

S Y S T E M I Q

*JUNE 2023*

# DELIVERING NET ZERO IN THE FOOD SECTOR



**“ Most global food companies now have science-based targets – and yet emissions are still rising as frankly the industry isn’t moving fast enough. This analysis sets out the hurdles facing the sector in getting to Net Zero, and how companies can overcome them. It’s clear that once a company treats net-zero as truly mission-critical, and once it can show investors the value at stake and real cost of inaction, much faster progress becomes possible. The reality is that only CEOs and their senior teams can give these efforts the priority status they deserve. New partnerships and risk-sharing will be key, within the value chains and beyond. So is advocacy to get governments to equally move faster in putting right policies in place. More than ever, we need courageous leadership.”**

*- Paul Polman, Systemiq Board Member and former CEO of Unilever*

### About Systemiq

Systemiq, the system-change company, was founded in 2016 to drive the achievement of the Sustainable Development Goals and the Paris Agreement, by transforming markets and business models in five key systems: nature and food, materials and circularity, energy, urban areas, and sustainable finance. A certified B Corp, Systemiq combines strategic advisory with high-impact, on-the-ground work, and partners with business, finance, policy-makers and civil society to deliver system change. Systemiq has offices in Brazil, France, Germany, Indonesia, the Netherlands and the UK.

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### Authors and acknowledgement

This paper was authored by Aditi Ramdorai, Christine Delivanis and Rupert Simons and developed in consultation with experts from across Systemiq's Food and Nature Platform. We would like to thank the following individuals for their input and expertise: Paddy Ellen, Jeremy Oppenheim, Anna Morser, Carla Müller-Zantop, Guido Schmidt-Traub, and Morten Rosse.

Image p2: Cacao shells are used as fertiliser added to the soil at a sustainable cacao producer, part of the Acefuver association, in Chigorodo, Colombia. Chris de Bode for Panos Pictures/Food and Land Use Coalition.

Image p14: Coffee beans; Kakataima Agroecology School, the Slow Food Movement Colombia. Chris de Bode for Panos Pictures/Food and Land Use Coalition

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## INTRODUCTION

**Most of the world's global food companies have now set science-based targets (SBTs) to reduce their greenhouse gas (GHG) emissions and reach net zero. Some are making progress. However, most big companies are reducing their climate impact too slowly to meet their demanding targets. Across the board, their combined emissions are still rising.**

This paper examines the obstacles that food companies face on their journey to net zero – and how to overcome them. The views we present are grounded in the scientific understanding of viable net zero pathways for food and agricultural systems that Systemiq has developed as a founder of the Food and Land Use Coalition. They also reflect our experience of helping individual food and agriculture companies design and adopt effective pathways to a net zero, nature positive and commercially advantageous future.

We suggest two central changes for food companies eager to speed progress.

First, they should treat net zero as they would any other mission-critical objective. That means evaluating alternative pathways to net zero in hard financial terms, weighing the costs of investments – and any upsides – against the costs of inaction. Seeing alternatives presented in this familiar strategic fashion builds senior managers' and investors' understanding of the value at stake and gives them confidence in the cost-effectiveness of the pathway they choose. Support from the top provides the corporate-wide momentum to follow the chosen pathway all the way to net zero.

Second, to make good speed, global food companies need to engage closely with many different actors, within their value chains and elsewhere in the sector. Otherwise they will find themselves unable to effect all the big changes in behaviour needed in their particular value chains. Success depends on understanding the benefits of collaboration for not only effecting change but also sharing risk.

The rest of the paper shows why companies that select and implement their net zero strategies along these lines have the strongest chance of achieving ambitious climate targets on time and cost-effectively. It ends by setting out what Systemiq does to help actors in food and land use systems worldwide reach net zero together.

## SECTION 1

### GLOBAL FOOD COMPANIES ARE ADOPTING AMBITIOUS, SCIENCE-BASED CLIMATE TARGETS

More than 230 large food companies have now adopted emissions targets validated by the Science Based Targets initiative (SBTi), widely recognised as the leading standard-setter in this area. Only the professional services and fashion sectors can boast more adherents to SBTi climate standards. Some food companies are also engaging with the Science Based Targets Network (SBTN), which is defining targets to help businesses protect and restore nature more holistically. The SBTN is working on targets for biodiversity, land use, fresh water and ocean health. [See Box on Science Based Targets.](#)

The impressive ambition from the food sector reflects the scale of the challenge. Food and land use systems generate over one quarter of all GHG emissions<sup>1</sup> and have caused 90% of tropical deforestation<sup>2</sup>. The spread of farming has pushed 86% of species now at risk of extinction to the brink<sup>2</sup>. According to the Food and Agriculture Organization, the world has lost 420 million hectares of forest since 1990. Seven globally traded commodities – palm oil, soy, cattle, wood fibre, cocoa, coffee and rubber – are responsible for most of this encroachment.<sup>3</sup> Fertilizer run-off from agriculture is the main driver of nitrogen and phosphorus pollution, which damages marine ecosystems.

