





Ceres

THE INVESTOR GUIDE TO CLIMATE TRANSITION PLANS IN THE U.S. FOOD SECTOR

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About Ceres

Ceres is a nonprofit organization working with the most influential capital market leaders to solve the world's greatest sustainability challenges. Through our powerful networks and global collaborations of investors, companies, and nonprofits, we drive action and inspire equitable market-based and policy solutions throughout the economy to build a just and sustainable future. For more information, visit ceres.org and follow @CeresNews.

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ABOUT THIS REPORT

Given the scale, magnitude, and urgency of actions needed to mitigate the worst impacts and material financial risks related to climate change, investors are beginning to ask companies to develop and disclose climate transition plans. These plans should outline how companies plan to reduce greenhouse gas emissions across their operations and supply chain, given their industry, their emissions profile, their business models, and the leverage points available to them due to their place in the supply chain.

This report is designed to serve as a resource for investors to engage with companies in the food and agriculture sector on developing and disclosing robust and ambitious climate transition plans. It builds on emerging frameworks and guidance on transition plans and emissions accounting, climate-related disclosures, and target-setting by Climate Action 100+, the Task Force on Climate-Related Financial Disclosures (TCFD), CDP, the Science Based Targets initiative (SBTi), and the GHG Protocol to provide investors with further guidance for engagements with companies in the food and agricultural sector.

The guidance in this report was developed with the input of investor signatories of the Food Emissions 50 initiative, six food companies, and an expert advisory committee. This report is intended to guide investor engagements with food companies as a part of Ceres' Food Emissions 50 initiative and more broadly. This report and Food Emissions 50 are a part of Ceres' Ambition 2030 initiative to decarbonize six of the highest-emitting sectors in the U.S. Forthcoming research through the Ambition 2030 initiative will provide further guidance on climate transition plans, including for the other priority high-emitting sectors.

FOREWORD

We are in a race against the climate crisis. Over the past two years, the number of companies making commitments to meet the goal of limiting warming by 1.5 degrees Celsius to avoid the worst impacts of climate change has increased dramatically. But the latest research from the world's scientists provides the starkest assessment yet--we are still far behind where we need to be.

That is why it is more urgent than ever that companies move from words to deeds on their climate commitments. Broad commitments and long-term goals aren't enough.

Ceres is calling for a substantial increase over the next 12 to 18 months in the number of companies developing and implementing climate transition plans that set out clear and concrete short and medium-term actions to achieve science-based greenhouse gas emissions reduction targets. In addition, we are asking companies to define how these efforts will be integrated into their overall business strategies and governance structures. Transformative and ambitious actions by companies must be the main pillar of global efforts to reduce global emissions by half by 2030 and achieve net zero emissions by 2050 or earlier.

Investors, who need more information to better assess how companies are managing their climate risks, have been one of the main forces putting pressure on companies to move beyond commitments and implement climate transition plans. The recent proposal by the U.S. Securities and Exchange Commission to require mandatory climate risk disclosure is another indication that investors are looking for more information, including transition plans.

This backdrop makes this report, which lays out Ceres' view on corporate climate transition plans, particularly timely. As this report describes, climate transition plans should translate a company's global targets for emissions reductions to a concrete plan with specific, measurable, and time-bound goals. These plans should be grounded in sector-specific contexts and succinctly outline the company's transition strategy and the concrete actions it plans to take in the next one to five years to address climate change throughout its business, including its growth strategy, procurement, operations, and customer engagement activities

This report highlights the role of the food sector in addressing the climate crisis and the integral part that climate transition plans play in transforming the sector. The food sector has an outsized impact on the climate crisis—it is responsible for a third of global greenhouse gas emissions. Yet, food companies continue to lag behind others when it comes to disclosing robust and ambitious climate commitments. As of January 2022, only 21 out of the 50 highest greenhouse gas emitting North American food companies tracked by Ceres' Food Emissions 50 initiative have set any short-term emissions reduction targets that include scope 3 emissions, which includes the sector's supply chain and is its largest source of emissions. And none of these companies have published a climate transition plan.

With investors ramping up their pressure on companies to address climate risk, this report provides guidance to financial institutions as they engage with the food and agriculture sector, on how to develop and disclose robust and ambitious climate transition plans.

When large market actors act, they help to transform industries and drive wholesale change. If top companies act on strong climate commitments with time-bound, science-based, short- and medium-term targets, peers will be pulled along through a competitive cascade powered by investor, employee, and consumer expectations. With the future of our planet and economy in the balance, this is the opportunity the food sector faces. To use climate transition plans as a blueprint to spur innovation, new market strategies, and a transformative shift to a clean economy future.

Mindy Lubber
Chief Executive Officer and President, Ceres

INTRODUCTION

As made clear by the Intergovernmental Panel on Climate Change (IPCC), limiting global temperature rise to 1.5°C is critical to avoiding the worst impacts of climate change. The IPCC's 6th Assessment Report presents a sobering reality: societal failures to mitigate climate change have already led to some irreversible impacts, and the impacts on the global economy, food security, and human and planetary health will only become more severe if temperatures continue rising.

Companies in sectors across the global economy have responded to mounting pressure from investors and other stakeholders to address their climate-related impacts by publicly committing to greenhouse gas (GHG) emissions reduction targets, net zero targets, and other climate-related goals. Though this is an important first step, investors often lack additional information on how companies intend to achieve these goals. To ensure a smooth and successful transformation with minimal disruption to their investment portfolios, investors are now asking companies to disclose evidence that they are aware of what they must do to achieve their GHG emissions reduction targets and have plans to act accordingly.

Mitigating corporate GHG emissions in line with a 1.5°C scenario will require major transformations across a company's business. This transformation will take time, thoughtful planning, diligence, and adjustments to strategies along the way. Though companies may not have all of the answers immediately, waiting to act escalates acute risks for companies and their investors while simultaneously increasing systemic risks across the economy as we enter the critical decades to mitigate the worst impacts of climate change. Early planning now will provide companies more time to troubleshoot strategies to ensure timely GHG emission reductions and mitigate negative impacts to suppliers, customers, communities, and other key stakeholders both within and outside of corporate value chains.

What are the key elements of a climate transition plan for the food sector?

Transition plans are intended to act as accountability mechanisms for companies and their external stakeholders. Rather than being a separate disclosure, these plans should constitute a collection of evidence that the company is aligning relevant aspects of its business with its climate-related goals and emissions reduction targets. These plans should be specific to the company, grounded in sector-specific contexts, and succinctly outline the company's transition strategy and the concrete actions it plans to take in the next one to five years to address climate change throughout its business, including its growth strategy, procurement, operations, and customer engagement activities (Table 1).

Table 1: Climate Transition Plan Elements for the Food Sector

Climate Transition Plan Elements for the Food Sector	**Emissions Disclosure**	**Emissions Reduction Targets**	**Climate Transition Strategies and Actions**
	A company's disclosure of its full scope 1-2-3 GHG emissions inclusive of all relevant scope 3 categories for the company	A company's goals to reduce its full scope of emissions including near-and long-term science-based targets	A company's suite of strategies and actions to align its growth strategies, procurement, operations, and customer engagement to achieve its emission reduction targets
	Governance		
	Policy Engagement		
	Risk Management		

Initial guidance from the Task Force on Climate-Related Financial Disclosures states that transition plans should be aligned with a company's overall strategy, anchored in quantitative metrics and targets, actionable, credible, and subject to corporate governance processes. Transition plans should also be periodically reviewed, updated, and reported annually to stakeholders. CDP elaborates that transition plans should outline how an organization will pivot its existing business model towards one that is aligned with a 1.5˚C scenario based on the latest climate science recommendations. As an increasing number of institutional investors make commitments to align their portfolios with the Paris Agreement through efforts such as the Net Zero Asset Managers Initiative and the Paris Aligned Investment Initiative, there is an even greater need for disclosures that allow investors to better understand the current and future emissions impact of their investments and mitigate exposure to climate risk.

Some companies, such as Unilever, have already submitted plans or reports on progress against plans to shareholders for a vote at their annual shareholder meetings. However, given the intentionally high-level nature of existing guidance and a lack of clear consensus on what climate transition plans should include, the quality of current disclosures varies, and the information is often not comparable between companies. As a result, there is a clear disclosure gap when it comes to transition plans. After assessing responses to their its Climate Change questionnaire, CDP found that, while a third of organizations claimed to have developed a "low-carbon transition plan," fewer than 1% reported on all 24 of the questions that CDP identified to be key indicators of a transition plan.

This report builds on existing frameworks and provides sector-specific guidance to facilitate investors' assessments of information food companies may already be disclosing through CDP, TCFD, in their mandatory financial reporting, and other platforms to evaluate whether they are on track to achieve their goals and to prioritize topics for further engagement.

THE PATHWAY TO A LOWER EMISSIONS FOOD SECTOR

According to the IPCC, as of 2021, global temperatures have already risen 1.1°C above pre-industrial levels. Without significant changes, temperatures are predicted to rise by 2.1-3.5°C – a scenario that can exacerbate extreme flooding, droughts, and other weather conditions that are already disrupting agricultural production around the world and creating material financial risks for food companies and their investors.

Despite the urgent need for climate action, the food sector continues to lag behind others when it comes to disclosing robust and ambitious climate commitments. As of January 2022, only 21 out of the 50 highest GHG-emitting North American food companies tracked by Ceres' Food Emissions 50 initiative have set any short-term emissions reduction targets inclusive of scope 3 emissions, the largest source of emissions in this sector, and none have published a climate transition plan.

The global food system is responsible for approximately one third of global anthropogenic greenhouse gas emissions – we will not be able to mitigate the worst impacts of climate change without transformative changes in the food sector. Failing to act now may lead to significant economic disruptions in this sector and beyond. Adapting to the predicted severe impacts of climate change later in the century will be much costlier than mitigating climate change as much as possible today.

It is also critical that in the transition to a lower emissions economy, companies not only avoid harm, but also actively work to ensure a just and inclusive transition for all employees, suppliers, customers, and communities impacted by food companies' operations, supply chains, and products. Forthcoming research from Ceres will provide more context on the implications of food companies' transitions plans for the agricultural producers in their supply chains and considerations companies should embed in their procurement strategies to contribute to a just and inclusive economy.

