying energy efficiencies as seen with Aramark's AIWX™ Connect, which uses sensors to track occupancy, allowing for modified cleaning routes and energy use for better space management. This can result in an annual energy savings of 37% in unoccupied spaces.⁸⁷

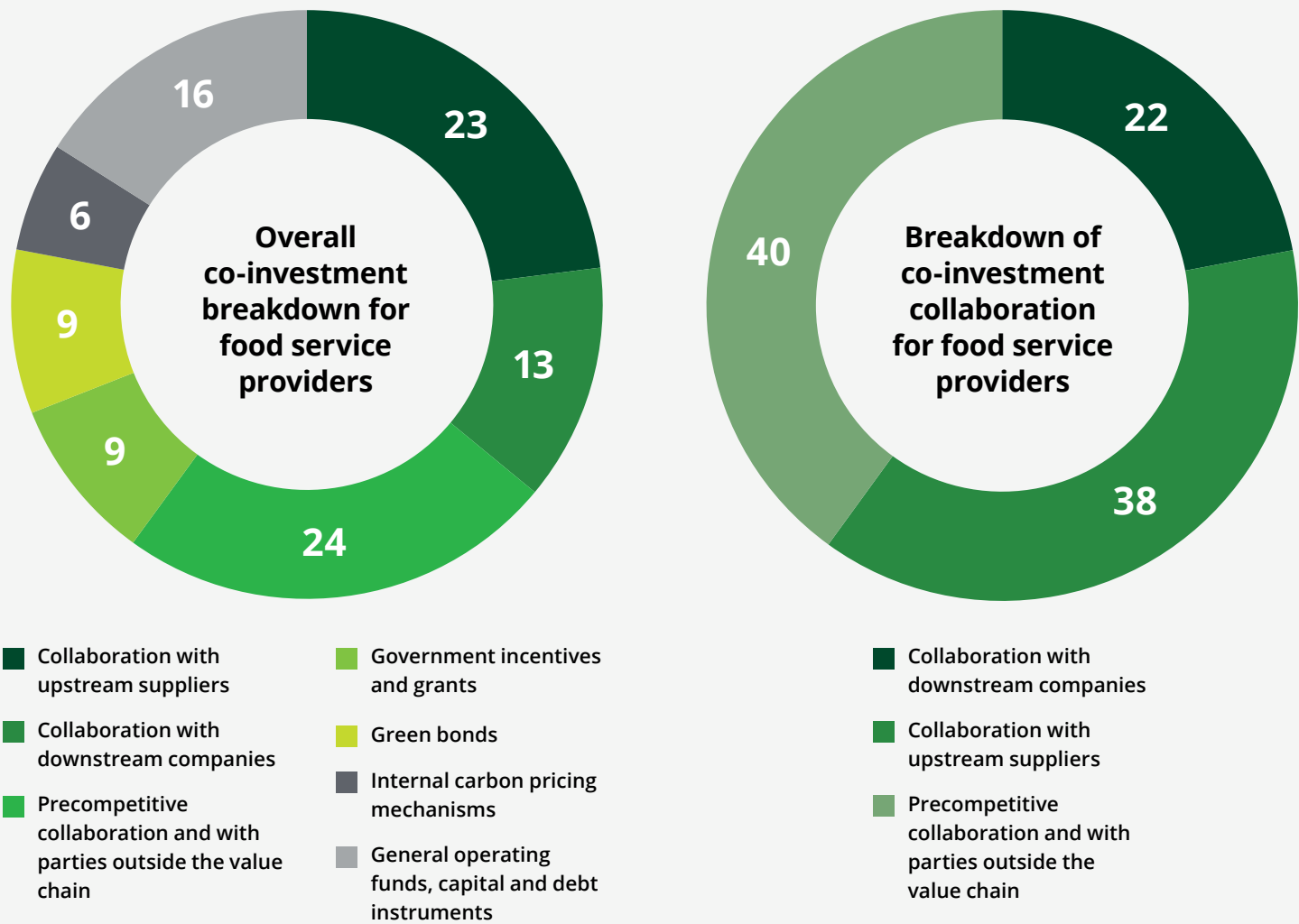
The next ranked strategies, **provide healthy and nutritious food products**, and **sustainable and responsible supply chain sourcing**, have wide cost-saving implications for food services. Both strategies could lead to reduced volatility in the supply chain, improved relationships with upstream suppliers, and overall risk-mitigation with sourcing.

With their lower consolidation of top strategies, the next ranked initiatives had near-parallel turn out as the top three. The following ranked strategies included **sustainable packaging solutions** (No. 4 at 23%), **ensure safe food products** (No. 5, 20%), and **protect and conserve biodiversity and ecosystems** (No.6, 19%). The percentage recorded for the sixth most frequently used strategy when compared to the first varies by only seven percentage points, further indicating a high-level of diversity within the food services industry's sustainable cost-savings strategies.



Co-investment

How collaboration and co-investment on sustainability drives value for food service providers



* The number represents actual no of participant responses

Collaboration with others, such as through **pre-competitive collaboration and with parties outside the value chain**, drives significant benefit for food service companies. These collaborations often provide access to expertise and transparent dialogue to create transformative solutions to existing sustainability challenges. An example of pre-competitive collaboration is the Understanding Packaging (UP) Scorecard developed by a cross-industry group of leading food service companies, NGOs, and technical experts.

The open-source tool measures the human and environmental health of commonly used foodware and food packaging materials, to assist companies' sustainable purchasing decisions. Scores are provided for plastic pollution, chemicals, climate, water use, sustainable sourcing, and recoverability.⁸⁸ Katherine Walker, director of sustainable operations at Sodexo (a global food services and facilities management company based in France), stated:

“At Sodexo, it has been critical to have access to nuanced expertise from respected third-party organizations to accelerate change. Including our competitors in these conversations with specialists and agreeing on what solutions will work best across the board can help shift the supply base in a common, purposeful direction. This precompetitive work is mutually beneficial to all parties as it saves resources, time, and money, and impact is achieved faster. ‘But don't you lose the competitive edge?’ Not at all, because deployment of these products or solutions is where Sodexo will need to outpace our competitors and rise to the top.”⁸⁹

Co-investing with downstream companies also drives greater revenue growth for food service companies. Food service companies often operate out of client-owned facilities (e.g., universities, hospitals) and thus can be limited in the scope of impact that they can have on site. Collaborating with their customers to drive efficiency on site can provide both parties with financial benefits and increase customer loyalty. For example, Aramark designates energy engineers to develop and implement energy management solutions to help its clients achieve their financial and environmental goals. Aramark has provided Samsung Electronics America with maintenance, janitorial, dining, refreshments, and concierge services since 2017. Since launching its energy management program, Samsung has achieved a 9.5% reduction in energy consumption and secured ENERGY STAR certifications for seven offices and two facilities.⁹⁰ Similarly, Sodexo plans to train all its onsite managers and senior leaders in sustainable practices such as creating lower-carbon meals and energy-efficient kitchen operations by 2025. Additionally,

long-term compensation of the CEO and other key positions within the company includes key performance indicators aligned with scope 1, 2, and 3 carbon footprint reduction including increasing plant-based dishes and reducing food waste.⁹¹

On the other end of the value chain, **co-investing with upstream companies** expedites transformational solutions that are vetted by the appropriate experts, creating value for all parties. This approach can significantly lower the cost of development, deployment, and adoption of solutions. There are opportunities to collaborate with equipment suppliers on energy- efficiency upgrades or with suppliers on sustainable sourcing and packaging initiatives. By collaborating with upstream suppliers and establishing partnerships, food service providers can drive greater operating efficiencies and reduce costs, because maintaining relationships with existing suppliers can be more cost-effective than sourcing new ones.

Motivations vs. value realized

Food services realized unexpected value across key motivators, with select value drivers seeing significant gains

The top post-investment value driver for food services is improved **supplier relations**. While many food service providers expected to see these gains before investing in sustainability measures (26% in their operations and 25% in their supplier operations), 48% of food service providers saw value realized in their own operations after investing—a huge 22 pp gain—with 36% seeing

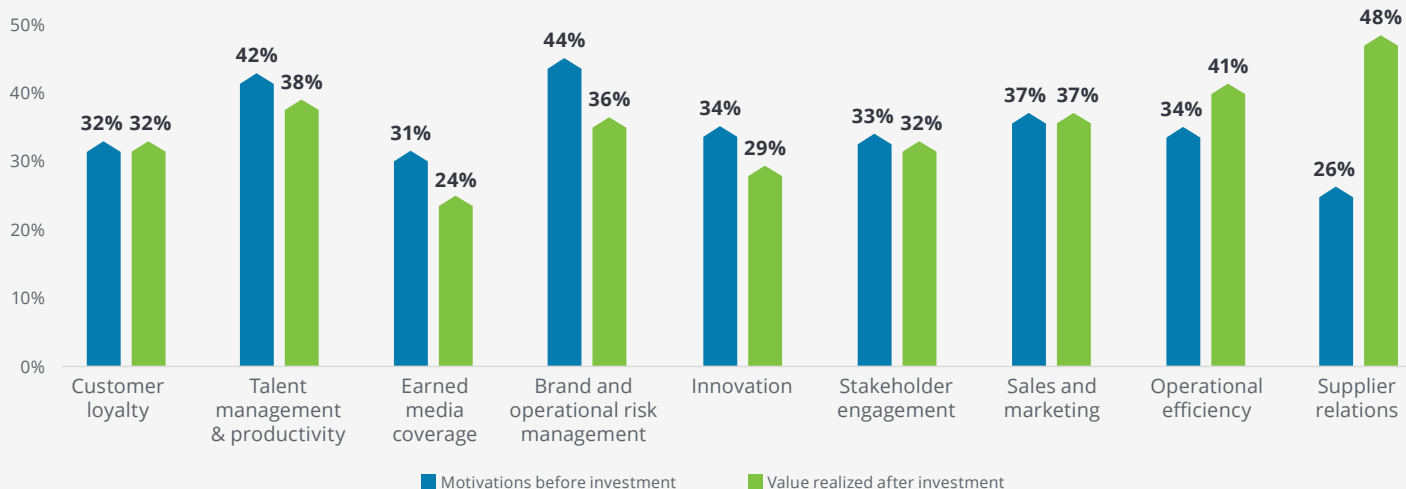
value in their supplier operations. With food service providers top value-driving strategy (sustainable and responsible supply chain sourcing was cited for both revenue growth and cost savings), food services would most likely increase transparency in its supply chain. This transparency could improve communication, build trust, and foster stronger relationships between food service providers and their suppliers. Additionally, investing in sustainable strategies can mitigate risks, which suppliers may appreciate.

The next category to exceed expectations was **sales and marketing**, with food service providers seeing gains in their supplier operations (25% expecting value and 36% realizing gains). The increase in sales and marketing could stem from food service companies' sustainable investments enhancing their brand reputation. With their top strategies (**sustainable and responsible supply chain sourcing** and **improve energy management**), food service providers could benefit from buying / selling products with sustainability claims, working directly with their suppliers to source new products, and increasing efficiency throughout the value chain. These actions could make them more attractive to

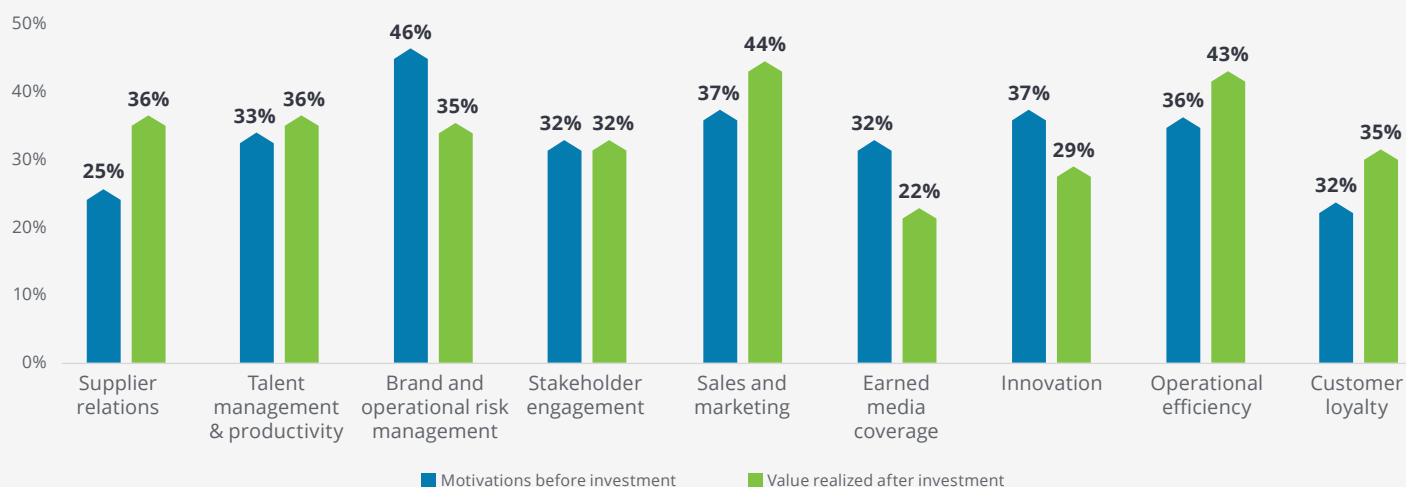
potential customers and partners—leading to increased business opportunities and, consequently, sales.