The sector's climate ambition is also partly a response to mounting regulatory pressure. The US Securities and Exchange Commission requires companies to disclose Scope 3 GHG emissions from suppliers in their value chain; the EU Commission's forthcoming Corporate Sustainability Reporting Directive will place the same responsibility on EU companies. The UK, EU and USA have all recently strengthened regulations to stop commodity agriculture destroying forests. The EU aims to start enforcing its measures in 2023: the EU Carbon Border Adjustment Mechanism, to be phased in from October 2023, will make it more difficult and expensive for EU companies to import high-emission products, like much of South America's meat and soybeans. Many countries are also planning to regulate farm emissions and nitrogen pollution, especially from meat and dairy farms. Some, like New Zealand, are negotiating with farmers and giving them time to adapt. Others, like the Netherlands, are adopting swifter measures, including mandatory herd culls and farm buyouts.

Carbon taxation schemes to protect the climate continue to evolve, but none yet apply consistently to the food sector in any region. However, the scope of such schemes has been extending and in Europe will soon affect high-emitting agricultural inputs, like fertilizer. If all major economies were to impose a \$100 tax on every ton of carbon emitted from the food and beverage sector by 2030, the sector would face an annual bill of between \$150 billion and \$300 billion unless it had sharply reduced its emissions before then.<sup>4</sup> Carbon tax may not come in the form of direct taxation or emissions trading schemes but rather as regulations like those described above, price increases or mandated supply restrictions. Currently all major countries have policy instruments in place in the food and agriculture sector to incentivize climate action. This is only expected to accelerate.<sup>5</sup>

There is commercial pressure on food companies to cut emissions too. As more companies in every sector and more governments adopt SBTs, they will demand lower emissions from their suppliers, including food suppliers. Over 4,000 companies, representing more than one-third of market capital worldwide, have already set SBTs. The US government, the world's largest purchaser, will require most large federal contractors to have set SBTs from 2024.<sup>6</sup>

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## SECTION 2

### FIVE CHALLENGES FOR GLOBAL FOOD COMPANIES TRYING TO DEVELOP AND IMPLEMENT CORPORATE NET ZERO STRATEGIES

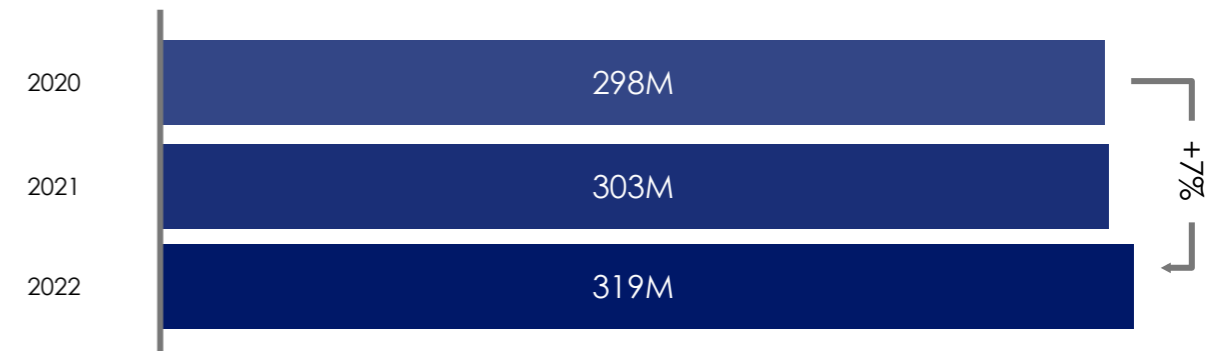
Setting tough targets is one thing; meeting them is another. Despite their commitment to net zero, global food companies have seen their combined emissions continue to rise over the past three years (see *Graphic 1*). Five of the seven companies represented in the graphic have cut their direct Scope 1 and 2 emissions from manufacturing operations and purchased energy. However, only one has cut Scope 3 emissions from elsewhere in its value chain. Yet Scope 3 emissions account for roughly 95% of an average global food company's total emissions, with 55-75% coming from ingredients. Their Scope 1 and 2 emissions are only 3-8% of their total GHG emissions (see *Graphic 2*). Moreover, our examination of corporate emissions reported to the Carbon Disclosure Project (CDP)<sup>7</sup> indicates that companies are underestimating their Scope 3 emissions; these could be 1.5-2 times higher than they are currently reporting.

The scientific basis of global food companies' climate pledges and targets is not in question. So what makes it so hard for them to get results? Systemiq has identified five sector-specific challenges hindering their efforts to design and implement corporate net zero strategies.