Emissions that must be mitigated to limit global temperature rise to 1.5°C

The global objective for climate action is to halve emissions by 2030 and achieve net zero emissions by 2050 to limit global temperature rise to no more than 1.5°C and mitigate the worst-case climate scenarios. For society to have the best chance at achieving this goal, there are several specific key results that must be achieved across sectors. The Climate Action 100+ report Global Sector Strategies: Investor Expectations for Food and Beverage outlines the estimated emissions* from key emissions sources in this sector that food companies must address in order to contribute to these global objectives:

Table 2: Largest emissions sources in the global food sector and their key drivers

Largest Emision Sources by Value Chain Stage	Key Emission Drivers
Agriculture 7.1-8.0 billion tons of CO_2 Emissions	• Methane emissions from enteric methane and manure in livestock production • Methane emission from rice production • Emissions from synthetic nitrogen fertilizer production • Nitrous oxide emissions from fertilizer use on agricultural lands • Energy use for on-farm machinery and buildings • Carbon loss from soil management practices
Land Use Change 3.2-5.7 billion tons of CO_2 Emissions	• Commodity-driven deforestation and other land conversion for the expansion of agricultural lands
Post Retail 1.6 billion tons of CO_2 Emissions	• Methane and avoided emissions associated with post-retail food loss and waste • Emissions associated with the disposal of non-food consumer waste • Post-retail food loss and waste • Energy use for cooking appliances and refrigeration • Consumer food waste • Consumer non-food waste disposal
Packaging 0.6-1.0 billion tons of CO_2 Emissions	• Emissions from paper, plastic, and glass production • Commodity-driven deforestation (for paper packaging) • Energy use for packaging production
Transportation 0.8 billion tons of CO_2 Emissions	• Transportation of raw and processed commodities and food products between farms, storage facilities, processing plants, manufacturing plants, retailers and consumers
Retail 0.4-0.7 billion tons of CO_2 Emissions	• Energy use in stores for lighting, food storage, and cooking • Hydrofluorocarbon (HFC) emissions from refrigeration • Retail and restaurant food loss and waste
Food Processing 0.6 billion tons of CO_2 Emissions	• Energy use for food processing and food product manufacturing • Food loss from food processing and food product manufacturing

***Emissions estimates from Poore and Nemecek (2018) and Crippa et al (2021), as elaborated in the Climate Action 100+ report.**

The global food sector is not on track to sufficiently address any of the sector's major emissions sources at the pace and scale needed. To achieve the level of emissions reductions needed, companies will need to develop strategies to ensure that the potential mitigation levers are implemented in their supply chains to address scope 3 emissions from agriculture, land use change, and food loss and waste in the supply chain and post-retail stage, while simultaneously promoting and enabling shifts in consumer behavior that will help reduce the demand for food products with a high GHG footprint. The remaining emissions reductions will come from the implementation of new technologies, increased energy efficiency, and rapid deployment of renewable energy and electrification.

Key characteristics of food sector sub-industries and their GHG emissions

Corporate transition plans should translate the global targets for emissions reductions to a concrete plan with specific, measurable, and time-bound goals that are most relevant to the company's sub-industry, place in the supply chain, corporate structure, operating regions, and other key factors.

Table 3: Classification of GHG emissions into Scope 1, 2, and 3

Upstream Indirect Emissions		Direct Operational Emissions	Downstream Indirect Emissions
Scope 3 Purchased goods and services	**Scope 2** Purchased electricity	**Scope 1** Company facilities	**Scope 3** Downstream transportation and distribution
Capital goods		Company vehicles	Processing of sold products
Fuel- and energy-related activities			Use of sold products
Upstream transportation and distributions			End-of-life treatment of sold products
Waste generated in operations			Downstream leased assets
Business travel			Franchises
Employee commuting			Investments
Upstream leased assets			

Following the framework developed by the GHG Protocol, GHG emissions can be categorized as direct operational emissions (scope 1) or indirect emissions (scopes 2 and 3). These scope 2 and 3 emissions are a result of activities of a company but occur at sources outside of the direct control or ownership of a company. The Corporate Value Chain (Scope 3) Standard classifies scope 3 emissions for an individual company into 15 distinct categories, depending on the activities and the company's position in the supply chain (Table 3). See the GHG Protocol's Technical Guidance for Calculating Scope 3 Emissions for an explanation of the 15 different scope 3 categories.

Here, we summarize key characteristics and emission profiles of the six sub-industries in the food sector tracked by the Food Emissions 50 Company Benchmark. These considerations should inform the strategies and actions companies prioritize when developing climate transition plans. Investors can also use these considerations to shape their assessments of companies' plans and prioritize topics for engagement.

AGRICULTURAL PRODUCTS

Companies in this sub-industry include: Archer Daniels Midland Co. (ADM), Bunge Ltd., Darling Ingredients Inc.

Sub-industry overview and characteristics: Agricultural products companies, also referred to as agricultural commodity traders, produce, process, and trade agricultural commodities such as corn, soy, palm oil, sugar, and cotton. Companies like ADM and Bunge also participate in the fertilizer value chain. These companies supply commodities to food and consumer goods manufacturers, food distributors, bioenergy companies, and other buyers for use in food products, animal feed, personal care products, apparel, and biofuels.

Table 4: A typical emissions profile of an agricultural products company

Emissions Profile (Typically relevant categories)		Potential Emissions Drivers
Upstream Scope 3 Emissions	• Purchased Goods and Services	• Commodity-driven deforestation and other land conversion • Emissions from synthetic nitrogen fertilizer production • Nitrous oxide emissions from fertilizer use on agricultural lands • Energy use for on-farm machinery and buildings • Carbon loss from soil management practices • Transportation between farms, storage facilities, and processing plants
Scope 1 and 2 Emissions	• Fuel- and Energy-Related Activities	• Energy use from food and biofuel processing raw commodities • Transportation of raw and processed commodities (company-owned ground, air, and maritime transportation)
Downstream Scope 3 Emissions	• Processing of Sold Products • End-of-Life Treatment of Sold Products	• Nitrous oxide emissions from fertilizer use on agricultural lands (fertilizer sales) • Energy use from food processing and food product manufacturing • Food loss from food processing and food product manufacturing • Fuel blending for biofuel production • Retail and post-retail food waste and loss

Compared to some other food companies, agricultural products companies have a higher proportion of scope 1 and 2 emissions associated with company-owned ground, air, and maritime transportation and the processing of raw commodities to produce products, including animal feed, oils, food ingredients, and biofuels. However, scope 3 emissions from purchased goods and services are typically the largest source of emissions. For example, in its response to the 2021 CDP Climate Change questionnaire, ADM disclosed that, of its total GHG emissions, 30% were scope 1 and 2 emissions, and 70% were scope 3 emissions. 52% of ADM's scope 3 emissions were associated with the downstream processing of sold products by its buyers, while 37% were associated with its upstream purchased goods and services.Importantly, because ADM does not make it clear that its disclosure includes emissions from land use change, it is possible that the contribution from emissions from purchased goods and services may be greater than disclosed.

PACKAGED FOODS AND MEATS

Companies in this sub-industry include: Beyond Meat Inc., General Mills Inc., Hershey Co., Hormel Foods Corp., Kraft Heinz Co., Mondelez International Inc., Saputo Inc., Tyson Foods Inc.

Sub-industry overview and characteristics: Packaged foods include a variety of non-perishable or shelf stable foods, such as cereal, snacks, and canned foods, and processed perishable foods, such as yogurt and cream cheese. Meat products can be sold whole, as cuts, or processed into products. The packaged meats segment tends to be more vertically integrated, with some companies owning the agricultural production, processing, and packaging and marketing processes. Some companies in this sub-industry specialize in select segments, like Mondelez, which primarily produces snack foods and confectionery products. Others are diversified across different product types, like Hormel, which has a portfolio that ranges from meat products to tomato sauce.

Table 5: A typical emissions profile of a packaged foods and meats company

Emissions Profile (Typically relevant categories)		Potential Emissions Drivers
Upstream Scope 3 Emissions	• Purchased Goods and Services • Waste Generated in Operations	• Commodity-driven deforestation and other land conversion • Methane emissions from livestock and rice production • Emissions from synthetic nitrogen fertilizer production • Nitrous oxide emissions from fertilizer use on agricultural lands • Carbon loss from soil management practices • Energy user for on-farm machinery and buildings • Emissions from paper, plastic, and glass production • Food loss from food processing and food product manufacturing
Scope 1 and 2 Emissions	• Company Facilities • Company Vehicles • Purchased Energy	• Energy use from food and food product processing • Transportation of raw materials and products between farms, storage facilities, processing plants, and retailers (company-owned ground transportation)
Downstream Scope 3 Emissions	• Downstream Transportation and Distribution • Processing of Sold Products • End-of-Life Treatment of Sold Products	• Transportation of food products between storage facilities, manufacturing plants, and retailers, and consumers • Energy use for cooking appliances and refrigeration (consumers) • Retail and post-retail food loss and waste (corporate customers) • Consumer food waste • Consumer non-food waste disposal

While scope 3 emissions from purchased goods and services are the major source of emissions for all companies in this sub-industry, the key drivers of emissions embedded in each company's procurement depend on the company's product portfolio mix. Companies that primarily process dairy and beef produced in the U.S. have greater exposure to emissions from methane emissions from enteric methane and manure. If the animals are fed feed containing soybeans sourced from Brazil, there is also a high risk of exposure to emissions from commodity-driven land conversion in the Cerrado, a critical grasslands ecosystem. Companies that produce products with palm oil will have greater exposure to emissions from commodity-driven land conversion, including palm oil-driven deforestation and peatland drainage in Indonesia.

FOOD DISTRIBUTION

Food Emissions 50 companies in this sub-industry: Performance Food Group Co., Sysco Corp., United Natural Foods Inc. (UNFI), US Foods Holding Corp.

Sub-industry overview and characteristics: Food distributors are the intermediaries that distribute commodities and products to food operators and service providers like food retailers, hypermarkets and supercenters, and restaurants. These companies not only physically transport goods from producers and manufacturers to their point of sale, but also facilitate the distribution of goods by storing and warehousing products. Because a key function of these companies is food distribution, most food distributors have extensive company-owned fleets for ground transportation. Many food distributors also have their own private label food product brands that are sold directly in retail stores and restaurants. These companies may have more oversight and influence over the emissions impacts of their private label products.