Lastly, food service providers saw unexpected value with their **operational efficiency**, in both their own and their supplier operations. Within their own operations, 41% of food services realized value, which was a 7 pp gain from expectations. In their supplier operations, 43% reported gains after investment, which also shows a 7 pp gain. This aligns with food service providers' top strategy of improving energy efficiency and highlights the gains made through such improvements.

Motivations versus value realized in own operations for food service providers



Motivations versus value realized in suppliers' operations for food service providers



* The values shown on the bar graphs indicate the percentage of respondents that selected each category

Path forward for food services

Act and adapt

Overall, food service providers saw significant benefits from investing in sustainable strategies. Positioned close to the end consumer (students, office employees, hospital patients, etc.), food service providers can be attuned to consumer behaviors and preferences and adapt accordingly. Through being able to anticipate and adapt to changing customer needs, food service providers can partner with consumers to develop offerings that meet their preferences. In a rapidly evolving market, the ability to efficiently anticipate and adapt is key for future success.

In their immediate ecosystem, food service companies must be conscious of their own sustainability goals, those of their customers (e.g., universities), and those of the end consumer (e.g., students).

Food service providers can work with their customers to share the benefits of and encourage them to adopt energy and water conservation practices. This could entail investing in energy-efficient kitchen appliances and equipment, energy-efficient lighting solutions such as LED bulbs, low-flow faucets and dishwashers, and

implementing water recycling systems where feasible. Additionally, because end consumers (university students, for example) often have some influence over purchase decisions made by their universities, food service providers can be proactive in adapting their product offerings to create a competitive advantage by staying attuned to the market and monitoring evolving consumer preferences.

Further, food service providers can provide training for staff on sustainable practices and the importance of sustainability in food service operations or create incentive programs to encourage staff to adopt and promote sustainable practices.

Please refer to the overarching **Path forward across the value chain** section on page X for additional actions that companies across the value chain can take related to the following actions: **drive progress in the face of uncertainty, invest in your enabling environment and establish key partnerships, and pursue collaboration and co-investment opportunities.**

Geographic deep dive:

The food services industry exhibits varied levels of optimism regarding the future demand for sustainable products across different regions. In the United States and Germany, optimism prevails with 62% and 72% of firms, respectively, expressing a positive outlook. Conversely, in the United Kingdom, only 44% of firms share this sentiment, while the Netherlands displays a notably pessimistic perspective with more than 60% of firms anticipating a decline in demand for sustainable products. This sentiment is echoed in the World Wildlife Fund's 2023 survey, which revealed that the cost of food has emerged as a major source of anxiety for Europeans—surpassing even housing costs—with 60% of respondents citing price as the main barrier to consuming sustainable food.⁹² More than 75% of these respondents believe that sustainable food should be priced lower or at least not higher than non-environmentally friendly options.

This disparity in outlook extends to expectations around the value realized from sustainability strategies. The United States stands out as the only market where a majority (59%) of participants anticipate an increase in value from these strategies. In stark contrast, the majority of survey respondents in the Netherlands (60%) and the United Kingdom (55%) expect the value realized from sustainability strategies to decrease, reflecting broader concerns in these geographies.

The varying expectations across these geographies could be linked to actual performance and economic factors. While most firms reported a minimum 2% increase in revenue attributable to sustainability strategies, Dutch firms experienced significantly lower cost reductions, with half of respondents reporting capturing the lowest rates of cost reduction (less than 2%), contrasting sharply with the United States, where only 18% reported capturing less than 2% of cost savings. Additionally, higher inflation rates in the Netherlands compared to the United States over the 12 months leading up to the survey may further explain the less optimistic outlook in the Dutch market, affecting the perceived value and effectiveness of sustainability initiatives.

Restaurants

Restaurants include a wide range of consumer-facing businesses, with the role ranging from quick-service restaurants (QSRs) to full-service and gourmet establishments. Across the spectrum of business, restaurants all focus on preparing and serving food to customers, in either a to-go or sit-down environment.

With a high level of consumer interaction, restaurants are highly attuned to, and driven by, consumer concerns. This includes the recent shift toward healthy food and the subsequent growth in plant-based products, with some 48% of restaurants now offer plant-based or vegan menu options.⁹³ A recent report by the Plant Based Food Association finds that 60% of total US households are now regularly purchasing plant-based alternatives of animal-based products, pointing to a wide-spread consumer demand for these products. Additionally, consumers have been increasingly focused on protecting and conserving biodiversity, through actions such as preventing deforestation for agriculture uses. As restaurants were the only value chain section to report this as a revenue-driving strategy, it shows their keen interest in consumer concerns.



Restaurants

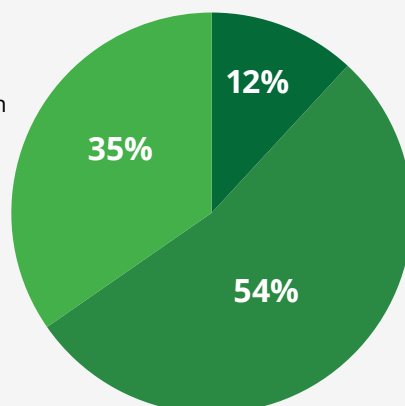
Prepare and serve food and drinks to be consumed on premise, through take-out, or via delivery services including quick service restaurants (QSRs) casual, full-service, and gourmet

Revenue growth overview

65%

of respondents saw at least 2% revenue growth from investing in sustainability strategies

- > 5% revenue growth
- 2% - 5% revenue growth
- < 2% revenue growth
- Did not realize



*Percentages may not total 100% due to rounding



Restaurants captured the lowest rates of revenue growth across value chain nodes

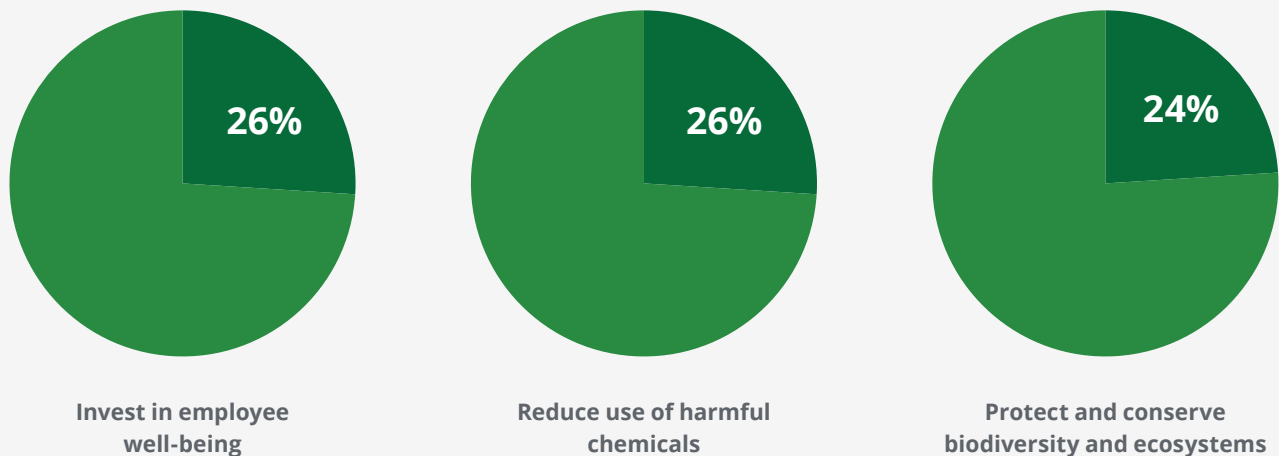
Restaurants experienced the lowest percentage of revenue growth among value chain players; 35% of restaurants reported revenue growth of less than 2% compared to 18% of manufacturers, 18% of retailers, 17% of processors, and 12% of food service respondents. This shows a general limitation in restaurants' ability to fully capitalize on the sustainability strategies they have enacted, potentially pointing to a need to adopt other measures.

Restaurants face several industry-wide challenges that may help explain their relatively lower rates of revenue growth compared to other value chain segments. Restaurants operate in a highly competitive industry with low barriers to entry, leading to market saturation in many areas. This landscape and dynamic often makes it difficult for restaurants to drive new customer acquisition.

Given the competitive nature of the market, restaurants are often limited in their ability to increase prices without affecting consumer demand. Consumers with multiple dining options may be deterred by higher-priced menus, therefore pressuring restaurants to keep prices competitive which can limit revenue growth. Additionally, restaurants need to continuously adapt to changing consumer preferences, such as dietary trends, demand for sustainable and locally sourced ingredients, and shifts towards plant-based diets. Keeping up with these trends requires menu adjustments and possibly higher ingredient costs, which can have an impact on profitability and revenue growth.

Revenue-driving strategies

Top 3 revenue-generating strategies selected by restaurants



How sustainability strategies drive value for restaurants

The top three revenue-generating strategies for restaurants included **invest in employee well-being**, **reduce use of harmful chemicals**, and **protect and conserve biodiversity and ecosystems**. These strategies point to key aspects of restaurants' value chain position, such as high levels of engagement with both employee staffing and sustainability-trending consumer choices.

Restaurants were the only segment to choose **invest in employee well-being** as a top revenue-driving strategy due to their strong reliance on the workforce. Eating and drinking establishments (e.g., coffee shops, bars, restaurants, cafeterias) require the service of many workers and make up the largest percentage of workers in US food and agriculture industries.⁹⁴ Moreover, restaurants also have extremely high levels of turn-over (as high as 200% in the fast-food sector).⁹⁵ In addition, the quality and work of employees directly affects the consumer experience, which is important to a brand's image and only further highlights the significance and impact of employee well-being levels. Jon Hixson, Chief Sustainability Officer of Yum! Brands, a leading global QSR company, commented that "people are the number-one indicator of success. Restaurants with

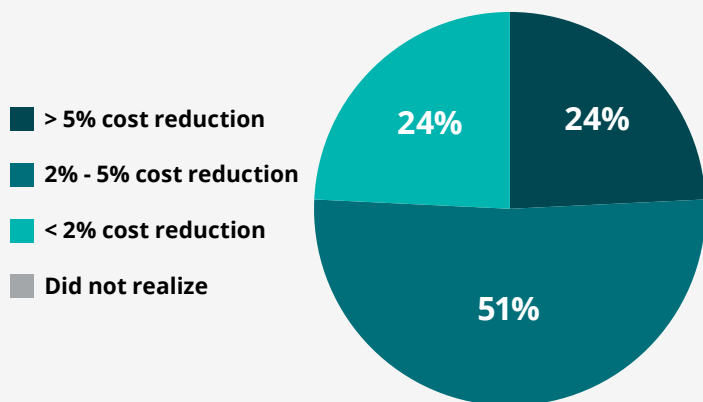
a positive return on investment sell more food and make more money per unit of food sold, which only occurs when you have a well-aligned, emotionally-supportive workforce, proud to be working in the restaurant."⁹⁶ To support this strategy, in 2020, Yum! Brands announced a five-year, \$100 million commitment to tackle inequality among employees, frontline restaurant teams, and communities worldwide.⁹⁷ Investments targeted the areas of equity, inclusion, education, and entrepreneurship, with a focus on increasing diversity among the corporation's executive and management ranks, franchisees, and suppliers.

Another key strategy enacted by restaurants was to **reduce the use of harmful chemicals**. A census poll conducted in the United Kingdom, Australia, France, Mexico, Germany, and the United States showed that more than 70% of respondents wanted manufacturers to both reformulate less healthy foods to make them healthier and produce healthier alternatives to replace unhealthy products.⁹⁸ An online survey by the International Food Information Council of more than 1,000 consumers age 18 to 80, found that three out of four reported that the food they eat has an impact on their mental and emotional well-being. In addition, three out of four respondents took into consideration whether food is processed when making purchasing decisions; six in 10 respondents said they avoid processed food, and just over half of respondents would be *willing to pay more* for unprocessed products.⁹⁹ The growing awareness of the poor health effects from the consumption of chemicals and ingredients in ultra highly processed foods is driving consumers away from these products. It may also be driving revenue for those companies that avoid their usage and replace them with fresher and more natural ingredients.