**Graphic 1: Emissions in the food sector continue to rise**

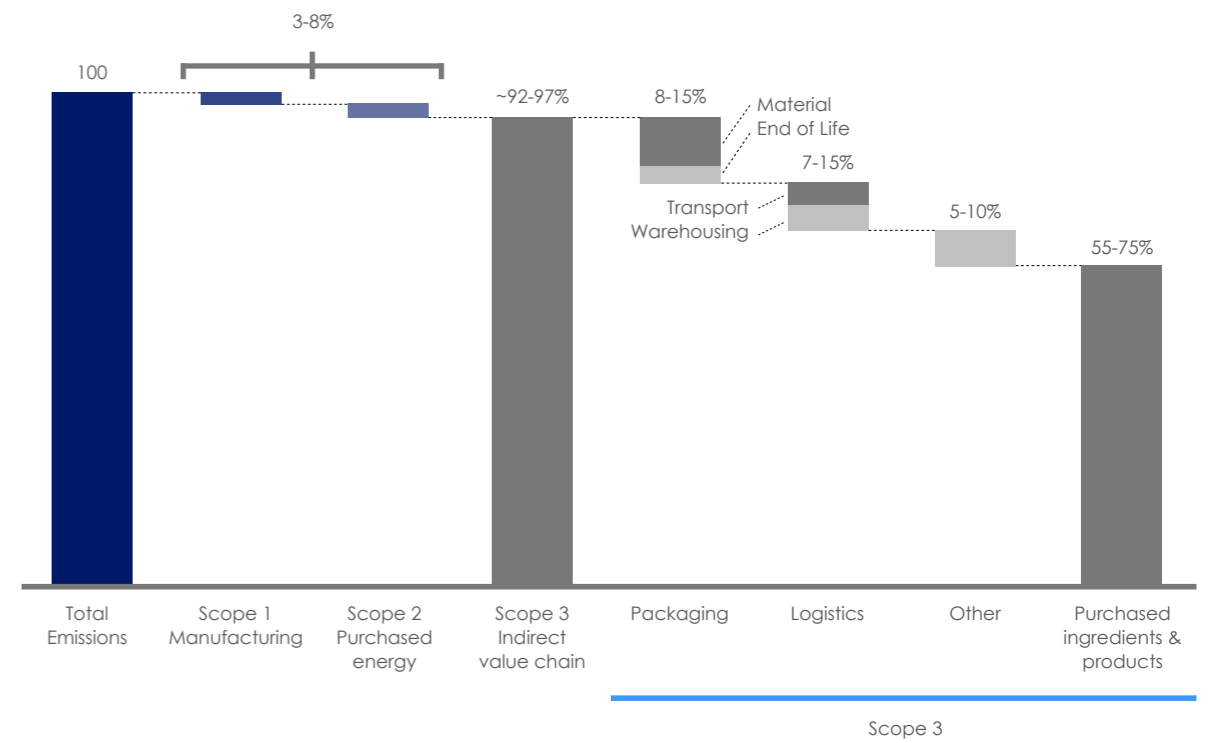
Cumulative emissions of 7 top global food companies\* - GHG Emissions, MT CO<sub>2</sub>e (2020-2022)



**Note:** \*10 key global companies were assessed, but only 7 included given data availability  
**Source:** CDP, Just Food and Systemiq Analysis

**Graphic 2: Emissions breakdown in a typical food company**

Illustrative Food Company Emissions Breakdown - GHG emissions (CO<sub>2</sub>e)



**Sources:** CDP, Systemiq Analysis

## CHALLENGE 1: COMPLEX, DIFFUSE AND OFTEN LOW-TECH VALUE CHAINS

Global food companies generally procure a wide range of ingredients and commodities from numerous different suppliers in many different countries. Compared to global companies in other sectors, their value chains are unusually decentralised and disaggregated. This creates three difficulties.

First, although they know that emissions from farms and changes in land use contribute the bulk of total emissions from their sector, individual global food companies – sitting at the centre of a web of supply chains – struggle to get a clear view of the source and scale of their Scope 3 emissions.

Second, with little direct control over the far end of their supply chains, food companies cannot easily incentivize the farmers growing their ingredients to cut GHG emissions. They often have to work through traders or other intermediaries. Influencing supplier behaviour is a lot harder than in many other sectors.

Lastly, fewer emissions-cutting technologies have been developed in food and agriculture than in other sectors, notably energy. And the few effective technologies, such as methane inhibitors for livestock or anaerobic digesters for the management of manure, are hard to deploy on low-tech smallholder farms. Farmers may need a lot of hands-on technical assistance and training to get them up and running.

## CHALLENGE 2: ON-FARM EMISSIONS-CUTTING MEASURES ARE WIDE RANGING IN NATURE AND EFFICACY AND WILL BE EXPENSIVE TO DEPLOY

On-farm emissions vary vastly by commodity and geographic region. As a result, there are no 'silver bullets' for reducing emissions from this sector: a solution in one place may be less effective in another. Partly for this reason, deploying the right measures at the necessary scale will be expensive. According to the Food and Land Use Coalition, reducing emissions from farms using nature-based solutions will require an investment of over \$100 billion annually, from now to 2030, to achieve the mitigation needed for the 1.5°C climate pathway.

To illustrate, reducing the impact on climate and nature of dairy farming in Europe, with its generally small pastures, will largely depend on rolling out methane-reducing feed additives and better manure management. In contrast, the additional solution to reducing emissions from dairy in countries with large pastures, like New Zealand, is planting trees to sequester carbon. Similarly, regenerative agriculture practices, like crop rotation, low tillage and lower fertilizer usage, can reduce emissions from the cultivation of wheat, corn, other cereals and oilseeds. But the effectiveness of these levers will be very different in North America compared to Eastern Europe, Latin America or Australia.

Reducing emissions from commodities grown in the tropics, like cocoa and coffee, requires yet another approach. Here, the priorities are to avoid sourcing products from recently deforested areas and to focus procurement instead on agroforestry systems, where dense tree canopies enhance local soil health and biodiversity as well as reducing carbon emissions. However, reliably certified alternative sources for tropical products have not yet reached sufficient scale to satisfy demand. Sustainability standards exist for some – palm oil, for example – but only in some of the areas where these commodities are grown and, in general, there are few reputable certification bodies.