Table 6: A typical emissions profile of a food distributor

Emissions Profile (Typically relevant categories)		Potential Emissions Drivers
Upstream Scope 3 Emissions	• Purchased Goods and Services • Capital Goods • Upstream Transportation and Distribution	• Commodity-driven deforestation and other land conversion • Emissions from synthetic nitrogen fertilizer production • Methane emissions from livestock and rice production • Nitrous oxide emissions from fertilizer use on agricultural lands • Carbon loss from soil management practices • Energy use for on-farm machinery and buildings • Transportation between farms, storage facilities, and processing plants
Scope 1 and 2 Emissions	• Company Facilities • Company Vehicles • Purchased Energy	• Transportation of raw materials and processed commodities and food products between manufacturing plants, storage facilities, and retailers, (company-owned ground transportation) • Energy use from food processing and food product manufacturing (company-owned manufacturing for private label brands)
Downstream Scope 3 Emissions	• Use of Sold Products • End-of-Life Treatment of Sold Products	• Energy use in stores for lightning, food storage, and cooking (corporate customers) • Hydrofluorocarbon (HFC) emissions from refrigeration (corporate customers) • Retail and restaurant food loss and waste (corporate customers) • Consumer food waste

Food distributors' emissions from transportation and distribution can fall under either scope 1 or scope 3 or both, depending on whether companies rely on company-owned transportation or contracted services. For most food distributors, emissions from land use change and agriculture embedded in their purchased goods and services remain the largest source of emissions. For example, in its response to the 2021 CDP Climate Change questionnaire, United Natural Foods Inc. (UNFI) disclosed that 97% of its total GHG emissions are scope 3 emissions, 93% of which are from its purchased goods and services. The second largest source of UNFI's scope 3 emissions is the end-of-life treatment of products, which includes food loss and waste among its retail customers and end consumers.

FOOD RETAIL AND HYPERMARKETS/SUPERCENTERS

Companies in these sub-industries include: Albertsons Company, Inc., Kroger Co., Metro Inc., BJ's Wholesale Inc., Costco Wholesale Corp., Walmart Inc.

Sub-industry overview and characteristics: Food retailers own and operate retail stores that primarily sell food products. Hypermarkets and supercenters include big box stores that offer a wider range of products when compared to food retail stores, including apparel and consumer durables. In comparison to food retail companies, food products may not be the key revenue driver for companies in this sub-industry. Hypermarkets and supercenters are often known for lower prices and bulk offerings. Many of these companies also have private label food brands for which they may have more supply chain oversight. As consumer-facing companies, they also have opportunities to influence and respond to changing consumer demands, including for low-emissions products.

Table 7: A typical emissions profile of food retail and supercenter companies

Emissions Profile (Typically relevant categories)		Potential Emissions Drivers
Upstream Scope 3 Emissions	• Purchased Goods and Services • Capital Goods • Upstream Transportation and Distribution • Waste Generated in Operations	• Commodity-driven deforestation and other land conversion • Methane emissions from livestock and rice production • Carbon loss from soil management practices • Transportation of raw materials and products between farms, storage facilities, processing plant, and retailers • Emissions from paper, plastic, and glass production • Retail food and waste (from company-owned locations)
Scope 1 and 2 Emissions	• Company Facilities • Company Vehicles • Purchased Energy	• Transportation of raw materials and processed commodities (company-owned ground, air, and maritime transportation) • Energy use in stores for lightning, food storage, and cooking • Hydrofluorocarbon (HFC) emissions from refrigeration
Downstream Scope 3 Emissions	• Processing of Sold Products • Use of Sold Products	• Energy use for cooking appliances, and refrigeration (customers at-home use) • Consumer food waste • Consumer non-food waste disposal

Because food retailers, hypermarkets, and super centers have long and complex supply chains, the majority of emissions in these sub-industries are fall under scope 3. In its response to the 2021 CDP Climate Change questionnaire, Walmart disclosed that, of its reported total emissions in 2021, 91% fell under scope 3. Of its scope 3 emissions, 76% were emissions associated with its purchased goods and services, which covers both products from packaged foods and meats companies, as well as fresh produce and non-food manufactured items. The second largest scope 3 category for Walmart was the use of sold products, which includes the post-retail energy use associated with its customers' use of products purchased at its retail locations.

RESTAURANTS

Companies in this sub-industry include: Aramark Corp., Chipotle Mexican Grill Inc., McDonald's Corp., Starbucks Corp., Yum! Brands Inc.

Sub-industry overview and characteristics: Restaurants are uniquely positioned to accelerate the transition to a lower emissions economy due to their name-brand recognition and their direct influence on the consumer behavior related to food. Many of these companies have regular customers who may patronize the restaurants on a daily or weekly basis. This gives restaurants leverage to accelerate shifts needed to align this sector with the Paris Agreement, such as an increased adoption of plant-based diets. Restaurants can also influence suppliers by increasing the demand for lower emissions commodities and products. A key barrier to robust climate action in this sub-industry is the prevalence of franchisees, over whom the franchising companies may claim to have less direct control.

It is critical that companies that conduct a large part of their business through franchisees take additional steps to address operational and supply chain emissions associated with their franchisees. Franchisors already hold franchisees accountable to standards outlined in operations manuals to ensure consistency in customer experience across locations. This often includes stipulations on each location's procurement practices. This kind of standardization could be extended to measures that reduce franchisees' overall emissions footprint.

Table 8: A typical emissions profile of a restaurant

Emissions Profile (Typically relevant categories)		Potential Emissions Drivers
Upstream Scope 3 Emissions	• Purchased Goods and Services • Fuel-and Energy-Related Activities • Upstream Transportation and Distribution • Waste Generated in Operations	• Commodity-driven deforestation and other land conversion • Carbon loss from soil management practices • Emissions from synthetic nitrogen fertilizer production • Nitrous oxide emissions from fertilizer use on agricultural lands • Methane emissions from livestock and rice production • Transportation of raw materials and products between farms, storage facilities, and processing plants • Restaurant food and waste (company-owned locations)
Scope 1 and 2 Emissions	• Company Facilities • Purchased Energy	• Energy use in stores for lighting, cooking appliances, and refrigeration (company-owned locations)
Downstream Scope 3 Emissions	• Franchises • End-of-Life Treatment of Sold Products	• Consumer food waste • Energy use for lighting, food storage, cooking, and refrigeration (franchise locations) • Scope 3 emissions of franchises

Companies in this sub-industry have land-based scope 3 emissions from their own purchased goods and services, as well as emissions from the operations and supply chains of their franchisees. In its 2021 annual report (form 10-K), McDonald's disclosed that, of the 40,031 McDonald's restaurants in 2021, 93%, were franchised. In terms of emissions, it disclosed to CDP that nearly 99% of its reported full scope emissions are scope 3 emissions, with 75% of scope 3 emissions coming from the purchased goods and services of both company-owned and franchised restaurants.

ASSESSING FOOD COMPANIES' CLIMATE TRANSITION PLANS

To achieve ambitious emissions reduction targets and align with a scenario that limits global temperature rise to no more than 1.5°C, companies in the food sector must leverage their unique position within the global economy to transform their business strategies, operations, and supply chains to mitigate the sector's major sources of emissions. Investors can use the framework outlined in this section and in Table 9 to assess climate transition plans from companies in this sector.

Table 9: Key elements to operationalize transition plans in the food sector

Climate Transition Plan Elements		
Emissions Disclosure	**Emissions Reduction Targets**	**Climate Transition Strategies and Actions**
A company's disclosure of its full scope 1-2-3 GHG emissions inclusive of all relevant scope 3 categories for the company	A company's goals to reduce its full scope of emissions including near- and long-term science-based targets	A company's suite of strategies and actions to align its growth strategies, procurement, operations, and customer engagement to achieve its emission reduction targets

Emissions Disclosure and Emissions Reduction Targets

All climate transition plans should set out to achieve ambitious emission reduction targets and should be based on comprehensive GHG emissions inventory and disclosures. Plans that set out to achieve unambitious goals or those that are guided by an incomplete understanding of a company's emissions profile expose companies to financially material climate risk and can lead investors to over- or underestimate the risks in their portfolio holdings.

Emissions Disclosure	What investors should look for in corporate disclosures:
A company's disclosure of its full scope 1-2-3 GHG emissions inclusive of all relevant scope 3 categories for the company	» Does the company disclose its scope 1, 2 and 3 GHG emissions, specifying the scope 3 emissions categories included? » Does the company specify that its scope 3 accounting methodology includes emissions from land use change and agriculture? » Does the company disclose a comprehensive breakdown of its emissions sources, specifying how it will address each source of its transition plan? » Does the company disclose evidence that it is reducing its scope 1, 2, 3 emissions from a baseline emissions year and that it is on track to achieving its short-and long-term emissions reduction targets?

» Does the company disclose its scope 1, 2, and 3 GHG emissions, specifying the emissions categories it includes in its scope 3 emissions accounting?

As scope 3 emissions make up the majority of a food company's full GHG emissions profile, disclosures that only cover scope 1 and 2 emissions are incomplete and may lead to an underestimation of the company's emissions profile. Further, scope 3 emissions from land use change and agriculture are the largest source of emissions in this sector. These emissions are typically embedded in a company's purchased goods and services, making it critical that companies also disclose which scope 3 categories they include in their emissions disclosure.

The GHG protocol recommends that companies report their total scope 3 emissions reported separately by scope 3 category, identifying the total GHG emissions in CO_2e for each category. Based on a review of current corporate emissions disclosure practices, Klaasen and Stoll (2021) identify three common reporting errors when it comes to scope 3 emissions:

1. Reporting inconsistency: Inconsistent reporting of scope 3 emissions across different disclosure channels, such as CDP and corporate sustainability reporting, that leads to discrepancies in the total reported GHG footprint of the company.
2. Boundary incompleteness: Scope 3 emissions reporting that does not meet the GHG Protocol's minimum boundaries for activities that should have emissions reported for in each of its 15 scope 3 categories.
3. Activity exclusion: Scope 3 emissions disclosures that do not include the most relevant scope 3 categories for the company.

All three common reporting errors lead to emissions disclosures that are not comparable between companies and that are, in some cases, underreporting the full scope of a company's GHG emissions. This can lead investors to underestimate the climate risk embedded in a holding, while also making it more difficult for a company to understand which actions to prioritize to mitigate its climate impact.

RED FLAGS

- The company only discloses scope 1 and 2 emissions.
- The company only discloses emissions for a limited part of its business. For example, companies that only disclose the emissions associated with one of their product lines or a limited number of portfolio brands.
- The company's annual GHG emissions disclosure does not show evidence that emissions are being reduced, and the company does not disclose a remediation plan to adjust its strategies and re-align with its targets.
- The company discloses scope 3 emissions from categories, such as employee travel and waste disposal, but it excludes emissions from purchased goods and services.
- The company does not justify any omissions of reported scope 3 categories.
- The company reports different GHG emissions figures in different disclosures.