Cost reduction overview

75%

of respondents saw at least 2% cost reduction from investing in sustainability strategies



*Percentages may not total 100% due to rounding

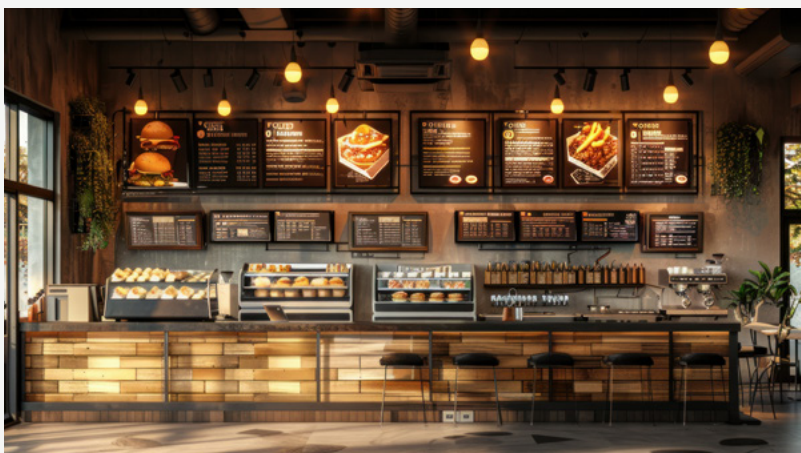
Protect and conserve biodiversity and ecosystems was another key revenue-driving strategy identified by restaurants, with 24% of participants identifying it as a top three strategy to increase revenue. The strategy involves upstream measures targeting reduced deforestation, protection of endangered species, and agroforestry practices. With key ecosystems, such as the Amazon Rainforest, under threat from agricultural activities, prioritizing their protection can be a differentiator for food and agricultural brands. However, to adequately protect these ecosystems, a clear definition of the word "deforestation" is needed. For example, the palm oil industry in Indonesia saw significant progress in deforestation reduction when transitioning to an explicit definition of deforestation from its previous level of ambiguity. In the past few years, both the beef and palm oil industries have come under

scrutiny for the vast amounts of rainforest cleared for their production. Often, in these areas, practices such as slash-and-burn have been employed, with large tracts of forest felled, burned, and cleared for production. This process leads to increased soil erosion, water contamination, and dust clouds.¹⁰⁰ In the highlighted case study, McDonald's and Carrefour co-funded research on the benefits of promoting the reduction of deforestation in their beef supply chains, which subsequently drove revenue for the brands.

Restaurants realize significant cost savings

While restaurants had the lowest revenue growth across value chain roles, restaurants captured higher cost savings compared to most of the other value chain segments. In the survey, a relatively medium- to high proportion (75%) of restaurants realized cost reductions at least 2% (compared to 80% of retailers, 77% of food service providers, 69% of processors, and 68% of manufacturers). However, restaurants had the highest proportion of respondents that achieved the highest rates of cost savings: 24% of restaurants reported capturing greater than 5% cost savings (compared to 23% of retailers, 20% of processors, 18% of food services, and 16% of manufacturers).

The very factor that limits restaurants revenue growth opportunities is also what can help restaurants realize significant cost savings. As restaurants continuously update their menus, they have the opportunity to focus on higher-margin items and eliminate items that are less popular or more costly to prepare. Restaurants can also drive down costs by implementing practices to reduce food waste, such as reevaluating portion sizes, improving food storage and handling, and repurposing ingredients across multiple menu items. Further, restaurants can adopt technologies that can drive efficiencies. Point-of-sale systems, inventory management software, and digital reservation systems can help restaurants identify consumer habits and reduce labor costs by automating processes.



Case study:

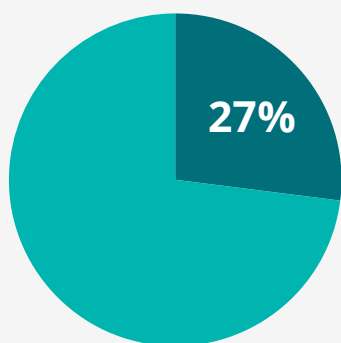
Raising cattle in Brazil is the biggest driver of deforestation in the Amazon Rainforest and is responsible for up to 80% of GHG emissions related to land use change. In the study, benefits were identified for ranchers, slaughterhouses, and retailers. Deforestation-free commitments reduced risk and, when coupled with sustainable agriculture practices, created financial opportunities throughout the value chain. Sustainable agricultural practices drove rancher innovation and resulted in 2.3 times improvements in productivity and 6.8 times improvements in profitability, primarily by:

- Reducing the costs of inputs;
- Reducing the cost per kg produced through better agricultural techniques such as pasture recuperation, water distribution, fencing and rotation of pasture;
- Eliminating the need to lease additional land for production through sustainable intensification (more cattle per hectare);
- Producing higher quality beef that commands a premium; and
- Decreasing GHG emissions by 20%.

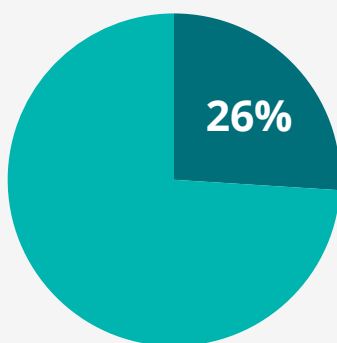
The value of sustainability strategies is shaped by increasing value in the eyes of stakeholders and consumers. Consumer-facing companies, such as McDonald's and Carrefour, have a direct opportunity to incorporate sustainability as a product differentiator and to reduce reputation risk. In the study, sustainability-related product quality improvements were one of the biggest value drivers for customers. Retailers also reap the benefits of improved supply quality and continuity of products, lower cost of capital, and improved talent retention. The ability to charge a price premium for higher-quality sustainable products provides revenue opportunities between \$12.5 million and \$62.1 million for McDonald's and Carrefour. Additionally, there are benefits related to cost savings associated with sustainable products from reduced operational, market, regulatory and reputational risks.¹⁰¹

Cost-saving strategies

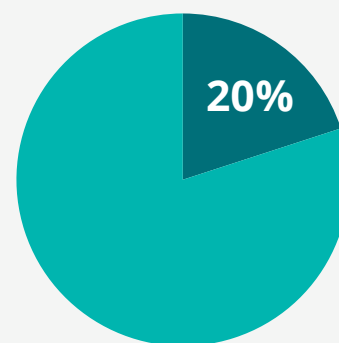
Top 3 cost-saving strategies selected by restaurants



Sustainable and responsible supply chain sourcing



Provide healthy nutritious food products



Invest in water stewardship

Restaurants chose sustainable and **responsible supply chain sourcing**, **provide healthy and nutritious food products**, and **invest in water stewardship** as their top cost-saving strategies. The range of 20% to 27% for these strategies puts restaurants on the lower end of alignment within the value chain roles, pointing to a more diverse set of successful strategies across the value chain segment.

Sustainable and responsible supply chain sourcing was selected as the top cost-saving strategy for restaurants and is a critical part of their larger strategy to address climate change. This includes both sourcing products that have already been developed with sustainability claims (organic, free-range, etc.) and working with their suppliers to develop sustainable products. How restaurants work with their supply chains varies across the value chain segment, with the strategies employed by large fast-casual restaurants different from those of a single gourmet establishment. McDonald's has been working with its vast supply chain to implement sustainable sourcing practices. By 2022, it reached notable milestones: 100% of the palm oil used in McDonald's restaurants and as an ingredient in McDonald's products is from verified sustainable sources; 99.9% of its ground and whole bean coffee is sustainably sourced; and 100% of soy sourced for the chicken feed used in McDonald's poultry products comes from verified deforestation-free supply chains. The benefits of potentially higher-quality products and improved reliability of supply may also include avoided public relations (PR) and legal costs related to reputational damage.

Provide healthy and nutritious food products was another key strategy selected by restaurants. This strategy includes measures such as offering plant-based foods and developing healthier meal options. Regulatory requirements have been a key driver of cost savings by mandating restaurants to disclose select food metrics. In 2010, the US Affordable Care Act mandated that chain restaurants with 20 or more locations display calorie information on their menus and menu boards.¹⁰² Later, in 2018, the US Food and Drug Administration passed a law to expand menu labeling requirements to include drive-through lanes.¹⁰³ Local regulations within the United States are also driving increased transparency; New York City was the first US city to require sit-down chain restaurants with more than 15 locations to put a warning icon on menu items with 2,300 or more milligrams of sodium.¹⁰⁴ With a growing focus on caloric intake and adverse health issues, restaurants are reformulating their menu items to have less sugar, reduced salt, and smaller portion sizes—which may also help lower costs. Overall, the regulatory landscape is shifting consumers' focus toward portion sizes and the health impacts of foods, driving restaurants to follow suit and adjust their behaviors.

During our stakeholder interview with Yum! Brands (which operates the restaurant brands KFC, Pizza Hut, Taco Bell, and The Habit Burger Grill), Jon Hixson (Chief Sustainability Officer) noted that **providing healthy and nutritious food products** also includes **ensuring safe food products**, with both strategies identified as driving cost savings for restaurants. The survey results demonstrated a statistically significant positive association

between investing in sustainability strategies for healthy and nutritious food and achieving cost reductions greater than 5% within a company's own operations. The cost savings may be driven by reduced regulatory risk, including lower fines and decreased legal and PR expenses.

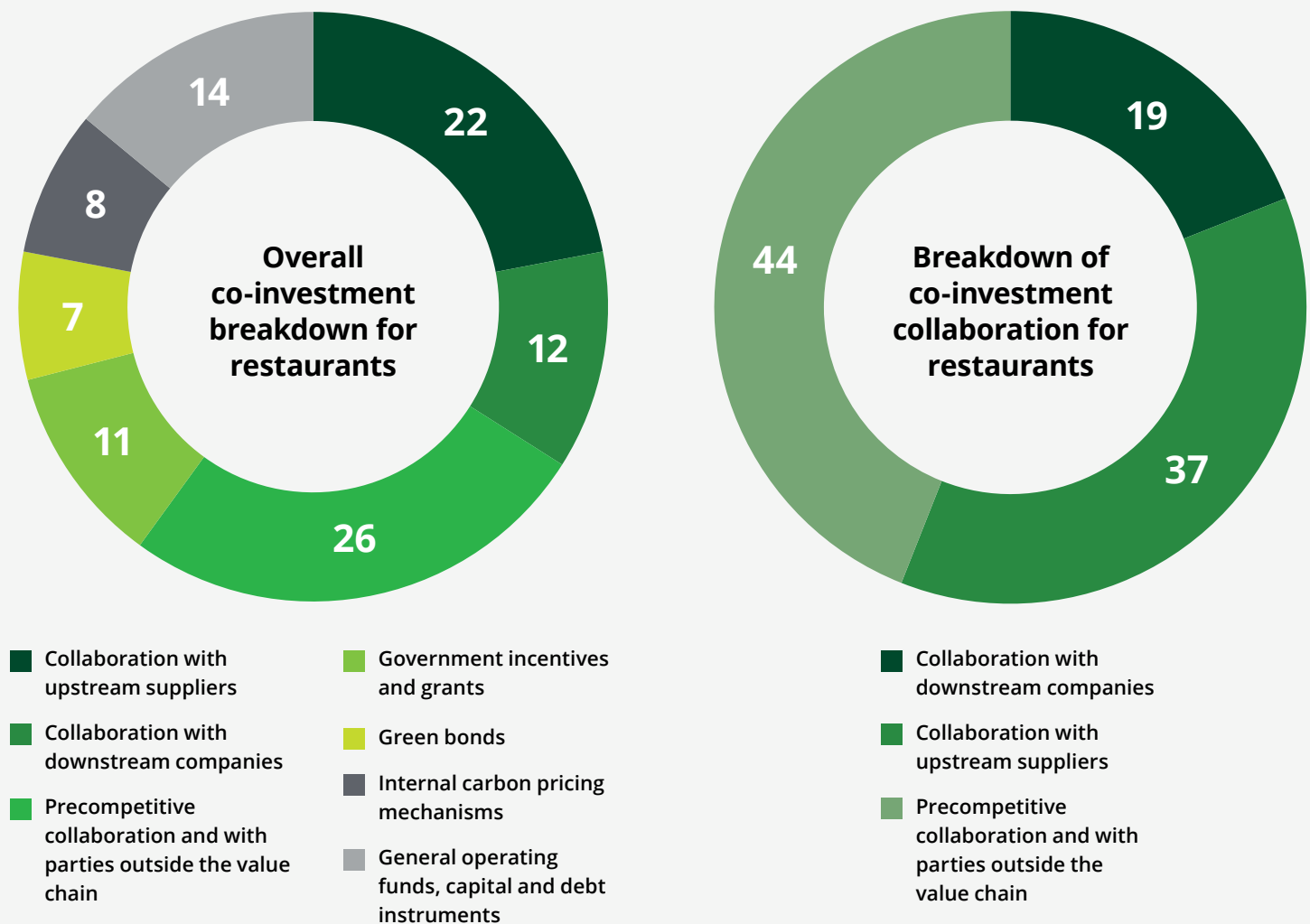
Restaurants were the only value chain segment identifying **investment in water stewardship** as a top cost-saving strategy that drives value. Direct use of freshwater is vital to restaurant and kitchen operations for products and sanitation. Freshwater is also used throughout the supply chain to produce primary products, whether it's developing beverages, preparing meat, or growing fruits and vegetables. Water stewardship practices that companies implement include tracking water usage, monitoring water stress regions, installing water-efficient equipment in their own

operations and value chain, and processing changes that require less water use. As an example, McDonald's France improved its water efficiency by encouraging its restaurants to report and analyze their monthly water consumption and create action plans to improve consumption using a company dashboard. Innovative water stewardship practices, such as low-flow urinals, drought-tolerant landscaping, and permeable pavements, are being used in the design of new restaurants.¹⁰⁵ As of 2020, increasingly efficient buildings in the United States achieved a 19% reduction in water use from 2005 levels.¹⁰⁶ These adaptations are vital, as over the longer term, water scarcity can affect a company's license to operate, with potentially significant financial impacts.