On top of these problems, food companies that decide on investments to cut Scope 3 emission are generally far removed from the farmers and producers where these investments take effect. This adds another layer of inefficiency in the system.

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*“Reducing emissions from farms using nature-based solutions will require an investment of over \$100 billion annually.”*

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## CHALLENGE 3: THE SHIFT TO ALTERNATIVE, LOWER-EMISSION DIETS IS SLOW

The IPCC recognizes the role of shifting to plant-based diets and lower-emission proteins in setting the food and agricultural sector on a net zero pathway, especially in richer countries.<sup>8</sup> But changing population diets is difficult: social norms, culture and habits concerning food are notoriously hard to shift. This makes investment in alternative, low-emission food ingredients or fundamental shifts to food company portfolios look like uncertain long-term bets for food companies.

That said, food companies are investing in plant-based alternatives and lab-grown meats to reduce their reliance on meat and dairy, and total investment in these alternatives is growing. Although alternatives represent less than 2% of today's meat and dairy market, their share is expected to grow to 11%, but only by 2035,<sup>9</sup> and that growth may not be steady. Plant-based meat sales have recently plateaued amid concerns about affordability and taste.<sup>10</sup> However, the technology for growing proteins in the lab is still at an early stage. While investment in this sector is increasing, experts believe that the market will not mature until after 2030, making cultured meat only a more long-term solution for food companies.



## CHALLENGE 4: LACK OF CLARITY ON THE ECONOMICS OF TARGETING NET ZERO

To win shareholder support, the CEOs and chief sustainability officers of food multinationals need to present a clear business case for their net zero plans. But a lack of clarity about the economics of reaching net zero means that a compelling financial case is rarely made. To develop a credible net zero plan, companies need to understand the financial costs of alternative investments to cut emissions as well as their likely impact on nature and the atmosphere. They then need to weigh the financial costs of the investments against the financial costs of inaction. Without that degree of economic clarity, CEOs struggle to communicate to shareholders why net zero should be a strategic priority.

Few companies are choosing to calculate and externally disclose the likely costs of inaction on emissions in today's rapidly changing environment. Yet such costs could be significant. Extreme climate events, and land degradation are already disrupting food companies' supply chains and pricing. These will likely become more frequent and severe. Experts believe that climate events and degradation together will reduce crop yields by an average of 10% globally and up to 50% in certain regions.<sup>11</sup> The 2022 drought in Italy – the worst in 70 years – led to significant yield loss for rice and dairy in the Po river basin. Companies that have yet to build more resilient supply chains, for instance, by choosing suppliers that use regenerative practices, are at increasing risk.<sup>12</sup> Carbon taxes on the sector, now widely expected, could significantly dent the profits of companies that have got no further than committing to SBTs when the taxes are imposed.

On the other side of the ledger, uncertainty also prevails about growth in consumer demand for green products. This hampers companies trying to gauge the likely financial benefits of alternative plans for reaching net zero and their potential payback periods.

## CHALLENGE 5: UNDERESTIMATING THE SCALE AND SCOPE OF EFFORT REQUIRED

The four challenges above make it hard for food companies to form a clear and detailed understanding of the strategic implications for their business of going for net zero. Often, companies don't know the most effective options to choose from; they may lack the cost and return data to calculate the net present value of investing (or failing to invest) in alternative options; and they may not have the influencing mechanisms to implement a chosen strategy across their diffuse, complex supply chains.

Companies unaware of the scale, urgency and difficulty of the work involved tend to give the job of developing a corporate net zero strategy to an under-resourced sustainability department and leave implementing the transition to their operations and procurement teams. A recent survey found that less than half of the companies had involved multiple teams in implementing the net zero strategy.<sup>13</sup> Unsurprisingly, implementation has been lagging as the scale of the task becomes clear.

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*“Companies unaware of the scale, urgency and difficulty of the work involved tend to give the job of developing a corporate net zero strategy to an under-resourced sustainability department.”*

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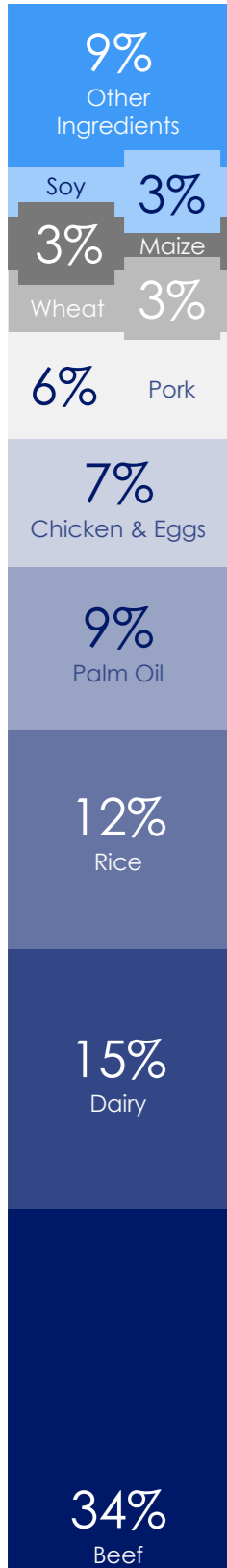
## SECTION 3