» Does the company specify that its scope 3 accounting methodology includes emissions from land use change and agriculture?

The GHG protocol recommends disclosure of emissions from land use change and agriculture embedded in purchased goods and services in the Corporate Value Chain (Scope 3) Standard. But, unless explicitly mentioned, there is no way to know whether the data are comprehensive of all scope 3 emissions sources. CDP found that companies for whom these emissions would fall under scope 1 were disclosing emissions from land use change, but companies further downstream were not. The forthcoming GHG Protocol Land Sector and Removals Guidance will help fill these gaps and clarify how companies should account for land-based emissions in their GHG emissions inventories. In the meantime, companies can consult Quantis' methodology to measure land-based emissions embedded in their purchased goods and services.

Many investors and other stakeholders are increasingly asking companies to have their GHG emissions verified by a third party, particularly for scope 1 and 2 emissions. However, investors should be aware that verification of scope 3 emissions is still an emerging practice, and verification by a third party does not necessarily ensure comprehensive coverage of all emissions, particularly land-based emissions from deforestation and agriculture. As best practices for emissions verification, particularly as it pertains to scope 3 emissions, continues to be developed, investors should look for explicit evidence within companies' disclosed emissions calculation methodology that the company's emissions estimates include emissions from land use change and agriculture.

RED FLAGS

- The company does not make it clear whether emissions from agriculture and land use change are included in its scope 3 emissions disclosures for all commodities it sources.
- The company cites third-party emissions calculation methodologies without an explanation of how they were applied to its own emissions calculation process.

HOW TO TELL IF SCOPE 3 ACCOUNTING INCLUDES EMISSIONS FROM LAND USE CHANGE AND AGRICULTURE

In its Corporate Value Chain (Scope 3) Accounting and Reporting Standard, the GHG Protocol notes that the minimum boundary for activities that should be covered by a company's emissions calculations for purchased goods and services is "all upstream (cradle-to-gate) emissions of purchased goods and services," up to the point of purchase by the reporting company. This includes agricultural activities, land use and land use change, transportation of materials and products between suppliers, and any other activities prior to acquisition by the reporting company.

Companies that follow the GHG Protocol should theoretically include emissions from land use change and agriculture in their scope 3 emissions estimates. **However, in practice, companies may not know which emissions are included in their estimates, especially if they use third-party data and estimate their emissions based by applying emissions factors to purchasing spend or volume data.** While some lifecycle assessment databases and other data sources would cover emissions from land use change and agriculture in their estimates, others do not. If companies know that their estimates include land-based emissions, they should make this clear in the explanation of their emissions calculations methodology to assure investors that there are no substantial omissions or underreporting related to their GHG inventory accounting. Following the release of the GHG Protocol Land Sector and Removals Guidance, investors will have more clarity on whether companies are including all relevant emissions. In the meantime, investors should look for concrete evidence that land-based emissions are included, even for disclosures that are validated by a third party.

» Does the company disclose a comprehensive breakdown of its emissions sources, specifying how it will address each source as part of its transition plan?

As an additional step beyond identifying the scope 3 categories the companies are disclosing, quantifying the contribution of each emissions source to the company's overall GHG emissions inventory is considered a best practice. This makes it easier to assess whether the company is prioritizing its largest emissions sources through actions outlined in its climate transition plan.

RED FLAGS

- The company includes different scope 3 categories in its emissions calculation methodology but does not publicly disclose its major sources of emissions.
- It is not clear how comprehensive the company's disclosures are and which, if any, emissions are being omitted from the company's disclosure.

» Does the company disclose evidence that it is reducing its scope 1, 2, and 3 emissions from a baseline emissions year and that it is on track to achieving its short- and long-term emissions reduction targets?

Companies should disclose on a regular basis evidence of the progress they are making in achieving their climate-related goals. Not only does this help investors better understand whether more engagement is needed, it also helps companies understand whether the actions they are taking are helping them make progress, or whether they need to shift their strategies.

Investors should expect companies to set targets and disclose progress towards reducing emissions on an absolute basis to ensure that companies can align with a 1.5°C scenario, regardless of the growth of their business. Importantly, the Science Based Targets initiative's guidance for companies to set targets to reduce GHG emissions from forests, land, and agriculture (FLAG) requires companies to set absolute emissions reduction targets for any targets that are calculated using the FLAG sector approach. Intensity-based targets are available for the 10 commodity-specific FLAG pathways that are intended to be used for commodities that represent more than 10% of a company's total land-based emissions.

RED FLAGS

- The company does not show evidence of reducing its emissions and does not disclose a remediation plan to adjust its strategies and re-align with its targets.
- The company only reports normalized GHG emissions reductions on an intensity basis.
- The company only reports on emission reductions achieved in specific segments, portfolio brands, or part of its supply chain.
- The company only reports on "net" emissions, which may imply the use of carbon credits or other carbon offsets before the company has reduced its emissions as much as possible.

Emissions Reduction Targets	What investors should look for in corporate emission reduction targets:
A company's goals to reduce its full scope of emissions including near- and long-term science-based targets	» Does the company have short-and long-term science-based emission reduction targets that include scope 3 emissions and are aligned with a 1.5˚C scenario? » Does the company clearly articulate that carbon credits will only be used to neutralize residual emissions or to counterbalance its emissions to support climate change mitigation outside of their value chains?

» Does the company have short- and long-term science-based emission reduction targets that include scope 3 emissions and are aligned with a 1.5°C scenario?

To limit global temperature rise to no more than 1.5˚C, the global economy must halve GHG emissions by 2030 and reach net zero emissions by 2050. To translate the level of emissions mitigation needed to the corporate level, the Science Based Targets initiative requires companies to set and achieve short- and long-term emission mitigation targets before offsetting their remaining residual emissions by their net zero target date. Recognizing the need for ambitious and urgent action to mitigate corporate emissions, companies should set GHG emissions reduction targets that are aligned with what is needed to achieve net zero emissions by 2050 or sooner and emissions reductions prior to 2030.

Given the significance of land-based emissions in this sector, companies that only set out to achieve emissions reduction targets for scope 1 and 2 emissions will be increasingly exposed to climate risk. According to the SBTi's methodology, a scope 3 target is required for any company where scope 3 emissions account for 40% or more of its total scope 1, 2, and 3 emissions.

RED FLAGS

- The company's emission reduction targets are self-validated and/or only cover scope 1 and 2 emissions, with no mention of the temperature alignment of its targets.
- The company has an outdated GHG emission reduction target aligned with a 2-degree scenario, with no public commitments to update its target in the next 24 months. Note: The Science Based Targets initiative is no longer validating 2-degree and well-below 2-degree targets after July 2022.
- The company's targets do not explicitly cover emissions from agriculture and land use change.

  Note: The Science Based Targets initiative's Forest, Land, and Agriculture (FLAG) guidance will provide methods for companies to set 1.5°C aligned targets particularly for these emissions.
- The company does not have a commitment to achieve no deforestation across its primary deforestation-linked commodities, as required by the SBTi FLAG guidance.
- The company has a net zero target but does not have interim short- and long-term emission reduction targets inclusive of scope 3 emissions that outline the level of emissions reductions the company intends to achieve.

» Does the company clearly articulate that carbon credits will only be used to neutralize residual emissions or to counterbalance its emissions to support climate change mitigation outside of its value chains?

As outlined in Ceres' report, Evaluating the Use of Carbon Credits, companies should use carbon credits to raise the ambition of their climate commitments. To ensure this, companies should disclose:

- Their anticipated residual emissions and the percentage they plan to neutralize with carbon dioxide removals.
- The volume of carbon credits purchased to counterbalance emissions and support climate change mitigation outside of their value chain.

For more information, see Ceres' report, as well as the SBTi Net Zero Standard.

RED FLAGS

- The company has a net zero target or claims to have achieved net zero emissions or carbon neutrality, but has not disclosed the volume of credits purchased to achieve its claims.
- The company's net zero or carbon neutrality claims are not backed by disclosure of emissions reductions in line with a 1.5°C scenario.

Climate Transition Strategies and Actions

Transition plans should outline how companies intend to transform their business to embed the business-specific and systemic reality of climate change. The plans should signal to investors that companies understand where and how they need to shift their businesses to align with their emissions reduction targets and a 1.5°C scenario. Here, we highlight questions investors can ask while assessing corporate disclosures to better understand whether companies are providing sufficient evidence that they have robust climate transition plans and are prepared to implement them.

Plans to address the priority sources of emissions in this sector should involve the reshaping of current practices and transformative innovations. Aligning with 1.5°C requires food companies to transform their **growth and innovation strategy, procurement policies, supply chain implementation, and marketing and external engagements**, and to take measures to reduce emissions from operations, waste, and transportation, though these emissions sources make up a much smaller proportion of these companies' overall GHG footprint.

ADDITIONAL CROSS-SECTOR CONSIDERATIONS COMPANIES SHOULD DISCLOSE AS A PART OF THEIR CLIMATE TRANSITION PLANS

This report focuses on the sector-specific elements that investors should look for within corporate climate transition plans to determine whether food companies' strategies can sufficiently address their climate impact or whether further engagement is needed. It is important to note, however, that, consistent with expectations from the Climate Action 100+ Net Zero Company Benchmark, CDP, and the TCFD, companies should also create internal and external enabling environments that will facilitate implementation of climate transition plans and accelerate the transition to a lower emissions economy.

GOVERNANCE

As outlined in the **Climate Action 100+ Global Sector Strategies: Recommended Investor Expectations for Food and Beverage**, companies should integrate climate action into their core decision-making process by ensuring clear and formal board oversight of and remuneration for delivery of their GHG targets. This is consistent with the Climate Action 100+ Net Zero Company Benchmark, the CDP technical note on transition plans, and the TCFD Guidance on Climate-Related Metrics, Targets, and Transition Plans. For this sector, it is critical that governance extends to the corporate supply chain's climate impact and environmental performance.

For more information on how companies across sectors can implement robust governance structures as a part of its strategy to address its climate impacts, see Ceres' report, Running the Risk: How Corporate Boards Can Oversee Environmental, Social and Governance (ESG) Issues.

RESPONSIBLE POLICY ENGAGEMENT

Companies can also help mitigate the systemic risk of climate change by aligning their external political engagements with their climate targets to help create a market environment that is more conducive to climate action. Corporate efforts to address GHG emissions and accelerate supply chain progress may be undermined by lobbying practices, whether directly or through their trade associations. As a part of their climate transition plans, companies should seek to support local, national, and international policies that are consistent with achieving net zero emissions by 2050. Companies should also disclose and engage their trade associations to ensure that their indirect lobbying efforts will help accelerate economy-wide actions needed for all companies to achieve their climate commitments. For this sector, issues that can be mitigated through policy interventions include climate smart agriculture, importation of commodities linked to deforestation, and food waste and labelling.