Co-investment

How collaboration and co-investment on sustainability drives value for restaurants



* The number represents actual no of participant responses

Restaurants reported high levels of **collaborative co-investment** (upstream, downstream, and pre-competitive), with the most popular strategy being pre-competitive collaboration; 44% of collaborative co-investing takes place with competitors and players outside the value chain.

Co-investment through **pre-competitive collaboration** was found to drive revenue growth for restaurants. For example, McDonald's was one of the founding members of the Global Roundtable for

Sustainable Beef (GRSB). Founded in 2011, the roundtable's goal is to improve the sustainability of beef sourcing. Today, the GRSB encompasses multiple participants, including other restaurants like Burger King and food processors like Cargill.¹⁰⁷ Engaging in pre-competitive collaboration allows multiple producers to coordinate their sustainability efforts. This not only enhances credibility in the eyes of customers but also generates earned media benefits, thereby improving top-line performance.

Co-investing with upstream companies is another key sustainability strategy for restaurants, as it allows them to have more control over their supply chains and the products they source. By working with players throughout their value chain, restaurants are able to advocate for the sustainability changes that most affect them. The following highlighted Starbucks example with coffee growers illustrates how co-investment between various value chain members can result in positive impacts for a company from both a cost and sustainability perspective—by giving farmers access to more environmentally friendly machines, quality becomes more standardized and processing efficiency is increased, thereby helping Starbucks create a more stable supply chain.

Case study:

Traditional coffee processing is water-intensive; it takes 37 gallons of water to produce a single cup of coffee.¹⁰⁸ In 2023, Starbucks announced \$50 million in planned investments to reduce its water use and waste by half by 2030. Starbucks expects to achieve this goal by directly investing in new ecological wet mills as part of its Coffee and Farmer Equity (C.A.F.E.) Practices, which are a Starbucks sustainable sourcing standard with which producers must comply. In 2021, Starbucks supported more than 1,200 eco-mills for coffee farms in Guatemala, Mexico, Peru, Kenya, and Rwanda. The implementation and practice of each eco-mill across these five countries reduced water usage by 80%. Starbucks is continuing its efforts to reduce water usage by:

- Investing in current water processing technology and machinery to optimize efficiencies;
- Corporate innovation initiatives and setting up farmer support centers located in Costa Rica; and
- Developing water replenishment projects in respective coffee farming communities.¹⁰⁹



Motivations vs. value realized

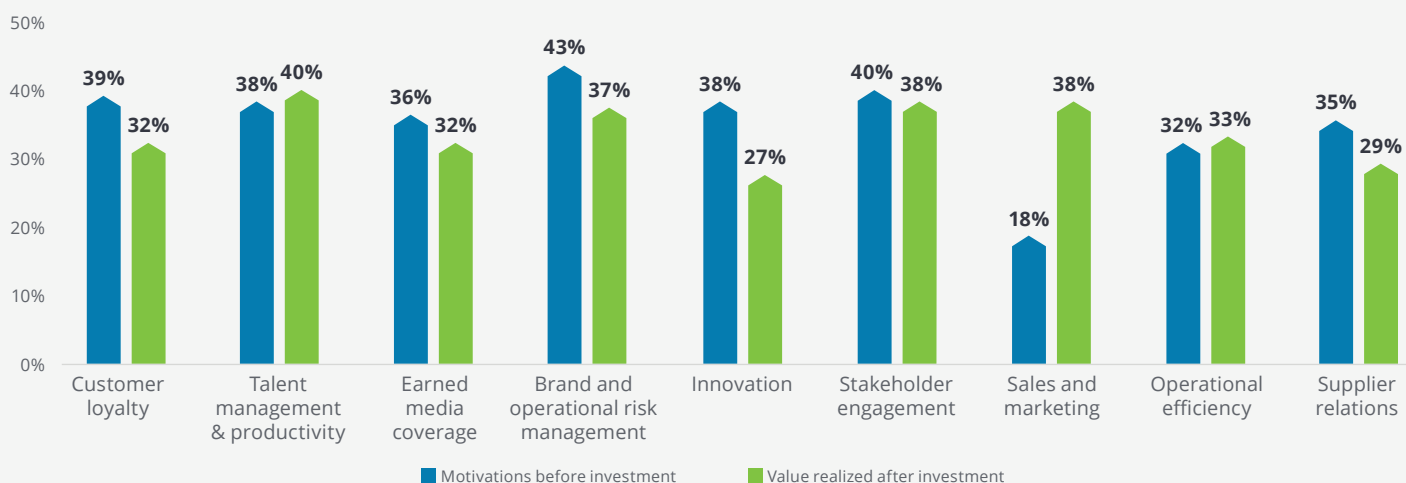
Restaurants show the single largest delta between expectations and those that realized value, highlighting unexpected successes

Restaurants had the largest single jump between a relatively low percentage of respondents expecting a benefit and those that realized value from that benefit after investment. Within their own operations, only 18% of restaurants were motivated by benefits in **sales and marketing**, yet a whopping 38% realized value in this area following investment—more than doubling pre-investment motivation responses. This result could stem from the consumer-facing nature of restaurants and their higher frequency of direct interactions with consumers that are increasingly shifting towards

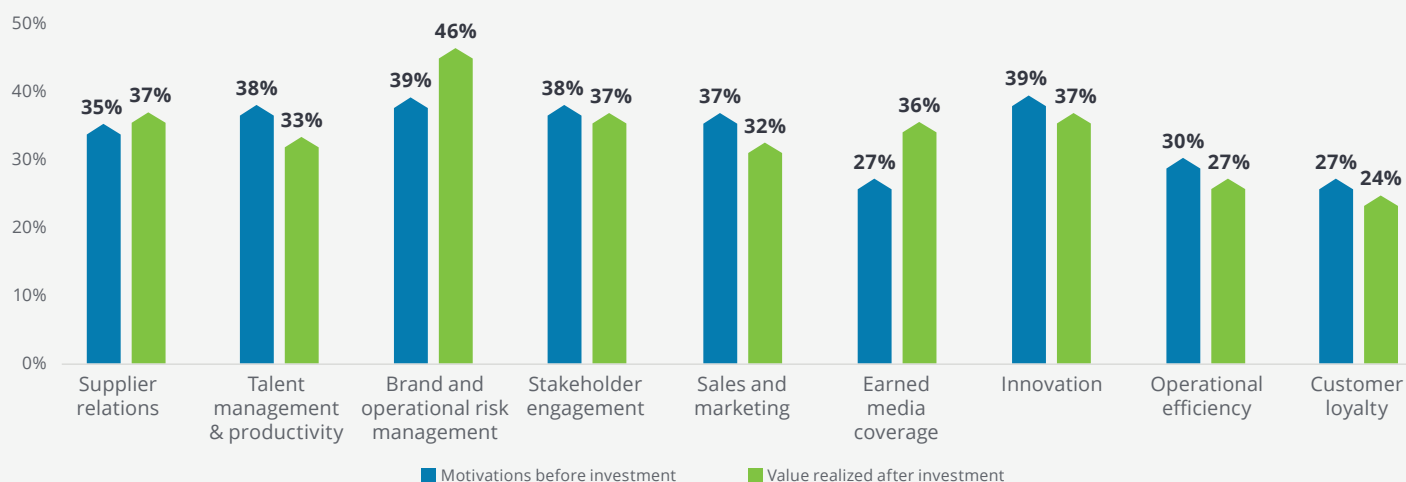
more sustainable choices. It could also be that sustainability initiatives provide a unique selling point that differentiates restaurants from their competitors. This distinct advantage not only attracts eco-conscious customers but also sets these establishments apart in a competitive market, enhancing their brand reputation and customer loyalty.

Overall, the areas with the largest motivators and greatest value realization include **stakeholder engagement**, **brand and operational risk management**, and **talent management and productivity**. These align with the top value-driving and cost-saving strategies highlighted by the restaurants throughout the survey.

Motivations versus value realized in own operations for restaurants



Motivations versus value realized in suppliers' operations for restaurants



* The values shown on the bar graphs indicate the percentage of respondents that selected each category

Path forward for restaurants

Act and adapt

As the value chain segment with the highest level of direct consumer engagement, restaurants can benefit from monitoring not only their own sustainability goals but also customers' sustainability concerns. Understanding consumer trends and the impacts of media campaigns, journalistic exposés, and documentaries is crucial for restaurant to stay informed about consumers' concerns and priorities. Restaurants have the unique opportunity to communicate sustainability benefits directly to their consumers, educating them about the key challenges facing the food and agriculture system and how their dining decisions can make a positive impact.

Beyond food preference trends, restaurants can benefit from being attuned to consumer expectations on service quality and overall dining experience. An engaged workforce is vital in this context. Given the competition for talent and importance of engaged employees to a restaurant's success, continued investment in training and well-being of employees will drive competitive advantage.

To adapt to evolving consumer tastes, restaurants can increase their co-investment efforts with supply chain partners. This collaboration will help meet consumer demands more effectively. By implementing strategies that address consumer motivations, employee retention, and other critical areas, restaurants can better align with the objectives of other roles within the value chain.

Additionally, restaurants are uniquely positioned to adopt cost-saving strategies that minimize food waste. By implementing practices such as portion control, optimizing food storage and handling, and finding innovative ways to reuse or repurpose ingredients across multiple dishes, restaurants can make greater progress towards their sustainability targets.

Please refer to the overarching **Path forward across the value chain** section on page 75 for additional actions that companies across the value chain can take related to the following actions: **drive progress in the face of uncertainty, invest in your enabling environment and establish key partnerships, and pursue collaboration and co-investment opportunities.**

Geographic deep dive:

Restaurants across various geographies anticipate that the value derived from sustainability strategies will rise over the next two years. However, there is a notable divergence in expectations regarding the demand for sustainable products. In the United States, only 46% of survey participants from restaurants expect an increase in demand for sustainable offerings, making it the most conservative outlook among the surveyed regions. In stark contrast, restaurant respondents in the United Kingdom demonstrate a significantly more optimistic stance, with 80% anticipating higher demand for sustainable offerings.

This varied outlook could be tied to policy momentum reflecting public sentiment. The United Kingdom's Environment Act of 2021 outlines the country's sustainability goals toward improving air quality, biodiversity, waste management, and more¹¹⁰ while the 2020 Agriculture Act outlines further regulations in support of supply chain transparency and fairness from farm to fork.¹¹¹ On the other hand, the United States somewhat relies on the 2022 Inflation Reduction Act, which offers incentives for clean energy through tax credits, but its impact on the restaurant sector's immediate outlook on sustainable products might lag behind more direct support seen in the United Kingdom.

The performance metrics highlight these differences further. U.K. restaurants have excelled in capturing revenue growth from implementing sustainability strategies, with 80% reporting $\geq 2\%$ increase in revenue. This statistic is significantly higher than the other regions analyzed – 69% in Germany, 64% in the U.S., and 55% in the Netherlands. This finding suggests that the enabling environment in the U.K., combined with effective sustainability strategies, may be contributing to a stronger performance in restaurants compared to other regions.

Retailers

Retailers sell consumer-facing brands produced by processors or manufacturers and sell them directly to end consumers. This segment in the value chain includes multi-channel retailers such as Walmart, supermarkets such as Kroger, fresh-format stores (which carry a produce-centric inventory) such as Hy-Vee's Fast & Fresh, limited assortment stores such as Trader Joe's, and high-end grocery stores such as Erewhon. Additionally, some retailers may have a higher focus on more sustainably made and produced products, such as Whole Foods.

Retailers have a vital role in the value chain, since they act as the gatekeeper between processors, manufacturers, and end consumers. While restaurants and food services also have direct contact with end consumers, retailers are unique in that they primarily carry branded products that other companies produce. This role within the value chain is critical in determining the quantity of goods that upstream players manufacture, produce, and sell.¹¹² As such, retailers have a unique position to assess consumer preferences for sustainable products—and the ability to act on these insights.

Given that retailers are consumer-facing companies, they are often the focus of NGOs that aim to work directly with them to accelerate the pace of change. Retailers' sustainability strategies may therefore be influenced by stakeholder pressures and the desire to achieve competitive advantage with customers. Recent pressures from NGOs, regulatory bodies, and stakeholders, have focused on curbing food waste and reducing the amount that ends up in landfills, in addition to packaging changes, such as phasing out single-use plastics. On these topics, retailers can play a role in not only advocating for a more sustainable supply chain, but also educating consumers on the value and benefits of sustainability practices across the food value chain.



Retailers

Source products, typically from manufacturers to sell to businesses or directly to customers (includes traditional grocery stores (e.g. supermarkets) and non-traditional grocery store (e.g. wholesale)

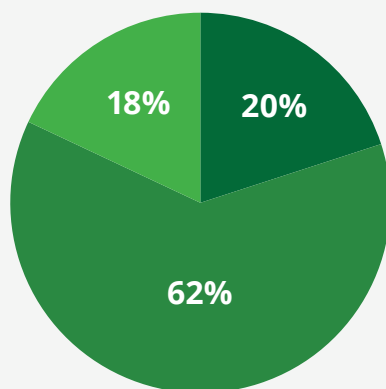


Revenue growth overview

82%

of respondents saw at least 2% revenue growth from investing in sustainability strategies

- > 5% revenue growth
- 2% - 5% revenue growth
- < 2% revenue growth
- Did not realize



**Percentages may not total 100% due to rounding*



Retailers experience high rates of revenue growth

In the survey, 20% of retailers reported experiencing greater than 5% revenue growth, the second-highest proportion reported. Only processors (22%) reported higher rates of revenue growth greater than 5%, with other segments reporting significantly lower amounts (5% to 12%). Not one retailer reported that it was not able to realize revenue growth from sustainability strategies, pointing to retailers' ability to drive value from their sustainability strategies.