### HOW FOOD COMPANIES CAN ACCELERATE THEIR PROGRESS TO NET ZERO

What can food companies do to break out of this impasse? We recommend a five-part approach:

1. Focus on key emissions hotspots
2. Select the optimal mix of ingredients for your net zero recipe
3. Quantify the net zero business case
4. Treat net zero as a mission-critical, strategic objective
5. Catalyse system change by forming partnerships

11 GTCO<sub>2</sub>e



### ACTION 1: FOCUS ON KEY EMISSIONS HOTSPOTS

As *Graphic 3* shows, the production of only nine commodities accounts for 90% of total land-based emissions worldwide from food supply chains. All nine fall into three categories: meat and dairy; tropical commodities, like palm oil; and heavily fertilized grains. Six regions – US, Brazil, China, India, Indonesia and the EU – drive 50% of the consumption of these highest-emitting commodities.\*

This concentration of emissions from particular products and regions makes it feasible for companies to identify their individual emissions hotspots and concentrate on reducing emissions from them. Focusing on the 'big bets' that matter can help companies gain traction on their Scope 3 emissions in the short term.

Developing and implementing successful net zero strategies requires companies to engage with decision-makers along entire 'hotspot' value chains, right down to the first link in the chain: the farmers. Companies need to track and trace emissions accurately along the chains to understand the risks, costs and potential returns of alternatives for reducing them and ensure all players co-operate.

Companies can start this process by prioritizing suppliers and traders for engagement, possibly those with whom they have had the longest relationships or for whom they are a major customer. Companies that are particularly large buyers of specific ingredients may choose to take a lead on setting net zero procurement standards and specifying cultivation practices that competitors with less purchasing power can follow.

Various companies have already started this kind of cooperation with farmers and suppliers – at least to a limited extent. Some are helping farmers to shift to more climate-friendly and regenerative practices. They are piloting different practices in multiple regions because, as noted above, the most appropriate and effective practices may differ widely by crop and location. For example, General Mills and Pepsico have recently announced a range of initiatives with farmer associations and other partners to pilot and scale regenerative agricultural practices. Such programs bring together local agronomical expertise and farmers on the scale needed for transitions to take hold. To incentivize such transitions, food companies could reach long-term off-take agreements with farmers and suppliers to help them access the financing they need.

\*Food and Land Use Coalition, paper forthcoming

#### Graphic 3: Global emissions breakdown by food commodity

GHG emissions (CO<sub>2</sub>e)

Sources: Food and Land Use Coalition analysis, paper forthcoming

### ACTION 2: SELECT THE OPTIMAL MIX FOR YOUR NET ZERO RECIPE

Getting to net zero will require transformative shifts in every global food company's strategy and operations. As for any corporate transformation, each company needs to strike a balance between cost, opportunity, risk and aptitude for change (a combination of corporate will and ability) to make the right adjustments to its portfolio and operating model.

To tailor a corporation's 'net zero recipe' to its specific emissions profile and aptitude for change, a company can draw on three emissions-cutting 'ingredients': technical levers, product reformulations and portfolio mix, and nature-based levers (see *Graphic 4*)

Graphic 4: Three ingredients for a corporate net zero recipe

	1. Technical levers	2. Product Reformulation & Portfolio Mix	3. Nature-based levers
What?	Emissions reductions initiatives in manufacturing and supply chain that deploy decarbonization technologies and solutions	Reducing emissions by making changes to the products or shifting the product portfolio	Sourcing ingredients that are produced through techniques that help store carbon
Levers	Packaging Sustainable Manufacturing Green Logistics	Lower-impact ingredients substitutions & novel ingredients  Focus growth towards low-carbon products  Deprioritize / phase out of high-carbon products	Regenerative agriculture practices to sequester carbon (e.g., cereal crops)  Agroforestry practices (e.g., for coffee)  Nature-based solutions within the value chain (e.g., land restoration)
How?	Delivered by technical teams (procurement, packaging, manufacturing, logistics)  Action can start today when cost implication understood	R&D / technical teams can begin some reformulation action today, following value engineering approach  Significant formulation change and growth mix changes require a process of exploration and alignment with strategy teams, category / regional leads	Sourcing sustainable commodity supply where effective protection and impact generation can be guaranteed  Deploying farming practices with key farmers and suppliers

Source: Systemiq Analysis

### Technical levers

These are changes to current practices in a company's facilities and along its value chains that will reduce emissions without altering the products the company sells or the types of ingredients it sources. Some technical levers change farming and processing practices to make them more sustainable using technology. Two such levers are methane-inhibiting livestock feed additives and solar irrigation pumps. To apply technical levers successfully, companies will need to make capital investments in their facilities and also engage closely with suppliers.

### Product reformulation and portfolio mix

Companies can reshape their portfolios to reduce emissions in two ways: by reformulating current products or by pivoting to lower-emission products.

Reformulating products entails replacing high-emission ingredients with low- or zero-emission substitutes. Instead of using, say, dairy ingredients in an existing product, a company might substitute plant-based alternatives or lab-cultured dairy ingredients. Alternatively, companies can shift their whole product portfolio away from high-emitting foods. For instance, a company long on meat and dairy might refocus production and marketing investment on low-carbon and plant-based products and dial down growth in meat and dairy categories.