For more information, see Ceres' Blueprint for Responsible Policy Engagement on Climate Change.

Growth and Innovation Strategy

Climate Transition Strategies and Actions	Evaluating corporate strategies and actions to align growth and innovation strategy to its emission reduction targets:
A company's suite of strategies and actions to align its **growth strategies**, procurement, operations, and customer engagement to achieve its emissions reduction targets	» Does the company disclose how it plans to align its topline growth strategy, inclusive of R&D and product development, with its emissions reduction targets? » Does the company disclose how it plans to align its current and future capital expenditures with its emissions reduction targets?

It is critical that climate action is embedded as a guiding force of a company's corporate strategy, and that it is part of decision-making across a company's portfolio of brands, subsidiaries, franchisees, and other business units. As companies shift to an overall lower emissions business model, all future expenditures and growth strategies should increasingly be built around operating with a lower emissions impact.

Companies can align their forward-looking growth strategy and strategic planning with ambitious emissions reduction targets in four key areas:

1. Core renovation of existing products
2. Innovation of new products
3. Strategic acquisitions and venture capital investments
4. Capital expenditure (capex) alignment, including taking potential future stranded assets offline

Over time, the share of the company's portfolio that is made up of products with lower emissions profiles should increase, while capital expenditures that finance the continued production of higher emissions products should decrease. To determine how much to invest in this transition and by when, companies should conduct a TCFD-aligned climate scenario analysis for a 1.5°C scenario. Based on the results of this analysis, companies can develop a time-bound strategy to shift their current and future expenditures in line with what is needed to achieve their GHG emission reduction targets.

» Does the company disclose how it plans to align its topline growth strategy, including R&D and product development, with its emissions reduction targets?

In addition to mitigating risks to the bottom-line from the increased cost of business due to potential regulations like carbon taxes and bans on imports of commodities linked to deforestation, addressing climate change through R&D and new product development can also improve companies' topline growth. Demand for climate-friendly products and services

is projected to increase. The ability of companies to provide lower emissions products and services may give companies a competitive edge and help them to maintain relationships with customers.

How sub-industries can address key emissions sources and drivers in the sector

Emissions from synthetic nitrogen fertilizer production

Agricultural products companies that blend and sell synthetic nitrogen fertilizers can reduce fertilizer-related emissions in this sector by innovating and lowering the cost of lower emission fertilizers. Ammonia, the basis for most fertilizers used globally, is typically produced through a process that uses natural gas, emitting massive amounts of CO2 in the process. Some companies are now investing in R&D of lower emissions fertilizer production that uses renewable energy instead, dramatically reducing CO_2 emissions. Agricultural products companies that produce fertilizers could gain a competitive edge by developing these products, which are likely to gain market share soon.

Nitrous oxide emissions from fertilizer use on agricultural lands

Agricultural products companies, **packaged foods and meats companies**, and other companies down the supply chain can also incentivize proper on-farm nutrient management through the development and piloting of fertilizer management technologies. Nitrous oxide, a potent GHG, is emitted from nitrogen fertilizer use. Overapplying fertilizers exacerbates their climate impacts and input costs and can also contribute to nitrogen pollution in nearby waterways. Companies can invest in technologies, such as precision agriculture, nitrification inhibitors, and automated agricultural processes, that help farmers more efficiently use agricultural inputs and reduce their supply chain GHG emissions.

Methane emissions from enteric methane and manure in livestock production

Agricultural products companies and certain packaged food and meats companies that develop and sell feed and other animal nutrition products can also invest in R&D and accelerate the adoption of additives to animal feed that have been proven to reduce enteric methane emissions. Some additives have been shown to reduce enteric methane emissions by over 20%. However, increased investment is needed for these solutions to be more commercially viable at a large scale. For more information, see CGIAR's research on the topic.

All key agricultural emissions

Packaged foods and meats companies can mitigate both their upstream and downstream scope 3 emissions through product innovation that increases demand for commodities associated with lower GHG emissions. Beef is around seven times as land- and GHG emissions-intensive as poultry and pork, while plant-based proteins, such as peas, generate the least emissions. According to the World Resources Institute, global per capita meat consumption must be reduced to around 1.5 burgers per person per week by 2050 to align with a 1.5°C scenario. This is around a 35% reduction from current consumption levels.

Companies can contribute to this shift and capitalize on changes in consumer preferences by investing in R&D and developing new products that use plant-based proteins, as well as through strategic acquisitions of companies that diversify the company's product portfolio and increase exposure to emerging plant-based products. Agricultural products companies can also invest in-house R&D and invest venture capital in companies developing alternative proteins to improve and offer a wider variety of flours, powders, and concentrates made from processed soy, pea, and corn proteins.

Introducing a new line of plant-based products does not guarantee that a company is reducing its GHG emissions impact. Companies should ensure that their new offerings do not have unintended consequences, such as increased exposure to soy-driven deforestation due to lack of traceability in its supply chains for soy protein isolates or making lower emissions offerings inaccessible for lower income households.

Questions investors can ask to assess whether a company's investments in plant-based proteins are helping them achieve their climate-related goals include:

1. Does the company have a no-deforestation policy and traceability mechanisms to ensure that any purchased ingredients, such as soybeans, do not expose the company to deforestation and its associated emissions?
2. How is the company planning to evolve its product mix over time to lower emissions from animal-intensive products?

3. How is the company planning to evolve its R&D expenditures and marketing budgets over time to lower emissions from animal-intensive products?
4. Does the company take sufficient measures to mitigate emissions from the production of plant-based products, including measures to decarbonize new production facilities?

In addition to increasing the supply and demand for plant-based products, companies should also focus on working with their suppliers to aggressively reduce methane and nitrous oxide emissions associated with livestock, as well as emissions associated with the production of animal feed.

Energy use for packaging production

Packaged foods and meats companies can invest in innovative and more efficient packaging practices. Packaging accounts for around 5.4% of total food systems emissions globally, including the energy used to produce raw materials used for packaging, such as paper, plastic, and glass, as well as land use change associated with the production of paper products. Companies can mitigate packaging-related emissions by reducing the amount of packaging used. Packaging in some contexts helps mitigate food waste, so it is critical that companies prioritize options that use packaging materials efficiently without compromising food storage and shelf life.

Conventional plastics are produced from petroleum byproducts, including crude oil and natural gas. Some companies are investing in materials, such as bioplastics, that can replace conventional plastic packaging. PLA (polyactic acid), typically made from sugar in corn starch, cassava, or sugarcane, can easily replace polyethylene for use in plastic films and bottles. PHA (polyhydroxyalkanoate), made by microorganisms that produce plastic from organic materials, can be used for single-use food packaging. Companies should assess the viability of these products, given the waste disposal and recycling infrastructure in targeted markets.

RED FLAGS

- The company's climate transition plan disclosure is limited to efforts to invest in new R&D, innovations, or other projects that only affect a portion of the company's business, portfolio brands, or products.
- The disclosed plans are limited to specific innovations, such as packaging, that do not address the company's largest emissions sources.
- The disclosed plans do not specify how investments will lead to transformations to the company's core business.

» Does the company disclose how it plans to align its current and future capital expenditures with its emissions reduction targets?

Companies allocate capital expenditures for corporate investments that are intended to support future growth opportunities and competitiveness, and the maintenance of current operating capacities. A transition to a lower emissions economy will require substantial shifts in the types and quantity of commodities that are produced by farmers, procured by food companies, and consumed by end users. Companies should provide evidence of increasing the share of capital expenditures invested in measures to reduce GHG emissions over time.

Companies that do not align their future capital expenditures with their climate commitments face significant financial risks due to stranded assets. Stranded assets occur when current corporate investments are unable to function at current or projected capacity. The legal, regulatory, and market response to climate change, as well as the physical impacts of climate change, are likely to result in material financial risks. Agricultural commodities tend to have flat cost curves, meaning that most of the costs of production and trade are fixed and these companies cannot lower their fixed costs to accommodate reductions in production capacity or increases in the cost of ingredients. Due to sunk costs like agricultural equipment, warehouses, ground and ocean transport, and other capital expenditures, agricultural products and packaged foods and meats companies are susceptible to stranded asset risk from changes in agricultural yields and other supply chain disruptions.

Capital expenditures vary depending on each company's business model and structure, as well as its place in the supply chain and the nature of its relationships with its suppliers and customers. Companies should disclose evidence that they are basing the proportion of capital expenditures they invest in lower emissions processes, technologies, and infrastructure each year on what is needed to achieve their emissions reduction targets. This could be informed by the results of a climate scenario analysis, an internal price on carbon, integrating a climate lens to existing tools to assess future investments such as discounted cash flow analyses, or other methods.

EXAMPLES OF POTENTIAL STRANDED ASSETS IN THIS SECTOR:

Physical stranding: Experts predict that climate change will shift suitable cocoa growing regions, with areas highly suitable for cocoa production expected to decrease substantially. This could lead to stranded assets for agricultural products companies that may need to abandon or downsize current processing facilities and invest in additional facilities in new growing regions, and their customers who may be unable to operate at current or projected capacity due to increased cocoa prices and lower production volumes. To avoid stranded assets, companies must take steps to ensure that their financial planning related to their cocoa sourcing incorporates these expected impacts on climate change on their sourcing patterns.

Legal stranding: As nations are increasingly scrutinized for their climate actions, companies that hinge their business growth on procurement from areas with high deforestation and land conversion risk may face legal stranding. For example, in Indonesia, 15% of current palm oil plantations are located on peatlands, which emit significant GHGs when converted for agricultural production. These lands, as well as an additional 76% of unplanted concessions, are at risk of becoming stranded. Though Indonesia has relaxed a previous moratorium conversion for palm oil plantations, it is likely that these regulations will be re-implemented, forcing palm oil producers to shift practices or cease production, resulting in stranded assets for buyers of palm oil and its derivative products.

Economic stranding: Companies may also have stranded assets due to the increased cost of high-emitting products. The U.K.-based FAIRR Initiative calculated, for example, that a predicted carbon tax (of $53/tonne) by 2050 would increase costs for beef companies up to 55% of current average EBITDA. Companies must plan accordingly to ensure that these predicted effects do not lead to stranded assets in existing and near-term investments in beef production, processing, and marketing.