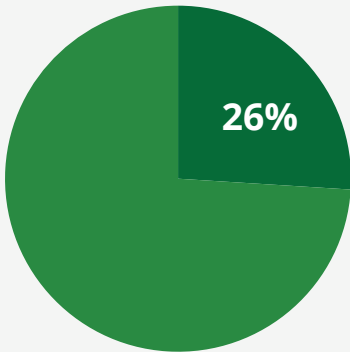
Retailers may experience high rates of revenue growth due to their direct consumer interaction, ability to adapt to consumer trends, and ability to capture revenue from offering value-added services. By being the direct point of contact with end consumers, retailers are able to influence consumer purchasing decisions at the point of sale. Retailers are also able to share sustainability stories with consumers to help influence and drive purchasing decisions towards more sustainable options.

Adaptability is also core to driving revenue growth. Retailers have hands-on data about consumer trends and can more quickly adapt their strategies. Given their diverse network of suppliers, retailers can leverage their networks to quickly adjust to consumer demand, as they have done in response to increased demand for organic products, plant-based foods, and sustainable packaging. Through this rapid adoption, retailers can procure food products that are in high demand and capture price premiums.

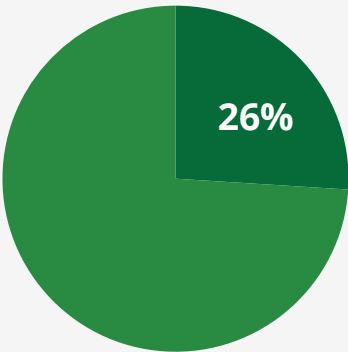
Finally, many retailers have added new revenue streams by providing value-added services, such as home delivery, online shopping, and in-store meals and other experiences (e.g., tastings, cooking demonstrations). These services improve customer experience and satisfaction, encouraging repeat business and potentially higher spending per visit and share of wallet.

Revenue-driving strategies

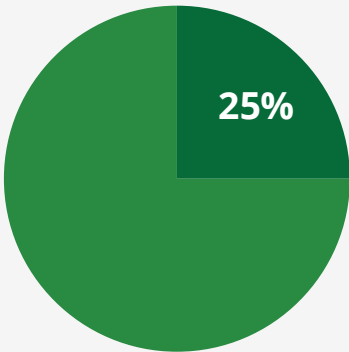
Top 3 revenue-generating strategies selected by retailers



Sustainable packaging solutions



Sell products with verifiable sustainability claims



Sustainable and responsible supply chain sourcing



How sustainability strategies drive value for retailers

Retailers selected **sustainable packaging solutions, sell products with verifiable sustainability claims, and sustainable and responsible supply chain sourcing** as top revenue-generating strategies. Retailers' direct connection to customers make messaging and brand storytelling essential parts of a successful sustainability strategy, as is reflected in the strategies retailers found effective in their operations. These strategies drive value by strengthening customer loyalty with existing customers, converting consumers to more sustainable and expensive products, and attracting new customers who value sustainability.

Sustainable packaging solutions was one of the top revenue-generating strategies selected by retailers, with 26% reporting its use. Within the broader category, there is a wide variety of options, including reducing the use of virgin plastic, designing packaging for reuse, and increasing recycled content across materials (plastics and polymers, pulp-based materials, etc.). Utilizing the ROSI™ framework, CSB has identified predictability in demand planning, stronger relations with suppliers, and a diversified supplier base (which may lead to reduction in price volatility of material for the company), as benefits resulting from sustainable packaging implementation.

Across the broader CPG space, the Ellen MacArthur Foundation (EMF) and Waste and Resource Action Programme (WRAP) have

convened the EMF Plastic Pact Network, with regionally specific Plastic Pacts across the globe.¹¹³ Each Plastic Pact is supported by a large number of "activators" that have committed to working toward pact goals, with the US pact goals spanning from a reduction in virgin-plastic use; to designing and manufacturing plastic packaging to be reusable, recyclable, or compostable; to scaling reusable packaging systems.¹¹⁴ To meet these goals, EMF aims to share learnings across the networks, and work collaboratively to increase the sustainability and circularity in plastic packaging use.

Selling products with verifiable claims was also picked by 26% of retailers as a revenue-driving strategy, likely because doing so can attract new customers or enhance customer loyalty. According to the CSB's SMSI™ research, 73% of yogurt sales and 54% of milk sales come from sustainable marketing claims such as organic, non-GMO, no hormones, certified humane, grass-fed, and plant-based. These products are important to retailers given their high frequency of purchase.

Verifying sustainability claims is integral to the success of this sustainability strategy. When retailers can verify food production involves humane practices, brands and retailers can communicate these higher workforce standards to consumers for a premium. For example, according to a 2018 study, the average cage-free eggs were sold at a \$1.16/dozen premium above non-cage-free eggs. This is aligned with SMSI™ data,¹¹⁵ which found that food and beverage products that are sustainably marketed have a 38.9% price premium, on average, compared to conventional products. Some retailers have also begun to take notice of these trends: European brands Albert Heijn and Delhaize Belgium are already 100% cage-free for their own brand and national brand eggs, for shell eggs, and egg-as-ingredient products.¹¹⁶

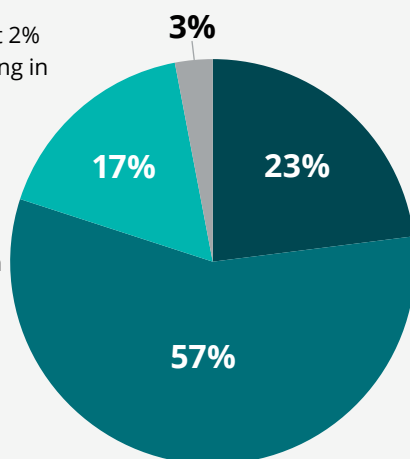
Sustainable and responsible supply chain sourcing emerged as one of the top revenue-generating strategies, identified by 25% of retailers. This strategy covers a diverse array of approaches, including sourcing raw materials from certified sustainable sources, ensuring fair labor practices, and reducing the carbon footprint associated with transportation and logistics. By employing sustainable and responsible supply chain sourcing practices, retailers can help build trust and credibility with their consumers and enhance customer loyalty. Because sustainability-minded consumers are interested in environmentally friendly and socially responsible products and are often willing to pay a price premium for them, implementing this strategy can allow retailers to increase their revenue and market share.

Cost reduction overview

80%

of respondents saw at least 2% cost reduction from investing in sustainability strategies

- > 5% cost reduction
- 2% - 5% cost reduction
- < 2% cost reduction
- Did not realize



*Percentages may not total 100% due to rounding

Across the broader food retail sector, initiatives such as the Sustainable Food Trade Association and the Global Food Safety Initiative have been instrumental in promoting responsible supply chain practices. These initiatives help food retailers set and achieve sustainability goals, such as reducing environmental impact, ensuring ethical labor practices, and enhancing transparency, which

can boost a company's reputation, making it more appealing to investors and partners. Overall, sustainable sourcing not only meets regulatory and consumer demands but also drives revenue growth by enhancing product quality, mitigating risks, and capturing new market opportunities.

Retailers experience high rates of cost reduction

Most retailers operate with low margins on products, with grocery stores typically seeing a margin of only 1% to 3%.¹¹⁷ Additionally, retailers are often unable to significantly raise their prices to offset their investments, since their consumers are highly price sensitive, especially for commodities and frequently purchased items. Thus, cost-cutting strategies have a clear impact on retailer profitability. Across all value chain segments, retailers had the highest proportion of respondents (80%) that reported realizing a minimum 2% cost reduction. Comparatively, 77% of food service providers, 75% of restaurants, 69% of processors, and 68% of manufacturers realized the same. Notably, 23% of retailers saw greater than 5% cost reduction, which is higher than most of the other value chain segments, only second to restaurants (24%).

Retailers' direct access to consumer purchasing trends and direct consumer interaction not only help drive revenue growth but also drive cost savings because they can quickly adapt to optimize offerings, which reduces costs by streamlining product offering or services and enhances those retailers that perform well. Many retailers can leverage economies of scale when negotiating with suppliers, achieving lower prices for bulk purchases, and streamlining distribution and logistics to reduce per-unit costs. This scale can be a considerable advantage for retailers because it might not be as accessible to other segments of the value chain, such as manufacturers.

Some value-driving strategies also function as risk-mitigating practices

Outside of the top three revenue-generating strategies, retailers identified **ensuring safe food products** as a value-driving strategy. While it is not a top strategy for driving sales or value for retailers, it is an important risk-mitigating strategy for the value chain role. As food safety is sometimes considered a table stakes measure, with most consumers expecting to be able to purchase safe food products through retailers, it can have dire consequences if not properly implemented.

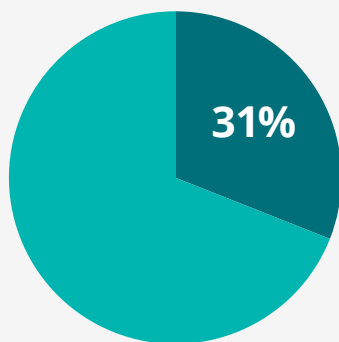
While food safety problems often originate upstream in the supply chain, there are cases in which contamination occurs at retail establishments themselves. For example, International Marketplace, a Utah grocery store, was forced to shut down its meat department after salmonella was found in ground beef samples during a routine government inspection.¹¹⁸ On a larger scale, horse meat was found in 37% of beef burger products in Ireland and the United Kingdom, in 2013. As a result, Tesco, a grocery retailer that was supplied with

beef containing horsemeat, experienced a sales decline of 43% and market value dropped by €360 million¹¹⁹—showing substantial risks for retailers that didn't ensure safe and acceptable products.

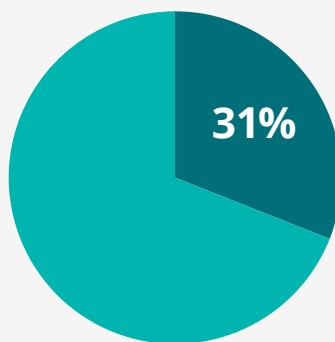
In their value chain role, retailers are often the last line of defense in protecting consumers against food safety risks and need to have procedures to protect against safety risks presented by suppliers and in their own operations. Given the complicated nature of supply chains, retailers are using traceability software to track a product's movement from farm to store shelf, mobile apps for distribution (such as on-line delivery), and smart shelves (streamlines inventory management, minimizing excess inventory and maximizing efficacy), which helps drive progress in food safety. These investments have also improved product quality, convenience, and customer experience, which may lead to greater customer loyalty and increased sales, as well as reducing the risk of losing sales and reputational risk in the event of a safety violation.

Cost-saving strategies

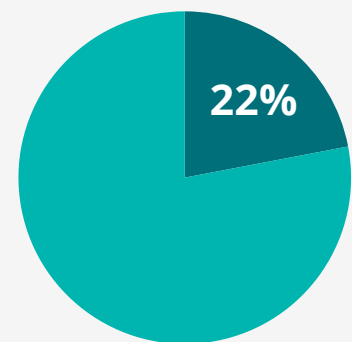
Top 3 cost-saving strategies selected by retailers



Reduce use of harmful chemicals



Raise, treat, and/or source animals responsibly



Protect and conserve biodiversity and ecosystems

Reduce use of harmful chemicals was reported by 31% of retailers as a cost-saving strategy. Like manufacturers and other upstream suppliers, minimizing the use of harmful chemicals can lower cost of materials, decrease waste disposal expenses, and avoid potential regulatory penalties and product recalls. Retailers are pressured to be more transparent about their usage of harmful chemicals within their products and are taking corresponding action. Costco, Kroger, and Safeway are among many retailers that have removed Bis-phenol A (BPA) from infant products, eliminated parabens from personal care products, and reduced volatile organic compounds (VOCs) from paints and household cleaners.

Raise, treat, and/or source animals responsibly was another top cost-saving strategies reported by retailers (31%). Programs to support humane living conditions must ensure that animals are raised in well-managed environments, minimize disease, and provide light/dark schedules to regulate normal sleep and wake cycles. Additionally, these programs should aim to treat animals responsibly throughout their life cycles, from humane breeding practices to the end harvest. Failing to consider animal welfare can lead to potential supply disruptions, possible fines, and increased reputational risks.