To choose the optimal shape for a reformed product portfolio, companies must evaluate their current one. They will need to understand each product and category's emissions intensity, margin contribution and expected sales growth, as well as how the market will evolve. Making product portfolio changes will generally take investment in R&D, acquisitions and marketing spend in the near and medium term. Companies whose current emissions are dominated by meat and dairy may find they can cut a lot of GHGs without sacrificing profit.



### Nature-based levers

These deploy nature-based solutions to remove GHG emissions from within the company's value chain. For example, a company might switch to sourcing ingredients from suppliers who deploy regenerative agriculture techniques, such as cover cropping, use agroforestry rather than monoculture to grow commodity crops like coffee, or collect products from standing forests which would formerly have been cultivated, such as honey and nuts. Restoring natural ecosystems within a company's value chain is another important nature-based lever to consider.

The latest SBTi FLAG guidance allows food companies to count carbon removals that meet SBTi standards as effective means of reaching net zero goals. This change increases the importance of these levers in corporate net zero strategies.

*"The mix of technical levers, product portfolio changes and nature-based levers in a net zero recipe will vary for each company."*

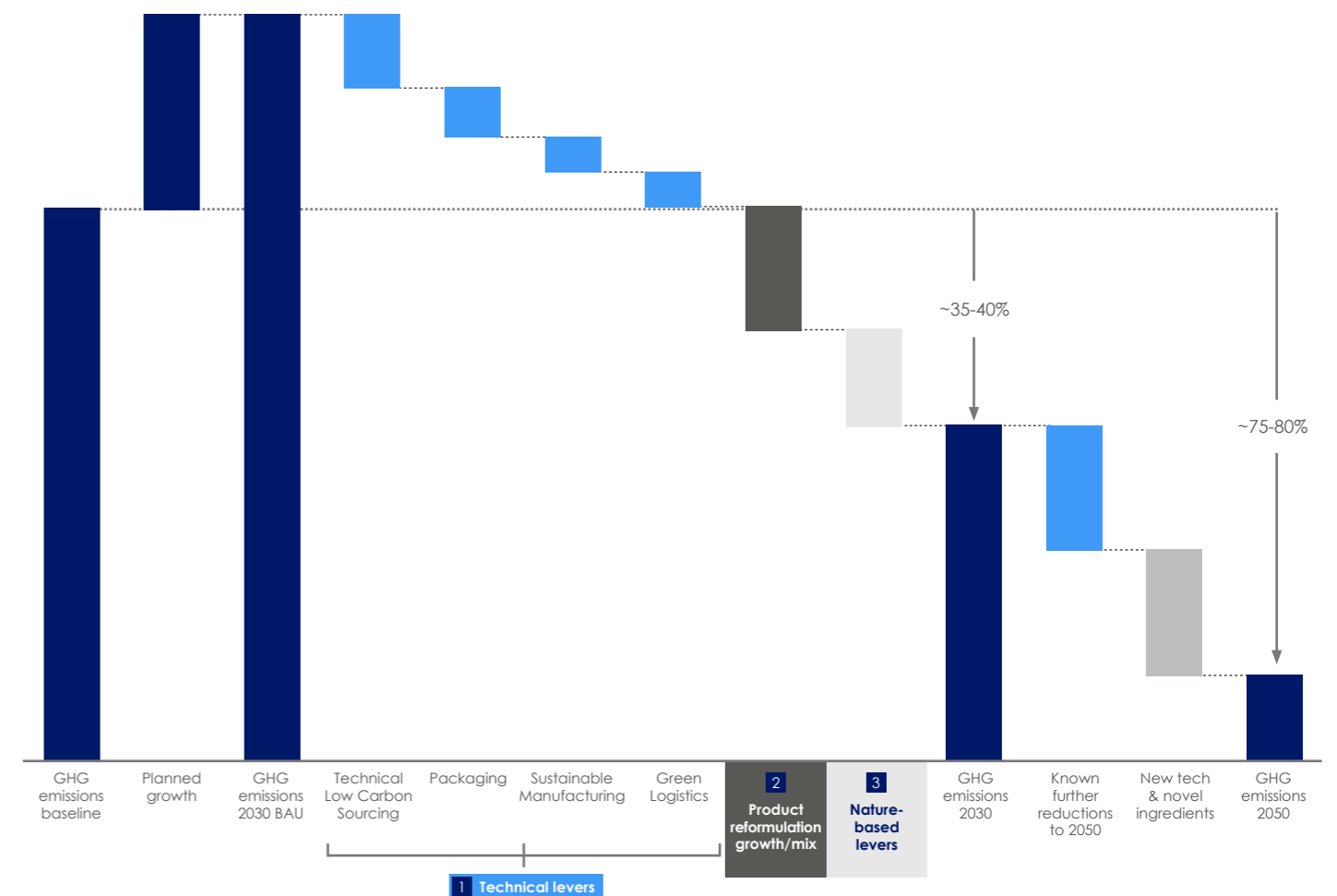
### Putting the recipe together

The mix of technical levers, product portfolio changes and nature-based levers in a net zero recipe will vary for each company. Several different mixes might produce a company's targeted carbon reduction: the right one for its recipe will depend on the company's current product portfolio and geographical spread, its risk appetite and its confidence and ability to change, among other considerations. For instance, some companies will be well equipped to persuade farmers to adopt technical levers; others may favour a complete change of direction for their product portfolio. Understanding the economics of each option is crucial to creating a winning net zero recipe, one that can meet the company's carbon, nature and financial performance goals.