To mitigate stranded assets, companies can assess their current investments by conducting a climate scenario analysis or implementing an internal price on carbon to decide what parts of their business they would be well-positioned to pivot away from. They can also plan to expand the production, processing, or procurement capacity of lower emissions agricultural commodities.

How sub-industries can address key emissions sources and drivers in the sector

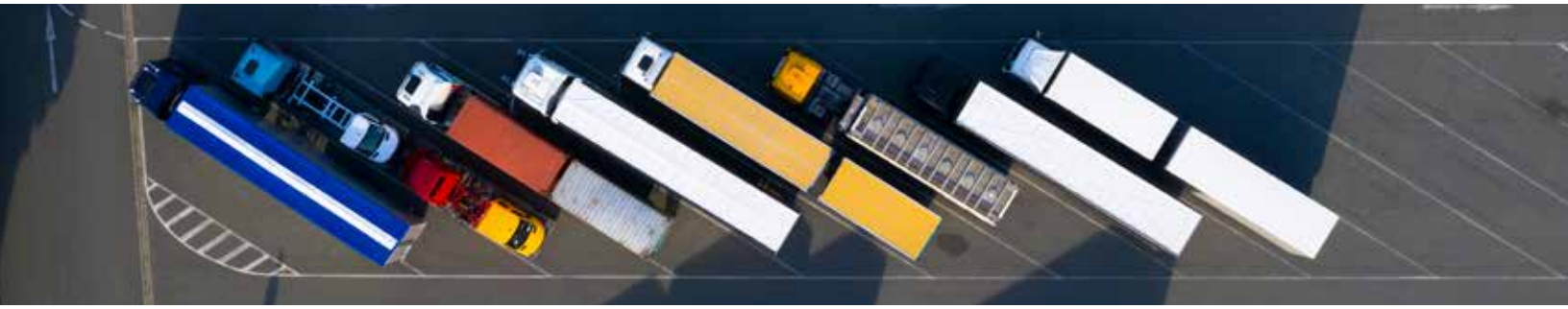
All key agricultural emissions

Packaged foods and meat companies can invest in new infrastructure and processing capacity to further capitalize on emerging market trends that favor crops with a lower emissions profile and reduce the emissions associated with product portfolios. For example, crops with environmental and health benefits, such as buckwheat, rye, and lentils, often require different manufacturing capabilities than other crops like corn and wheat.

Meat packing companies that are expanding their offerings to include plant-based alternatives may also need to acquire new technologies and processing and manufacturing capacity to accommodate the processing of alternative proteins, such as beans and peas.

Transportation of commodities and food products between farms, storage facilities, processing plants, retailers, and consumers

Food distributors, food retailers, and hypermarkets and supercenters can invest in the development of lower emissions or zero emissions transportation and distribution networks by partnering with emerging lower emissions vehicle companies to pilot and implement such technologies.



RED FLAGS

- The company discloses plans to invest in capital expenditures that will increase the capacity to produce and sell high-emitting commodities and products, such as beef, without discussing how it plans to shift future investments towards lower emission alternatives, or investments that will lower the emissions profile of existing products.
- The company does not disclose evidence of using a climate scenario analysis or other tool to inform its future capital expenditures.
- The company does not disclose evidence of aligning future business expansion, including mergers and acquisitions, with its existing emissions reduction targets.
- The company discloses evidence that it is planning to increase the production, processing, or procurement capacity of high-emitting agricultural commodities.
- The company discloses evidence of investing in new processing or manufacturing capacity in areas of high deforestation and land conversion risk.

Corporate Procurement Strategies and Supply Chain Implementation

Climate Transition Strategies and Actions	Evaluating the alignment between corporate procurement strategy and emission reduction targets:
A company's suite of strategies and actions to align its growth strategies, **procurement**, operations, and customer engagement to achieve its emission reduction targets	» Does the company assess its emissions from purchased goods and services to identify the largest categories and sources of supply chain emissions and engage with suppliers accordingly? » Does the company have supplier policies that address its priority supply chain GHG emissions, including a zero deforestation and zero land conversion policy? » Does the company require its suppliers to set science-based emissions reduction targets? » Does the company incentivize its suppliers to implement the practices required by its procurement requirements? » Does the company disclose its plan to achieve traceability and transparency its supply chain for the high-emitting commodities its sources?

Most companies in this sector will achieve the largest proportion of their emission reductions by addressing supply chain emissions embedded in their procurement. A food company's procurement needs include agricultural commodities, such as beef, dairy, corn, soy, palm oil, and wheat, for food products, paper, glass, and plastic for use in packaging, already manufactured food products, transportation services from contracted vehicle fleets, and purchased energy. To achieve their emissions reduction targets, companies must identify the main drivers of emissions in their supply chain, identify suppliers to engage, and ensure that suppliers have the financial and technical incentives needed to accelerate the transition to a lower emissions economy. Companies can refer to the Value Change Initiative's Value Chain (Scope 3) interventions – Greenhouse gas accounting & reporting guidance for instructions on how to estimate the emission reductions achieved through the actions they take in their supply chain, as well as the forthcoming GHG Protocol Land Sector and Removals Guidance.

» Does the company assess its emissions from purchased goods and services to identify the largest categories and sources of supply chain emissions and engage with suppliers accordingly?

To drive climate action through their supply chains, companies should assess their procurement to identify the purchased goods and services that represent the largest emission sources for each company. This screening of emissions from purchased goods and services should allow the company to better understand the key leverage points it can use to mitigate the major sources of emissions and climate risk in their supply chains. Based on this assessment, companies should work with their suppliers to develop plans and strategies to identify the key mitigation levers available to reduce suppliers' major source of emissions.

Much of this sector's emissions are embedded in the production of key agricultural commodities. The key practices and technologies that will drive emissions reductions at the source will vary depending on the commodity purchased and its region of origin (Table 10).

Table 10: Practices and technologies that can mitigate emissions from agricultural commodities commonly sourced by U.S. food companies

Key emissions drivers	Common commodities sourced by U.S. food companies	Practices and technologies that can address key emissions drivers
Commodity-driven deforestation and other land conversion	Beef - Australia and Brazil	Practices to increase yield per hectare in pasture-based systems in Australia and Brazil to reduce the need to expand in to forested areas, including improvements in pasture management, crop-livestock integration, rotational grazing, and improved animal nutrition.
	Soybeans – Brazil	Avoiding deforestation and other land conversion in grasslands like the Cerrado by expanding soy production on degraded lands, implementing crop-livestock integration, and improving soy yields. Traceability and monitoring technologies to identify conversion in the supply chain.
	Palm Oil – Indonesia and Malaysia	Avoiding deforestation and peatland conversion by engaging the increasing proportion of smallholder palm producers, improving yields, and providing technical and financial support for certification compliance. Traceability and monitoring technologies to identify conversion in the supply chain.
	Beef, dairy, pork, poultry, and eggs – U.S.	Source animal nutrition and feed inputs that utilize deforestation and land conversion-free soy and other commodities.
Methane emissions from enteric methane in livestock production	Beef and dairy – U.S.	New feed inputs and technologies to reduce enteric methane emissions. Efficiency gains could materialize from the use of emerging precision livestock farming technologies, which could also prevent pasture degradation.
Methane emissions from manure in livestock production	Beef, dairy, and pork	Improved manure management practices, including using anaerobic digesters, solid-liquid separators, composters, and covers to manage liquid manure.
Methane emissions from rice production	Rice – India, Pakistan, Thailand, and U.S.	Implement alternative growing practices such as alternate wetting and drying, invest in the breeding of low-methane rice varieties, and improving soil management practices.
Emissions from synthetic nitrogen fertilizer production	Corn, Soybeans, and Wheat – U.S.	Use of lower emissions fertilizers.

Nitrous oxide emissions from fertilizer use on agricultural lands	Corn, Soybeans, and Wheat – U.S.	Use of precision agriculture, which can lead to reduced fertilizer, pesticide, and irrigation use.
Carbon loss from soil management practices	Corn, Soybeans, Wheat, Beef, and Dairy – U.S.	Improving soil management practices on crop fields and pasture through practices that prevent soil degradation and build soil organic matter. See box on regenerative agriculture below.
Energy use for on-farm machinery and buildings	Corn, Soybeans, Poultry, and Eggs – U.S.	Shifting to renewable on-farm energy use for machinery, increasing energy efficiency, and shifting to renewable energy use for the heating and cooling of poultry houses.

Purchases of all agricultural commodities can also expose companies to emissions from food loss and waste. Companies should ensure that their screening of emissions from purchased goods and services account for any food loss that occurs in the supply chain before their point of purchase. If food and agricultural products that are currently being lost along food value chains can be recovered, this will mitigate emissions from all the above sources. Companies are also exposed to the transportation-related emissions associated with their suppliers' upstream transportation and distribution networks.

WHAT ABOUT REGENERATIVE AGRICULTURE AND AGRICULTURAL CARBON SEQUESTRATION?

There is a lot of excitement about the potential to capture and store carbon in agricultural soils as a natural climate solution. These practices, often labelled as "regenerative," "climate smart," or "conservation" agriculture, include planting perennials, reducing or eliminating soil tillage, composting, crop diversity, and rotational grazing. Regenerative agriculture has the potential to reduce agricultural emissions by decreasing or eliminating the need to use high-emitting agricultural chemical inputs, such as pesticides and fertilizers and machinery, such as tractors used for tillage, and by enhancing carbon sequestration in agricultural soils.

There is still debate in the scientific literature about how much and how permanently carbon can be stored in soils. According to Roe et al. (2019), the estimated soil carbon sequestration potential in croplands around the world ranges from 250 million to 6.78 billion tons of CO_2 per year. **To achieve the high estimate, farmers must double soil carbon on croplands from 0.27% to 0.54% through at least 20 years of continued soil management practices.** The specific type and combination of regenerative agricultural practices as well as their applicability to the farm where they are being implemented can result in a wide range of emissions mitigation and removal potential. To make matters more complicated, location-specific factors like soil type, moisture, temperature, microbial and fungi composition and nutrient availability of the soil influence how much carbon can be stored in agricultural soils. Due to these complexities, measuring actual GHG emissions reductions based on incremental changes in soil carbon is challenging as it is expensive, time consuming, and difficult to account for accurately on a large scale, which is why most practitioners use modeling with some testing for verification. Continued investments in new testing technologies, such as sensors and drones, improving data collection, and disclosing results are necessary to better understand the contribution of regenerative agriculture towards corporate GHG emission reduction targets.