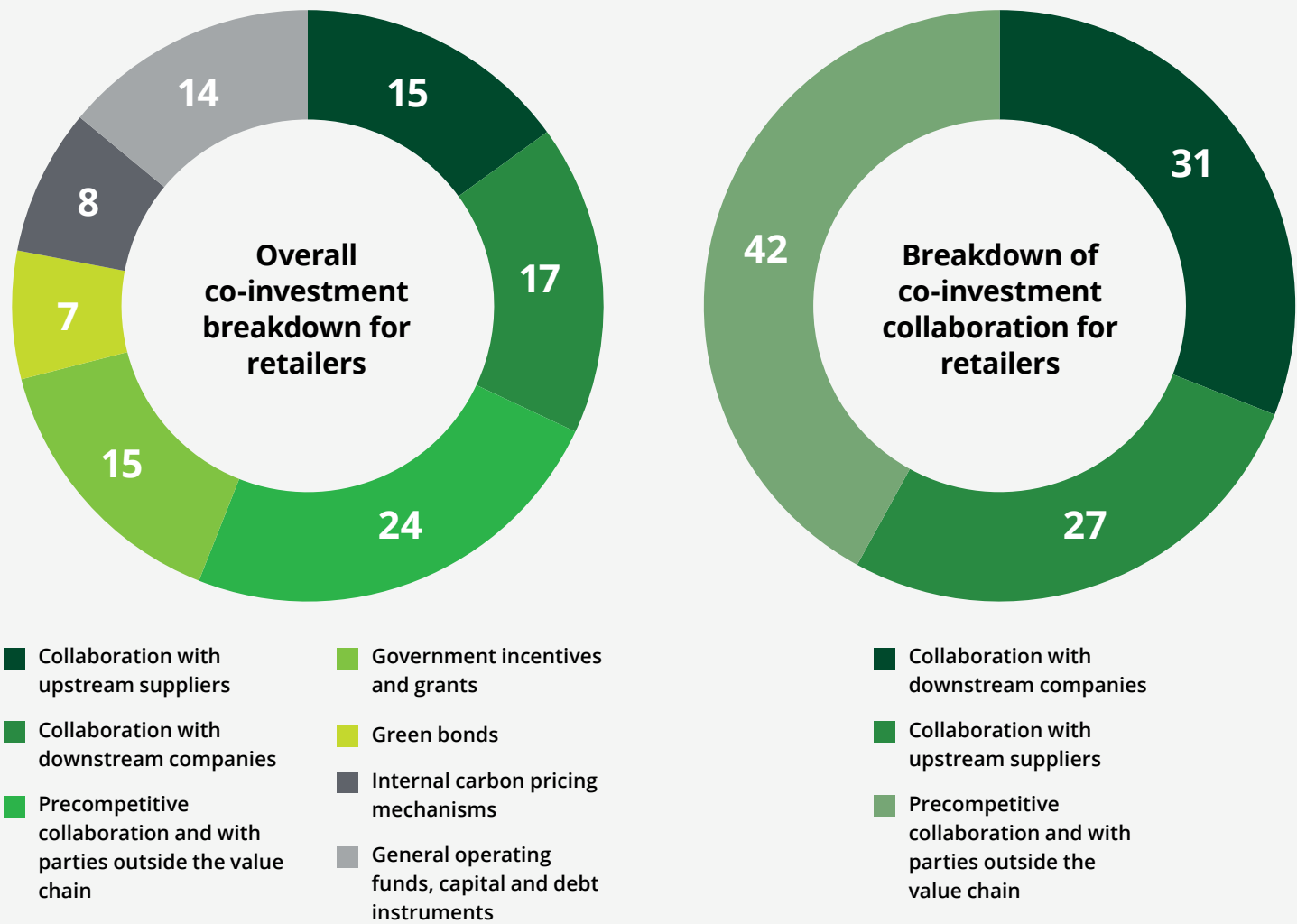
The American Society for the Prevention of Cruelty to Animals (ASPCA) has released its first Supermarket Scorecard, which evaluates the 20 largest US grocery store chains on their policies to address critical animal welfare issues. The inaugural report tracks top supermarkets' commitments to eliminating farm animal confinement and other intensive practices from their supply

chains. According to the ASPCA, consumers' food purchasing decisions are significantly influenced by animal welfare concerns. Retailers Whole Foods and Sprouts Farmers Market scored high for their policies on chickens raised for meat (also known as broiler chickens), egg-laying hens, and pregnant pigs. Sprouts Farmers Market's Chief Sustainability Officer Brandon Lombardi commented that promoting animal welfare "is important to our customers and is the right thing to do," illustrating that protecting sales is a strong incentive to support animal stewardship strategies. In addition to the ASPCA monitoring company progress against corporate pledges, many states have passed laws that ban intensive confinement of farm animals and, in some cases, block the sale of items from animals raised in this way, which affects most major retailers.¹²⁰

The reduction of regulatory risk also drives the value of **protecting and conserving biodiversity and ecosystems**, with 22% of retailers surveyed listing it as a cost-saving strategy. Protecting biodiversity can create more resilient ecosystems that support sustainable agriculture and lead to more stable and reliable supplies of raw materials, reducing costs associated with supply chain disruptions. An example of this would be the sourcing of Brazilian cattle that are raised using deforestation techniques. To limit deforestation in the Amazon region, Brazilian banks will deny credit to meat packers that purchase cattle from deforested areas.¹²¹ With potential disruptions stemming from the change in financing, cattle from the sustainably sourced areas would present a more stable supply.

Co-investment

How collaboration and co-investment on sustainability drives value for retailers



* The number represents actual no of participant responses

Retailers frequently operate as the final node in the supply chain before products reach consumers. This makes the collaboration between suppliers, downstream companies, and parties outside the value chain a vital part of deriving value from sustainability strategies. From a revenue lens, collaboration can drive efficiencies through meeting customer expectations and driving efficiency in sales efforts. From a cost perspective, collaboration can reduce food waste through improving inventory management efforts. This is reflected in the popularity and variety of co-investment approaches utilized by retailers (a combined 56%).

Pre-competitive collaboration was the most popular form of co-investment among retailers (42%). Many retailers are members of the Ellen MacArthur Foundation, which focuses on transitioning from a linear to a circular economy and related systems-level challenges, such as improving biodiversity and increasing use of sustainable packaging. Many are also working collectively through partnerships, such as the Retailer Leadership Council of the Green Chemistry & Commerce Council (GC3), to strengthen science-based initiatives, discontinue the use of harmful chemicals in food and other retail products, and address consumer expectations on chemical use.¹²²

Retailers can help drive revenue through optimizing inventory management and reducing unsold product by collaborating with downstream players.¹²³ Retailers face pressure to reduce food waste. Leveraging advanced data analytics and demand planning solutions can aid organizations to harness the power of collected data and big data. This data can then help organizations predict demand, identify waste patterns, and order the precise amount of food needed. Many retailers are leveraging advanced data analytics technology, with 31% co-investing with downstream companies.

Walmart's Intelligent Retail Lab showcases the potential of data and analytics. By automating product identification and comparing quantities with predicted sales demand, Walmart further optimized its stock levels, reduced waste, and capitalized on sales trends. Denali, a full-service recycler, and Walmart have committed to providing food waste recycling at all 4,700 of Walmart's stores

throughout the United States. The companies aim to divert millions of pounds of food waste from landfills toward other uses such as compost, animal feed, and generating renewable energy.

Engaging with downstream companies also helps reduce food waste. For example, collaborating with start-up ventures enables retailers to cost-effectively reduce waste through innovative means, such as upcycling uneaten food into animal feed. Using patented technology, the startup Bright Feeds has the capacity to process 450 tons of food waste per day¹²⁴ into nutritious animal feed. Bright Feeds takes in waste restaurants, food manufacturers, bakeries, schools, and any other business that produces food waste.¹²⁵ Bright Feeds' relatively low tipping fees incentivizes producers to drop their food waste at the facility, saving businesses and municipalities millions of dollars.¹²⁶



Motivations vs. value realized

Compared to other value chain roles, retailers' own operations had a closer alignment between where they expected value and where it was derived. This alignment was particularly prominent in sales and marketing, and stakeholder engagement, where the percentage of retailers expected value equaled realized value (37% and 31% in respective categories).

One area of deviation was the notable improvement (43%) in supplier relations, which exceeded initial motivations of 32%. This uptick

suggests that sustainable strategies foster enhanced collaboration along the value chain, thereby improving communication, building trust, and strengthening relationships.

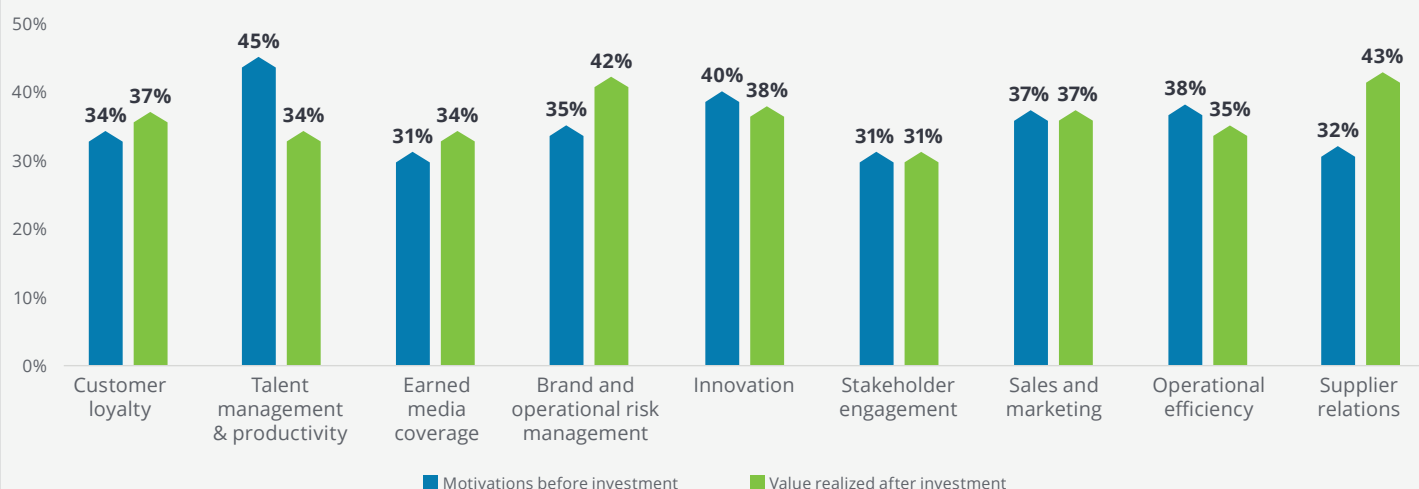
On the downside, there was a notable discrepancy between expected (45%) and realized (34%) outcomes for talent management and productivity co-investments – an 11 pp difference. While talent management and productivity were key motivators for investment, the actual benefits fell short of expectations. This could possibly

be due to a lack of awareness within the organization about how sustainability aligns with current incentive structures. As sustainability is still relatively nascent in organizational priorities for many companies, the integration and impact of sustainability strategies might not be fully understood internally or communicated to the workforce.

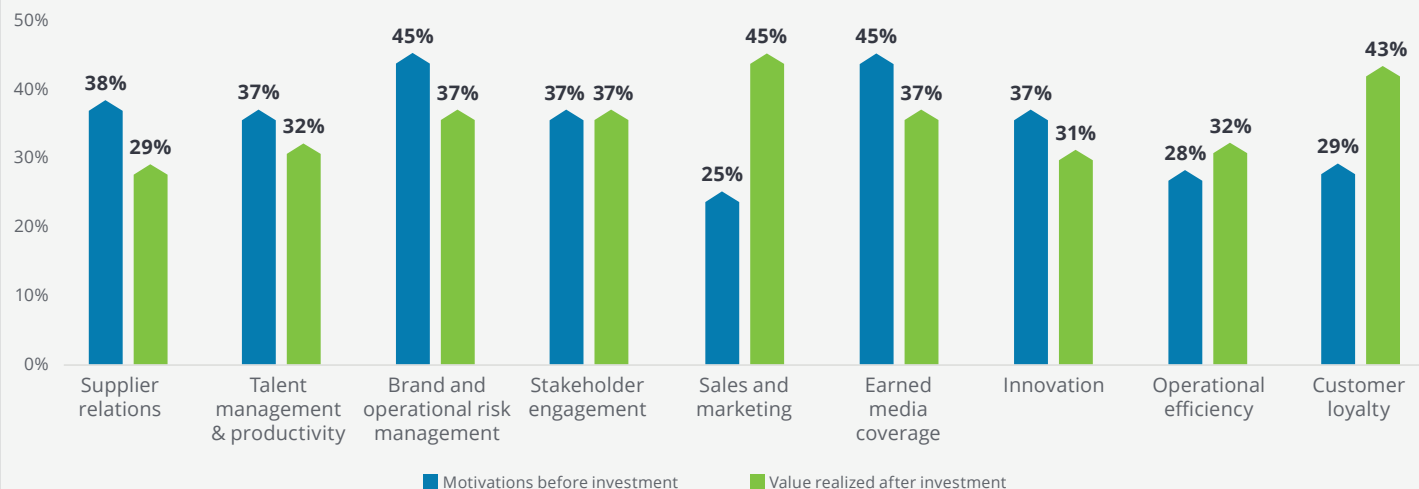
Retailers' sales and marketing co-investments experienced a substantial increase in value following investments in their suppliers'

operations. Only 25% of retailers were initially motivated to co-invest in sales and marketing, but 45% realized the value from these co-investments, indicating a 20 pp increase in retailers that saw a benefit. This difference between expectations and results is likely attributed to retailers leveraging marketing strategies that promote more sustainable products which aligns with the new consumer trend of more people willing to pay a price premium for sustainable products.