Graphic 5 is a net zero recipe for a typical global food company. It shows the balance of the three emissions-cutting ingredients that the company has chosen to reach its corporate SBTi climate targets on time.

### Graphic 5: A potential net zero pathway for a food company

Emissions Reductions Pathway - GHG emissions (MT CO<sub>2</sub>e)



Source: Systemiq Analysis



### ACTION 3: QUANTIFY THE NET ZERO BUSINESS CASE

Many companies, across sectors, struggle to promote climate action as a corporate priority because it often looks like a large additional investment with no financial upside. Our analysis of the economics for the food sector shows that, on the contrary, delaying corporate-wide action to reach net zero and become nature positive risks adding suddenly and significantly to future business costs. By the same token, early action can make sure food companies stay ahead financially.

Companies need to model the financial outcomes of alternative net zero plans in detail, so the C-suite can compare their costs and possible financial benefits against the costs of inaction.

Graphic 6 summarises an analysis of the cost per tonne of GHG mitigated for a range of technical and nature-based levers available to an average food company with a portfolio heavy on meat and dairy products. The findings are presented as a marginal abatement cost curve. Levers below the x-axis (for example, enhancing energy

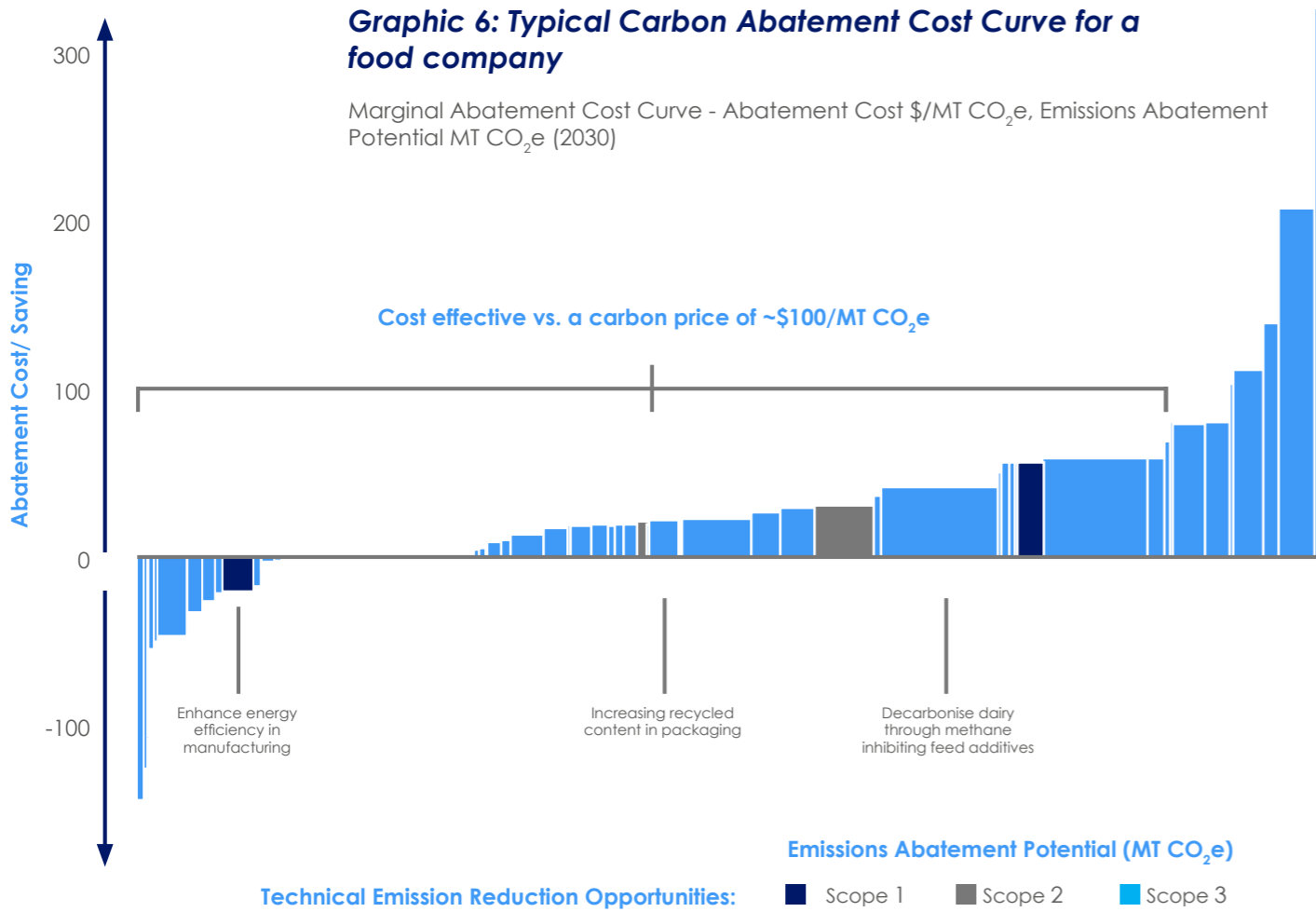
“Our analysis for various food brands suggests that the majority of levers have an average cost of roughly \$60-70/t CO<sub>2</sub>e”

efficiency in manufacturing processes) are cost-saving for companies today. Levers above the x-axis (such as methane-inhibiting feed additive for dairy cows) represent a net cost at today's prices. Our analysis for various food brands suggests that the majority of levers have an average cost of roughly \$60-70/t CO<sub>2</sub>e.