A climate transition plan that pins its agricultural emissions mitigation solely on regenerative agriculture may not on its own lead to a company achieving its GHG emission reduction targets. However, these practices can also provide other environmental benefits, such as supporting pollinators and other biodiversity, reducing erosion, improving water quality, and reducing water use. Regenerative agriculture systems may also be more resilient to extreme weather events, such as drought and flooding, helping companies mitigate potential physical climate risks to their agricultural supply chains. Economic benefits also include higher yields and lower input costs for farmers. Any actions to promote regenerative agriculture practices intended to increase soil carbon sequestration should be paired with investments in agricultural practices that mitigate emissions, such as reducing enteric methane emissions from livestock, improving manure management, and transitioning to zero-emissions farm equipment.

RED FLAGS

- The company does not identify the major sources of emissions in its supply chain.
- The company only discloses very high-level categories of emissions sources such that it is not clear what the priorities should be in terms of actions to mitigate emissions in the supply chain.
- The company uses emissions factors to estimate its emissions that are not location specific and that may not capture the specific processes in its supply chain.
- The company does not engage suppliers on the major sources of emissions identified in its assessment of its scope 3 emissions from purchased goods and services.

» Does the company have supplier policies that address its priority supply chain GHG emissions, including a time-bound no-deforestation policy or a no-natural ecosystem conversion policy?

Public commitments and policies can keep companies accountable for making progress towards their goals to mitigate their supply chain emissions, while simultaneously signaling the market risk to suppliers who do not comply with the company's policies. Downstream companies in this sector, such as restaurants and retailers, have a considerable influence on their suppliers due to their high purchasing volumes. By engaging suppliers on climate action through procurement contracts and policies, these companies can help drive climate actions throughout their supply chains. Companies should develop policies and codes of conduct for suppliers that are operationalized within procurement contracts and grounded in the company's assessment of the priority emissions drivers in its supply chain.

How sub-industries can address key emissions sources and drivers in the sector

Commodity-driven deforestation and other land conversion for the expansion of agricultural lands

A priority emissions driver that companies must address to meet emissions targets is commodity-driven deforestation and other natural ecosystem conversion, which must be eliminated as soon as possible to limit global temperature rise to 1.5°C. These practices are often the single largest source of GHG emissions for companies in this sector that either directly or indirectly source commodities like palm oil, soybeans, and beef. To align their supply chains with a 1.5°C scenario, companies should have a clear commitment to eliminate commodity-driven natural ecosystem conversion in the supply chain, with supplier-facing policies that outline expectations and requirements for suppliers to comply with these standards.

Companies should consult the Accountability Framework Initiative (AFi)'s consensus-based guidance for standardized definitions and best practices for addressing natural ecosystem conversion in corporate supply chains to set robust no-deforestation and no-conversion policies. Importantly, as set forth by the SBTI's FLAG guidance for setting science-based targets to reduce land-based emissions in line with a 1.5°C scenario **companies that do not have a clear, publicly disclosed no-deforestation commitment will no longer be able to have any of their FLAG GHG emission reduction targets validated by the SBTi**. For more information on how to engage companies on eliminating deforestation, see Ceres' report, Investor Guide to Deforestation and Climate Change.

RED FLAGS

- The company has procurement policies that do not sufficiently address its major sources of emissions.
- The company has climate-related procurement policies that only apply to suppliers of certain commodities or services or one that only applies to certain products, brands, segments, subsidiaries, or franchises.
- The company has no way to measure and evaluate its progress toward meeting procurement policies or its suppliers' performance.
- The company does not provide evidence of taking actions in line with its policies.
- The company has no-deforestation or no-conversion policies that are limited to certain commodities, sourcing origins, or suppliers in its supply chain.
- The company's no-deforestation or no-conversion policies only extend to its direct, or tier 1, suppliers, leaving out its suppliers' upstream supply chains.

» Does the company require its suppliers to set science-based emission reduction targets?

By establishing a clear requirement for suppliers to set their own emissions reduction targets, companies can reduce their emissions from purchased goods and services, while creating market risk for suppliers who are unable to comply with the company's requirements. Companies may need to adopt a tiered or incremental approach for small- and medium-sized enterprises (SMEs) that may not have the capacity to immediately set science-based targets. The SBTi has a differentiated, streamlined route for SMEs to set science-based targets, which does not require them to set targets for their scope 3 emissions, though SMEs must commit to measure and reduce their scope 3 emissions over time.

RED FLAGS

- The company discloses evidence of requiring suppliers to set emissions reduction targets, but this seems limited to certain suppliers, such as direct or tier 1 suppliers who the company has a direct relationship with, or suppliers who are engaged through a specific sustainable sourcing program.
- The company does not disclose the percentage of its suppliers who have an emission reduction target or the percentage of the company's emissions covered by existing supplier targets.

» Does the company incentivize its suppliers to implement the practices required by its procurement requirements?

As companies seek to reduce the GHG impact of their supply chains, it is critical that companies do not simply cut out non-compliant suppliers from their supply chain. Moving sourcing away from suppliers who do not, for example, set science-based emission reduction targets or comply with a company's no-deforestation policy may help reduce a company's immediate climate risk. However, it may also create "leakage markets," where high-emitting practices are allowed to continue if, for example, producers that engage in deforestation simply find less scrupulous buyers for their products. These markets have the potential to exacerbate sector- and economy-wide supply chain disruptions and reductions in agricultural production capacity.

Companies should instead engage their suppliers and incentivize climate-friendly practices through strategies that include both carrots and sticks. For examples of how companies can address supply chain deforestation, see Ceres' Investor Primer on Financial Mechanisms to Incentivize Deforestation-Free Commodity Production.

How sub-industries can address key emissions sources and drivers in the sector

Commodity-driven deforestation and other land conversion for the expansion of agricultural lands

Companies all along food and agriculture supply chains can work with value chain partners, NGOs, and other stakeholders to financially incentivize and provide technical assistance to adopt the measures outlined in Table 10. In cases where traceability and access to specific suppliers within the company's supply chain is not currently possible, companies should engage suppliers at the supply shed level while working with value chain partners and other stakeholders to accelerate the adoption of lower emissions practices at the jurisdictional and landscape levels.

One option for companies to improve their supplier engagements is by developing longer term supplier contracts. In a traditional contractual model, buyers may shift suppliers on a yearly basis. To meaningfully shift suppliers' behaviors, deep engagements that exceed the length of a typical contract may be needed. Long-term contracts can, in some commodity contexts, create more trust between suppliers and buyers and can help companies monitor results from any pilot projects or other measures they implement to reduce supply chain GHG emissions. For companies that invest in the resilience of their agricultural supply chains, long-term contracts may also help protect companies from climate-related supply chain disruptions.

RED FLAGS

- The company does not disclose evidence of assessing the impact of its efforts to incentivize suppliers to shift to more sustainable practices and whether its efforts are helping to increase compliance with its supplier policies.
- The company's efforts to incentivize suppliers are limited to pilot projects or are only extended to a limited scope of suppliers, with no evidence of plans to scale up initiatives.

» Does the company disclose its plan to achieve traceability and transparency of its supply chain for the high-emitting commodities it sources?

A common bottleneck for achieving supply chain emissions reductions among downstream companies, such as food retailers, is the inability to achieve full supply chain traceability and engage with indirect suppliers, or a company's suppliers' suppliers. Because effective emissions mitigation levers differ between commodities and their regions of origin, companies that do not understand where commodities originate from have limited ability to direct supply chain interventions towards the largest sources of their scope 3 emissions from purchased goods and services. Additionally, in the absence of full traceability, companies must use emissions estimates for commodities at the regional or national level. In some cases, this can make companies appear to be responsible for addressing more emissions than there are in their supply chain and could lead to an inaccurate estimate of the company's climate-related risks.

Agricultural products companies are often much closer to a commodity's point of origin and may have more direct relationships to producers on the ground or the middlemen who supply them. Agricultural companies that achieve full traceability will have more leverage to reduce their scope 3 emissions from purchased goods and services and will also stand to gain an advantage over competitors, as more of their customers set their own goals to achieve traceability within their supply chains.

Food retailers, hypermarkets and super centers, and restaurants are increasingly engaging in vertical and backward integration, where they acquire upstream companies and increase their own agricultural production capacity to supply private-label, in-house brands. This may lead to more emissions from land use change and agriculture to be accounted for as a part of scope 1 direct emissions, which companies have more control over. As private-label brands increase in popularity among consumers, these companies may gain a competitive edge by being able to make climate-related claims about their products.

RED FLAGS

- The company only discloses traceability to the country or region of origin, without an explanation of how it is planning to achieve traceability to the commodity's point of origin or point of control. Note: While companies work to increase their supply chain traceability, which can take time, they should work to mitigate emissions from sourced commodities at the supply shed level.
- The company only discloses traceability for certain commodities, suppliers, or segments of its business.

Operations, Waste, and Transportation

Climate Transition Strategies and Actions	Evaluating the alignment between plans to reduce emission from operations, waste, and transportation with emission reduction targets:
A company's suite of strategies and actions to align its growth strategies, procurement, **operations,** and customer engagement to achieve its emissions reduction targets	» Does the company have a plan to address its energy-related emsissions associated with its operations? » Does the company have a plan to address energy-related emssions associated with transportation? » Does the company have a comprehensive strategy and action plan to reduce or eliminate operational food loss and waste?

As companies reduce emissions from land use change and agriculture, much of the remaining emissions will come from a company's direct operations, its waste management practices, and its transportation and distribution. For food companies, this includes emissions from any company-owned agricultural lands, energy use in food processing and manufacturing plants, company-owned transportation and distribution, and food waste. For companies that are expanding their manufacturing capacity for private-label brands, operational emissions will make up an increasing proportion of their overall emissions footprint.

» Does the company have a plan to address its energy-related emissions associated with its operations?

Scope 1 and 2 emissions related to purchased electricity and the use of energy within operations are not the key source of emissions in this sector. However, companies must also reduce and eliminate these emissions to fully align with a 1.5°C scenario. Companies should make a clear commitment to sourcing 100% renewable energy through initiatives such as the RE100. The minimum requirements to join RE100 include achieving 60% renewable electricity in their operations by 2030, 90% by 2040, and 100% by 2050. Companies should pair this shift with a multi-year improvement plan to increase overall energy efficiency by improving operational efficiency, optimizing energy consumption during non-production times, and recovering heat energy from production processes.