Motivations versus value realized in own operations for retailers



Motivations versus value realized in suppliers' operations for retailers



* The values shown on the bar graphs indicate the percentage of respondents that selected each category

Path forward for retailers

Act and adapt

Retailers are well-positioned to continue to leverage their direct consumer interactions to understand and adapt to their end consumers' sustainability-related interests and objectives. To drive more value from their sustainability strategies, retailers can increase their share of private-label products (which often have higher margins than branded products) and incorporate sustainability claims. By tailoring their products to consumers' preferences more precisely, retailers can differentiate themselves from competitors, enhance their brand image and consumer trust, and attract new sustainability-minded customers. Retailers can leverage sales data to gain further insights into consumers' evolving preferences and adapt accordingly by refining and developing relevant private-label products.

To drive additional value from their sustainability strategies, retailers—particularly those with physical storefronts—can achieve significant cost savings through energy management. This includes upgrading to energy-efficient lighting and HVAC systems, utilizing renewable energy, and implementing automatic shut-off switches.

Another area that retailers can continue to take action is advanced inventory management. Utilizing real-time data can help retailers more accurately predict demand, optimize stock levels, and minimize overstocking and understocking situations. Technologies such as radio frequency identification (RFID), AI-driven forecasting models, and dynamic pricing labels can help retailers maintain efficient inventory levels, thereby reducing costs associated with excess inventory such as storage, labor and handling, and waste disposal.

Please refer to the overarching **Path forward across the value chain** section on page 75 for additional actions that companies across the value chain can take related to the following actions: **drive progress in the face of uncertainty, invest in your enabling environment and establish key partnerships, and pursue collaboration and co-investment opportunities.**

Geographic deep dive:

In the retail sector, 85% of UK-based retailers are optimistic about the value generated from sustainability strategies. This high level of positivity reflects a robust engagement with sustainable practices and a strong consumer response to such initiatives.

In stark contrast, only 30% of retailers in the Netherlands are optimistic about consumer demand for sustainable products. This is nearly 40 percentage points below the optimism level observed in the United States, where 68% of retailers are optimistic.

Even though Dutch retailers experience similar financial benefits from sustainability when compared to other surveyed countries, the general outlook in the Netherlands is dampened by broader economic challenges. High inflation and rising commodity prices increased the number of bankruptcies within the Dutch retail sector, influencing the overall negative economic perspective.¹²⁷

The disparity in optimism might also be attributed to differing financial outcomes from sustainability efforts. A significant majority of retailers have successfully realized cost reductions of at least 2% in the United Kingdom (85%) and United States (84%). However, in the Netherlands, only 70% of retailers observed a similar reduction. This financial discrepancy, combined with the broader economic context, may explain Dutch retailer's lower optimism regarding the demand for sustainable products.



Path forward across the value chain

Cross-cutting path forward

It's imperative for players across the food and agriculture value chain to invest in sustainability to address urgent and material issues threatening the industry. Though the survey revealed an almost universal positive ROI for investments in sustainability in the past, the question still remains on how to drive optimal value from future investments. Companies can take several actions to drive value:



Act and adapt

Take action today while positioning yourself strategically to capture value from the advancements of tomorrow



Drive progress in the face of uncertainty

Drive progress in implementing sustainability strategies despite changing regulations, measurement difficulties, and more



Invest in your enabling environment and establish key partnerships

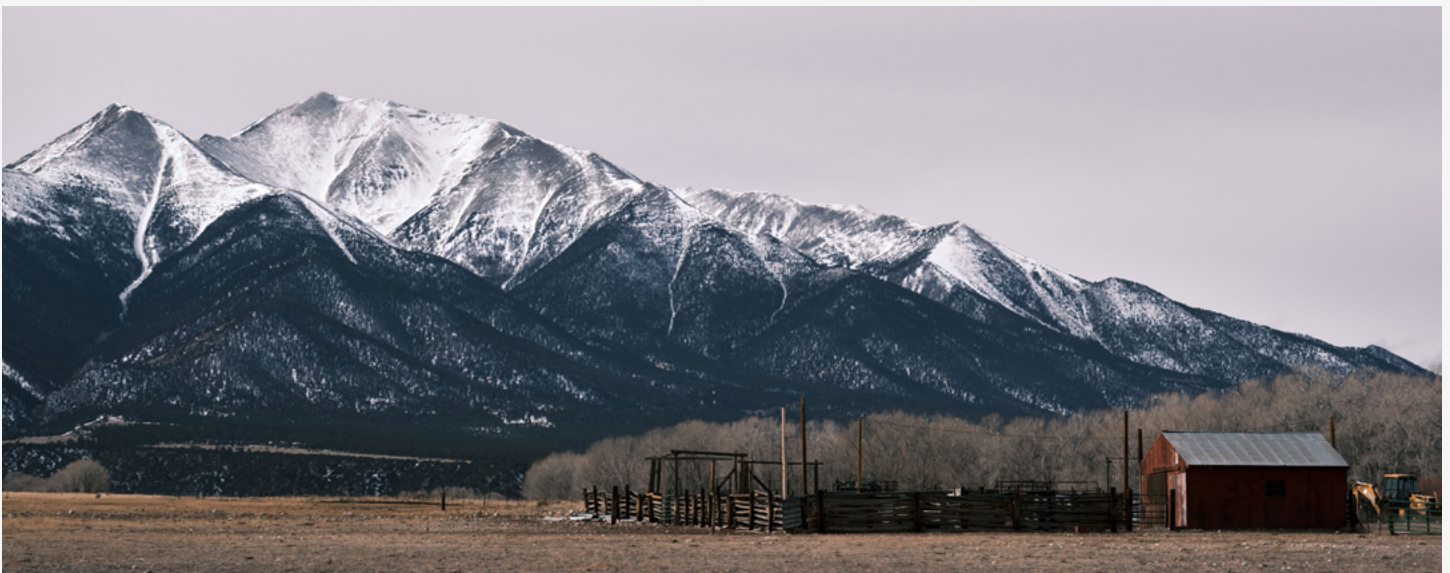
Create a supportive internal enabling environment through discrete initiatives while forming key partnerships



Pursue collaboration and co-investment opportunities

Collaborate across the value chain to drive support for your sustainability efforts and support systems-wide change

Each value chain deep-dive offers specific 'path forward' actions that companies within each value chain segment can take as part of the 'act and adapt' action. This section of the paper details actions that all companies – regardless of where they sit on the value chain – can take to drive value, including actions pertaining to: drive progress in the face of uncertainty, invest in your enabling environment and establish key partnerships, and pursue collaboration and co-investment opportunities.



Act and adapt

1

What companies can do today is different from what they will be able to do tomorrow, and being ready to pursue the latter requires preparation. Do what you can today while monitoring advancements in technology and the increasing affordability of solutions.



Act now: According to our research, delaying or withholding sustainability investments results in lost revenue and/or higher costs. To avoid this, initiate sustainability strategies that are easy to implement or require a relatively lower investment of time or resources and drive operational improvements—“low-hanging fruit.” Examples of such actions include reducing energy use¹²⁸ through energy-efficiency upgrades, lowering input costs through decreased chemical use,¹²⁹ and securing tax deductions through food donations.¹³⁰ Additionally, utilize technologies available now, such as inventory management platforms for demand planning to reduce food waste and more efficient equipment to cut down energy emissions. Capturing quick wins sets the foundation for continued sustainability investments and taking on more complex strategies in the future.

Adapt: Strategies with less obvious business cases today could shift to have a strong ROI because of policy shifts, emerging technologies, economies of scale, changing consumer preferences, and a number of other factors.

Shifts in policy can have negative and positive effects. New regulations may initially increase business costs through new reporting requirements or banned ingredients, but they can also improve access to new technologies through tax incentives and credits.

To prepare for different scenarios and to stay informed about evolving policies and regulations, engage with industry associations and participate in discussions on best practices.

New solutions emerge while maturity and scale increase the ROI for existing technologies. Companies are encouraged to regularly review and consider adopting technologies that align with their sustainability goals, such as Internet of Things (IoT) sensors and data analytics tools that extract sustainability insights. Gain insight into emerging technologies through partnerships with startups, research institutions, and tech innovators.

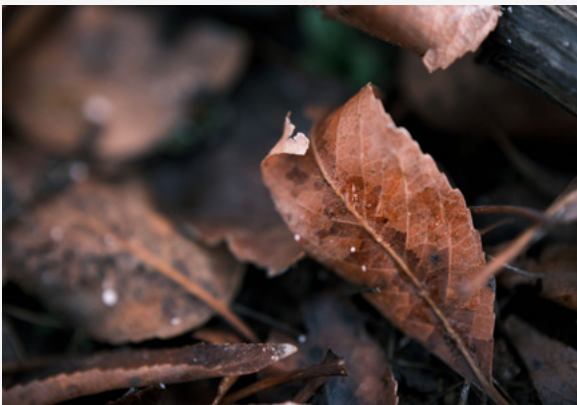
To stay on top of the best and latest strategies, create cross-functional connections among internal business units such as government relations, technology, operations, sustainability, and finance. Establish a cadence for that cross-functional team to revisit ROI estimates for existing and prospective investments, leveraging trend forecasts for policy and technology in your industry to adjust financial forecasts accordingly. These actions will help position you to take action and adapt your sustainability strategies in the face of constant change.

Drive progress in the face of uncertainty.

The business case for sustainability has been made, but if you are feeling uncertain about the future and the long-term ROI of your sustainability investments, you are not alone—however, neither are you stuck. Companies can continue making progress in capturing value from implementing sustainability strategies despite the uncertainties of changing regulations, measurement difficulties, and more.



Although the future regulatory environment is quite uncertain, new regulations can be positive catalysts for change and can unlock areas of new value. For instance, consider guidance released under the USDA's Food Safety Modernization Act¹³¹ that imposes new requirements on foreign supplier verification programs for food, or the EU regulation on deforestation-free products, which (when applicable in late 2024) will require operators selling certain commodities to ensure that products are not contributing to forest degradation.¹³² Regulations such as these necessitate the development of new transparency, traceability, and sustainability measurement capabilities. This, in turn, can create an opportunity for organizations to leverage these capabilities to develop and market product portfolios with novel sustainability attributes. Leading organizations will see these new regulations as an opportunity to innovate and differentiate, opening the door to new revenue opportunities.



The survey results and additional CSB research indicate that many benefits of sustainable strategies are overlooked. Failing to quantify some or all of the benefits when calculating the ROI generally occurs when data is unavailable to track results, intangible benefits and avoided costs are not considered, and sustainability is not embedded across the organization and in the company's financial processes. Companies that leverage measurement and tracking tools to capture more data and holistic benefits will make better-informed decisions, increase confidence around sustainability strategies, and reap greater long-term benefits and value creation.

There are several things you can do to improve in this space:

Define clear value metrics. Outline key performance indicators (KPIs) that align with your sustainability goals; establish measurable targets for environmental, social, and economic impact; and set up processes to track over time. These KPIs are key to driving management decisions for an organization. When goal setting, consider different time horizons depending on the scale and realistic velocity of change in various areas. Additionally, do not rely on external ESG reporting metrics as your guide for selecting sustainability strategies and making broader management decisions; these industry reporting metrics are largely output-oriented (i.e., they measure whether an action has been taken and not whether outcomes have been achieved).

Implement robust measurement architecture. Invest in advanced measurement methodologies to accurately quantify the impact of sustainability initiatives and integrate life cycle assessments and comprehensive impact assessments into the measurement processes.

Enhance data capture processes. Implement systems for real-time data capture to ensure a continuous and accurate flow of information through tools that capture granular data on resource consumption and environmental performance, among other areas. Further, invest in the underlying data management infrastructure and data governance processes to ensure optimized insight generation and decision-making.

Adopt improved tools. Leverage technologies to better track, verify, and value efforts such as carbon reductions and removals; for example, Deloitte's ClearCarbon™¹³³ digital solution, which is designed to transform carbon into an asset, allowing organizations to transparently demonstrate real sustainability impact, fortify trust throughout the value chain and beyond, and generate new revenue streams by quantifying the effectiveness of an organization's CO₂e emissions reductions and removals strategy.

Track the return on sustainability investment. Employing the ROSI™ methodology (or some version of the approach) to track intangible and tangible value associated with specific sustainability strategies and practices from the beginning can allow companies to better understand the ROI needed to fully embed sustainability into their strategy and achieve competitive advantage. Currently, very few companies are tracking those financial returns, and ESG reporting is divorced from financial reporting. Doing so will help not only improve environmental and social outcomes and capture financial value, but also unlock new opportunities for organizations across the food and agriculture value chain.

While the future is far from certain, leading organizations are harnessing this uncertainty and see change as an opportunity to drive transformation in their products and services that enable competitive advantage.

ClearCarbon™ is a digital solution designed to transform carbon into an asset, allowing organizations to transparently demonstrate real sustainability impact, fortify trust throughout the value chain and beyond, and generate new revenue streams by quantifying the effectiveness of an organization's CO₂e emissions reduction and removal strategy.



Invest in your enabling environment and key partners.