How sub-industries can address key emissions sources and drivers in the sector

Energy use for on-farm machinery and buildings

> **Agricultural products and packaged foods and meats companies** with company-owned grain elevators, chicken hatcheries, and other agricultural operations can engage contracted farmers on reducing on-farm GHG emissions related to energy use and agriculture, as well as land use change where relevant to reduce their scope 1 emissions.

Energy use for food processing and food product manufacturing

> **Agricultural products companies, packaged foods and meats companies**, and other companies that process and produce food products can reduce the energy and carbon intensity of their processing and manufacturing plants.

Energy use in stores for lighting, food storage, and cooking

> **Food retailers, hypermarkets and supercenters, and restaurants** can increase energy efficiency and reduce the use of high-emitting refrigeration in their stores.

RED FLAGS

- The company's new acquisitions or investments do not align with its goals to mitigate energy-related emissions.
- The company only disclose efforts to reduce operational emissions without disclosing more substantial efforts to reduce its scope 3 emissions, which make up the majority of their full scope of emissions.

» Does the company have a plan to address energy-related emissions associated with transportation?

Emissions from transportation and distribution can fall under either scope 1 or scope 3, or both, depending on whether companies rely on company-owned transportation or contracted services. For both company-owned and third-party fleets and distribution services, companies can reduce transportation-related emissions by shifting to lower emissions fleets, piloting lower emissions heavy duty vehicles, and embedding concrete requirements in their contracts with transportation service providers.

How sub-industries can address key emissions sources and drivers in the sector

Energy use for transportation

Agricultural products companies, food distributors, food retailers, hypermarkets and supercenters, as well as other companies with extensive transportation and distribution networks should set targets to increase purchases of zero-emissions vehicles and working with third-party providers to obtain zero emission transportation services, with a goal of transitioning to 100% zero emission transportation by a target date such as 2040. By implementing measures to reduce the GHG emissions impact of their transportation and distribution, companies with in-house ground transportation, like food distributor Sysco Corp., which has the second largest private vehicle fleet in the U.S. after PepsiCo, can reduce their direct scope 1 emissions and help accelerate the shift to a lower emissions transportation sector. Other companies that use third-party transportation providers can reduce their scope 3 emissions from downstream transportation and distribution.

Agricultural products companies that also have company-owned river and maritime transportation for long-haul shipping should invest in and work to increase the use of lower emissions shipping fuels. Such fuels include sustainable biofuels (e.g., biomethanol), synthetic carbon-based fuels (e.g., methanol produced with direct air capture), and "blue" and "green" hydrogen and ammonia. For more information, see the World Bank's analysis of decarbonization options in the maritime transport industry.

RED FLAGS

- Companies mention pilots for lower emissions transportation without disclosing plans to scale these projects to cover their full fleet and transportation needs.
- Companies only disclose efforts to reduce transportation-related emissions without disclosing more substantial efforts to reduce their scope 3 emissions, which make up the majority of their full scope of emissions.

» Does the company have a plan to reduce or eliminate operational food loss and waste?

Measures to reduce food loss and waste along food and agriculture supply chains can allow companies to reduce their scope 3 emissions while simultaneously reducing their operational costs associated with purchased ingredients and waste disposal. When creating plans to address this source of emissions, companies should adhere to the waste hierarchy approach. Best practices for reducing this source of emissions vary by sub-industry and place in the supply chain.

How sub-industries can address key emissions sources and drivers in the sector

In-store and consumer food waste

Around 30% of food in American grocery stores is wasted and often ends up in landfills. U.S. **food retailers** generate around 16 billion pounds of food waste every year, which the U.S.-based nonprofit ReFED estimates costs the industry $18.2 billion in lost revenue. Despite the financial materiality of food waste, producing food waste is often built into food retailers' business strategies:

Overstocking produce is a common practice, based on the assumption that customers are more likely to purchase produce from a fully stocked display. This leads to unpurchased, spoiled foods and damaged items from customer and employee handling that get thrown away.

Pulling items from shelves prior to the sell-by date is another common practice that is intended to protect retailers from the perception that companies are selling spoiled or old items, even when most foods are appropriate to consume long after the sell-by date.

While some food retailers have invested in efforts to address food waste, many of the measures highlighted in corporate sustainability reports focus on diverting food waste from landfills through donations, sending food waste to

animal feeding operations, and food recycling programs, rather than reducing or eliminating food waste. To mitigate the costs, food security implications, and emissions associated with food waste, **food retail and hyper markets and super center companies** should prioritize efforts to reduce food waste. For examples of what this can look like in practice, refer to ReFED's Retail Food Waste Action Guide.

GHG ACCOUNTING FOR RECOVERED FOOD LOSS AND WASTE

Emission reductions from recovered food loss and waste can be accounted for as a part of a company's scope 3 emissions inventory and would appear as emission reductions within the scope 3 category: "Waste generated in operations." Companies can consult the GHG Protocol's guidance on this scope 3 category for more information on how food waste can be accounted for in its emission disclosures. This data can be used to monitor progress and make changes to the company's food waste mitigation strategies if needed.

RED FLAGS

- The company's food waste and loss reduction strategies are not grounded in quantitative metrics that can be tracked over time.
- The company's food waste and loss reduction strategies are limited to efforts to divert food to other uses rather than eliminating the source of the food loss or waste.

Customer Engagement

Climate Transition Strategies and Actions	Evaluating the alignment between plans to reduce emissions in cooperation with downstream customers and a company's emission reduction targets:
A company's suite of strategies and actions to align its growth strategies, procurement, operations, and **customer engagement** to achieve its emissions reduction targets	» Does the company disclosed a plan to engage its customers and end users on the shift to lower emssions product and service offerings? » Has the company displosed a plan to engage its customers on emssions associated with the use and disposal of its sold products?

Companies are well-positioned to accelerate a societal transition to a lower emissions economy through their customer engagement activities with retail customers and end consumers. These strategies should build on the company's efforts to align its growth and innovation strategy with its GHG emission reduction targets.

» Has the company disclosed a plan to engage its customers and end users of its products on a shift to lower emissions product and service offerings?

Companies can mitigate their scope 3 emissions from purchased goods and services by engaging customers in a shift to lower emissions offerings if these efforts lead to reduced procurement volumes of higher emissions agricultural and food products. Companies already influence consumer behavior through their marketing and product development strategies, including targeted advertising, product packaging, and other tactics. These same tactics can be used to nudge consumer behavior towards lower emissions products.

How sub-industries can address key emissions sources and drivers in the sector

Emissions from synthetic nitrogen fertilizer production

Agricultural products companies can increase the percentage of their marketing budget that is focused on agricultural inputs that help reduce agricultural emissions, including lower emissions fertilizer products.

All key agricultural emissions

Food retailers and hypermarkets and supercenters can implement nudges in their stores to drive consumer demand towards lower emissions products, including through shifting product placement and advertisements.

Restaurants and packaged foods and meat companies are increasingly taking advantage of consumer trends by expanding menus and product offerings to add plant-based alternatives to their traditional meat-based items. There are several approaches companies can take in this shift. Labelling emissions and other climate-related information on menus and on product packaging is an emerging practice, but this practice may be less effective than other strategies companies can implement, such as shifting the proportion of their menu offerings that are plant-based or otherwise associated with lower emissions, even without labelling them as such. Additional information can confuse consumers and lead to unintended results if not conveyed accurately, clearly, and in a way that consumers can easily use to make decisions.

» Has the company disclosed a plan to engage its customers on emissions associated with the use and disposal of its sold products?

Companies can also directly engage with their customers to reduce scope 3 emissions from the use of sold products and the end-of-life treatment of their sold products. These scope 3 emissions categories are a higher source of emissions from upstream and midstream companies, including agricultural products companies and food distributors. They encompass use-phase emissions, such as fuel and electricity used to cook and prepare food products, and the emissions associated with the disposal of food products, usually in the form of food loss or waste.

How sub-industries can address key emissions sources and drivers in the sector

Emissions from synthetic nitrogen fertilizer production

Agricultural products companies with scope 3 emissions from the use of sold products associated with fertilizer sales can innovate and work with suppliers to reduce the emissions associated with their fertilizer blends, while also encouraging more efficient and less polluting fertilizer application practices among its customers.

Emissions associated with the disposal of non-food consumer waste

Packaged food and meats companies, retailers, and restaurants can reduce their scope 3 emissions from the end-of-life treatment of products by engaging customers on avoiding consumer food waste, including by innovating the way their food products are packaged and by educating consumers on ways to reduce at-home food waste.

NEXT STEPS FOR INVESTORS

Prioritizing companies for engagement

Companies should disclose climate transition plans that will get them on track to achieving their ambitious GHG emissions reduction targets. The guidance in this report is primarily intended for investors' engagements with companies that have already disclosed their full scope GHG emissions and have set 1.5°C GHG emissions reduction targets that cover scope 3 emissions. Without these foundational elements in place, companies face the risk of creating plans that are not ambitious enough to align with what is needed to mitigate climate change. Investors should focus their engagements on these asks for lagging companies.

However, recognizing that companies may point to the difficulty of GHG accounting and target-setting as a barrier that sets them back from being able to invest in and implement emissions reduction efforts, investors can also use this guidance to engage laggard companies, noting, however, that companies should get ahead of forthcoming guidance and standards by preemptively aligning their actions with more ambitious standards.

Where investors can find basic info to prioritize engagement topics

After identifying the companies that have GHG emissions reduction targets that cover scope 3 emissions, investors should then look for basic information about the company's business, commodity exposure and main raw materials used, types of owned properties, and main type of customers to get a better sense of what leverage points the company may have, in addition to what the company's major emissions sources are likely to be. This information can typically be found in mandatory financial disclosures, such as the company's annual report (Form 10-K).

Where companies can disclose their climate transition plans

The recommendations in this report are intended to provide additional guidance on how investors can assess the information companies are already disclosing to CDP, in TCFD-aligned reporting, in mandatory financial disclosures, and in corporate sustainability reports to ensure that companies are already providing adequate specificity and nuance, given their major sources of emissions. Disclosure requests and disclosure frameworks are already beginning to move beyond asking companies to explain how climate-related risk assessments have influenced their business strategies into deeper discussions of how companies are implementing their plans and evidence that their strategies are leading to effective climate risk mitigation and GHG emissions reductions. As we approach critical deadlines for addressing climate change and as climate-related risks become increasingly material, it is likely that more harmonized guidance for comparable information will continue to emerge.

Additional resources

Investors can consult the Food Emissions 50 website for additional resources from Ceres on topics relevant to engagements on climate transition plans in the food sector, including deforestation and land use change. The website will continue to be updated with new resources to support engagements through the Food Emissions 50 initiative.