Organizations can become better suited to support sustainability efforts by implementing internal changes and developing a supportive external ecosystem. As mentioned prior, data measurement and tracking are key to operationalizing many sustainability efforts. With that data foundation built, a company can integrate sustainability into core business decisions and connect them to its mission and values, making it a fundamental aspect of the company's identity and operations. For example, more than 2,000 companies disclosed in 2020 that they were already using or planning to introduce an internal carbon price within two years to embed sustainability into business operations.¹³⁴ Internal carbon pricing can take many forms; by assigning a monetary value to each ton of GHG emissions to a specific project, companies can ensure that the environmental impact of their operations becomes a tangible and quantifiable factor that can inform decision-making.



Decision-making and prioritization are also influenced by financial incentives. Almost all (98%) respondents reported that their respective company ties executive compensation to performance against sustainability goals for the company, and 59% have been doing so for three or more years. Aligning financial incentives for a broad range of business leaders and employees can be a powerful tool for progress, because doing so incentivizes more leaders to engage in sustainability-related work. In particular, financial leaders need to be involved in sustainability investment decisions as financial disclosure reporting rules become more common. Reporting on sustainability goals and actions will require new financial processes to ensure the accuracy of reporting and achievability of stated goals

Efforts to establish an enabling environment go beyond internal operations, especially to tackle scope 3 emissions. Companies should encourage and incentivize suppliers to adopt sustainable practices through vehicles such as longer-term supplier contracts, enhanced payment terms, cost sharing for capital expenditures, and funding to support the transition to regenerative farming practices, among other areas. Companies are able to maximize value only with the proper enabling environment both within and outside of their organizations.

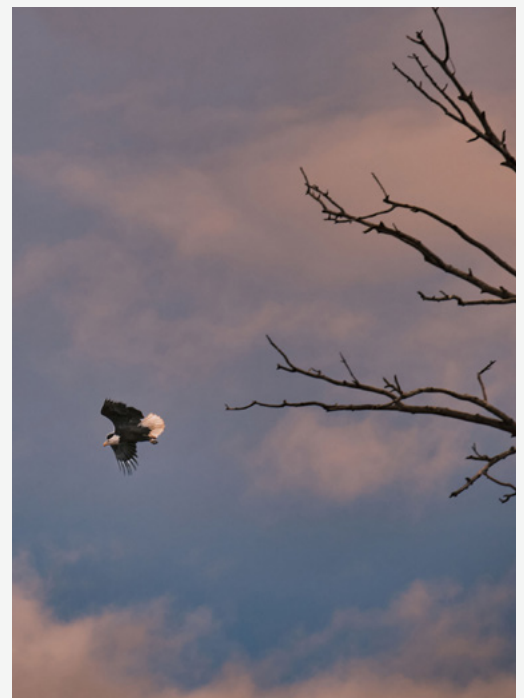
Pursue collaboration and co-investment opportunities.

There is demonstrated appetite to collaborate across the value chain, as illustrated by the 84% of survey respondents who reported that they are co-investing to fund sustainability. The survey data shows a statistically significant positive association between companies engaging in pre-competitive collaboration and/or external partnerships, and those that achieved revenue growth of more than 5%. Pre-competitive collaboration provides opportunities for companies to work with competitors on shared areas of focus to drive change at the industry level, ranging from setting industrywide standards to data and knowledge sharing. Pre-competitive groups such as the World Business Council for Sustainability Development (WBCSD) are action-oriented and provide members with opportunities to drive progress in various topic areas that align with member interests.



The industry is interconnected already, and more connections can be found through trade organizations and industry conferences. Opening conversations about sustainability with suppliers, customers, competitors, vendors, and other players can help drive support for sustainability initiatives and lead to collaboration on efforts and investments. Regardless, the food and agriculture value chain begins where farmers, ranchers, and producers sit, and early collaboration with them is tantamount to successful food and agriculture sustainability transformations.

This research conducted by NYU Stern CSB and Deloitte offers evidence of positive returns from investments in sustainability in the food and agriculture sector. However, it also highlights some uncertainty about the difficulty measuring and longevity of those returns. With these steps in mind, businesses can continue to move forward and realize the benefits of investing in sustainability (and avoid the costs and risks of not doing so) with greater confidence, in both the results they can achieve and in their ability to prepare for and adapt to changing dynamics.



Survey and interview scope and approach

Survey methodology and approach

We conducted the survey portion of our research to understand the motivations of food and agriculture companies for investing in sustainability strategies, the value realized from their investments, and their outlook on the potential value from future investments in accordance with the NYU Stern Center for Sustainable Business (CSB) ROSI™ framework. The survey was co-designed by CSB and Deloitte, and survey results were collected and tabulated by an external vendor. The results of this survey can be used to understand opportunities for food and agriculture companies to realize value from investing in sustainability.

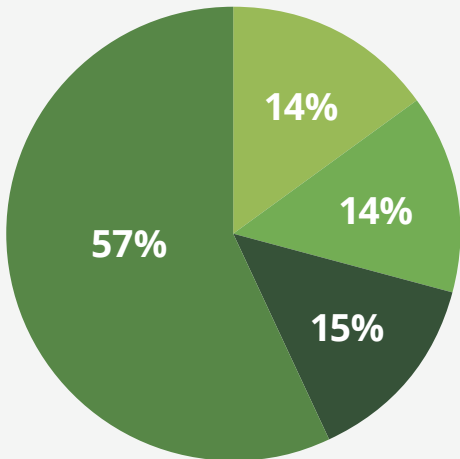
Survey approach

Leveraging the input of subject-matter specialists in agriculture and sustainability, NYU Stern CSB and Deloitte co-designed a 25-question survey. A third-party research and survey firm helped facilitate a double-blind survey to minimize potential biases in responses, supporting with the collection of a total of 350 anonymous responses from executives representing food and agriculture companies across four countries: Germany, the Netherlands, the United Kingdom, and the United States. Three respondents operating exclusively in the fish and seafood and/or forestry and timber sectors were excluded from analysis.

Respondent overview

Though the survey is not globally representative, respondents were distributed across four geographies and multiple value chain segments. Respondents were required to operate in the processor, manufacturer, food service, retail, or restaurant value chain segments and at least one of 12 sectors in-scope (dairy, meat and poultry, row crops, etc.).

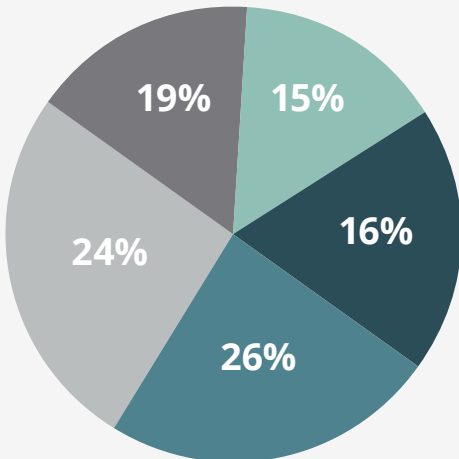
Figure 7: Respondent demographics by geography



Key heading

- United States 200
- Netherlands 50
- United Kingdom 50
- Germany 50

Figure 8: Respondent demographics by value chain node



Key heading

- Food Services & Commissaries 91
- Restaurant 84
- Retailer 65
- Processor 54
- Manufacturer 56

To identify stakeholders with adequate background in their companies' sustainability investments, respondents were required to be in roles that are VP level or higher and have a role in ESG, procurement, finance, sales, marketing, strategy, or sustainability. All companies represented had a minimum of US\$250 million in annual revenue or equivalent in their local currency in 2022.



The survey is not designed to be representative of the overall food• and agriculture sector. Survey participants had to meet the following requirements:

- Minimum seniority of VP level in their organization
- Work at an organization with a minimum revenue of US\$250 million
- Hold a role in ESG, procurement, financial planning and analysis, sales, marketing, strategy, sustainability, or finance
- Value chain segment of represented organization is a processor, manufacturer, food service,¹³⁵ retail, or restaurant¹³⁶
- Represented organization operates in at least one of the following sectors: beverages (alcoholic), beverages (non-alcoholic), confectionery, dairy, meat and poultry, prepared foods (goods ready for consumption, e.g., snack packs, pre-made breakfast), specialty crops (e.g., fruits, vegetables, nuts, flowers), row crops (e.g., corn, soybeans, wheat, canola, oats)

Results of this survey are subject to sampling variation. The vendor estimates at 95% level of confidence that each survey result has a confidence interval of +/- 6.9 percentage points in the United States, and +/- 13.9 percentage points in the remaining markets.

Stakeholder interviews

To supplement and further investigate findings from the survey data, we conducted nine stakeholder interviews with companies across the food and agriculture value chain. *Please refer to the Contributors section for details on companies we interviewed.*

Survey analysis

Descriptive analysis

The descriptive analysis assessed patterns in aggregated responses based on survey respondent demographics by value chain node, sector, or geography. Per the parameters outlined above, three manufacturers operating within the forestry and seafood sectors were excluded, leading to a sample size of 347 respondents considered in the descriptive analysis of the data. There were no outlier data points that were excluded based on expert evaluation.

Significance testing

In addition to descriptive analysis, regression analysis and significance testing were conducted on a subset of survey data. Eight models were created:¹³⁷

- **Models 1 and 2:** Revenue growth/cost reduction from sustainability strategies compared to sustainability strategies executed in a company's own operations
- **Models 3 and 4:** Revenue growth/cost reduction from sustainability strategies compared to sustainability strategies executed in a company's supplier operations
- **Models 5 and 6:** Revenue growth/cost reduction from sustainability strategies compared to whether a company had sustainability goals and executive compensation tied to ESG performance
- **Models 7 and 8:** Revenue growth / cost reduction from sustainability strategies compared to types of financing sources for sustainability investments

The outcome was divided into a binary response for companies that reported either greater than 5% revenue growth or cost reduction in 2022 from their sustainability investments or less than 5% revenue growth or cost reduction in 2022 from their sustainability investments. This split was intended to demarcate the difference between outperformers as a result of sustainability investments with the highest rates of revenue growth or cost reduction.

All models were tested for collinearity using a variance inflation factor (VIF) test. The results were then checked to see if any variables had a VIF value above 5 to determine whether there was a case of collinearity. No collinearity was found in the models presented. A p value cutoff of $p < 0.1$ (i.e., 90% confidence interval) was used for the results presented.

Models presented include various controls including whether the firm is publicly or privately owned, the geographies where they operate, what sector they operate in, and their customer base (B2B versus B2C).

All models were also checked to ensure adherence to the specifications of a logistic regression as detailed below:

- **Binary outcomes** – Responses were coded to be binary.
- **No multicollinearity** – Models were checked for multicollinearity using a VIF test.
- **No extreme outliers** – Given the predictor and response variables were binary, there were no outliers that showed up.
- **Linearity** – This applies to cases where the predictor variable is continuous. Given the predictor variables used were binary, this assumption does not apply.



Assumptions and limitations

Given that the survey data is composed of self-reported data from individuals who work at represented companies, there is a potential bias introduced by the respondents' results. Respondents provide results based on their specific purview and experience. Potential social desirability bias may also influence results. Options in the survey questionnaire were presented in a randomized order and options were randomized in their display.

The results of the survey analysis provided do not seek to convey any causal conclusions. The results reported from our significance testing are focused on identifying correlations in data. The results are also subject to potential omitted variable bias. While a wide variety of control variables have been included to reduce the omitted variable bias, there still exists a possibility that some omitted variable bias may skew the results.

The quality of the results presented is also a product of the quality of the results collected during the survey. Thus, all the limitations of the survey analysis discussed above also apply to the underlying data for the significance testing.



Contributors

Acknowledgments of contributors across the NYU Stern Center for Sustainable Business (CSB) and Deloitte Consulting LLP in the creation of this paper

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23. Processors and food service providers realized the highest rates of revenue growth (>2%); processors represented the largest proportion of respondents who realized >5% revenue growth.
24. Retailers, food service providers, and restaurants realized the highest rates of cost reduction (>2%), with retailers and restaurants having the largest proportion of respondents who realized >5% of cost reduction.
25. Manufacturers represented the smallest proportion of respondents who a) realized >2% cost reduction, b) realized >5% revenue growth, and c) realized >5% cost reduction.
26. Twenty-five percent and 15% of manufacturers ranked improving energy management and investing water stewardship as their top three strategies that drove financial value in their own operations.
27. Twenty-one percent and 14% of manufacturers selected improving energy management and investing water stewardship as one of their top strategies that led to decreased costs or achieved cost efficiencies.
28. Forty-three percent expect value to increase somewhat, and 17% expect value to increase significantly.
29. Nineteen percent expect value to remain the same, 17% expect value to decrease somewhat, and 4% expect value to decrease significantly.
30. The survey was conducted in 2023; respondents were asked to respond specifically about 2022 when reflecting on the prior year.
31. Includes survey respondents who reported participating in co-investment with upstream suppliers, downstream suppliers, organizations outside their supply chain (e.g., academic institutions, NGOs), and through pre-competitive collaboration.
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34. Investments in sustainability strategies led to revenue growth greater than 5% for 22% of processors, 20% of retailers, 12% of restaurants, 11% of food service companies, and 5% of manufacturers.
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137. All models excluded observations in which survey respondents responded they "did not realize revenue growth/cost reduction in 2022 from sustainability initiatives" or "did not track revenue growth/cost reduction in 2022 from sustainability initiatives," reducing the sample size to 342 observations.





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