Clearly, more levers add to company costs today rather than save them, but this could change over the medium term. The margin between low-emission food production unit costs over the costs of current practices is likely to shrink or disappear over the coming decade, as grants for switching to green practices become common, green technology development accelerates, and it becomes more normal for players in the industry to share the costs of financing net zero initiatives.

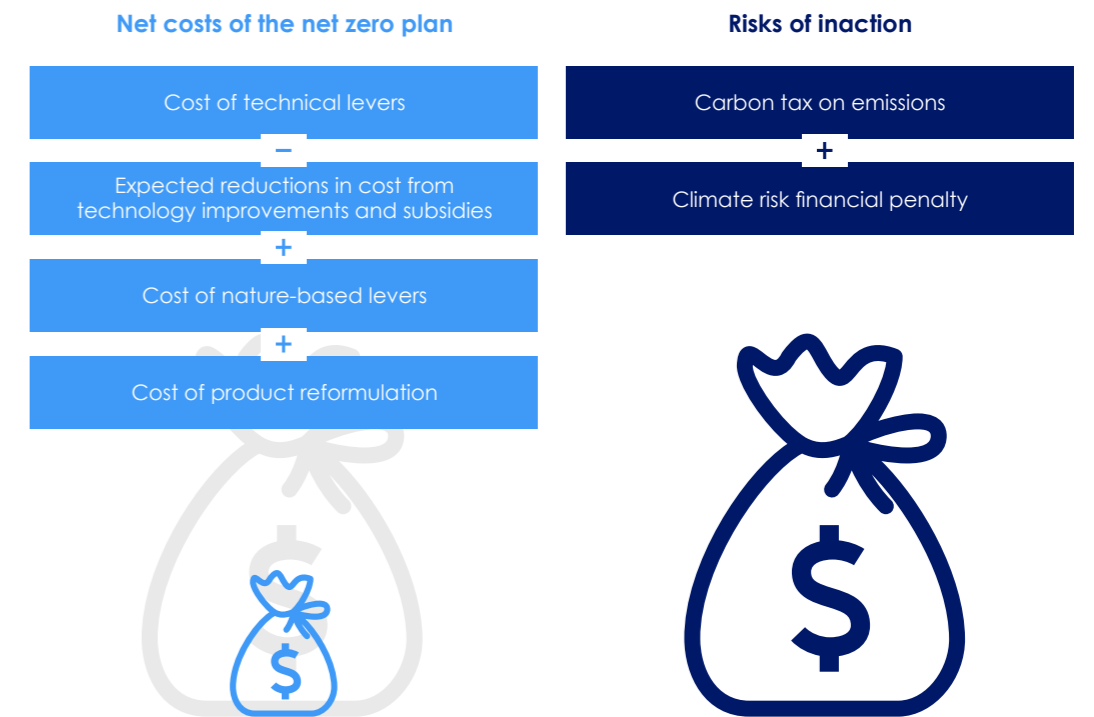
In contrast, the costs of inaction will surge if a carbon tax is imposed. At that point, companies that have delayed reducing emissions will face big bills as they scramble to find lower-carbon suppliers. IEA forecasts anticipate a price of \$140/t CO<sub>2</sub>e in 2030 in advanced economies pledged to reaching net zero, and \$90/t CO<sub>2</sub>e in those emerging markets with net zero pledges. This will add costs to the average global food company that are significantly higher than the costs of deploying the majority of technical levers today, according to our analysis in Graphic 6. Companies could suffer further financial penalties for inaction on climate. They will be more exposed than better-prepared competitors to increasing physical climate risks, such as higher insurance costs and higher prices for commodities and other inputs.

Applying this kind of scenario analysis to alternative net zero recipes, and studying their detailed financial implications, can help company leaders to identify the optimal recipe for their corporation.



**Notes:** Based on today's pricing, does not account for inflation.  
**Source:** Systemiq Analysis

### Graphic 7: Building the business case for net zero



**Source:** Systemiq Analysis

## ACTION 4: TREAT NET ZERO AS A MISSION-CRITICAL, STRATEGIC OBJECTIVE

Early successes suggest that food companies must make reaching their science-based targets a corporate strategic priority if they are to succeed. That means putting critical line and functional leaders at the centre of shaping and delivering the targets. All of a corporation's constituent parts need to be involved in reaching net zero, given the breadth of its implications, as do stakeholders beyond corporate boundaries.

**Engage the whole organisation in reaching net zero.** The first job is to build a **cross-business net zero taskforce** whose remit is to develop a corporate-wide strategy for reaching net zero and to lead its implementation. Taskforce members should reflect every aspect of the enterprise, from procurement, manufacturing, operations and R&D to sales and marketing, finance, logistics and packaging, across all the different brands.

Companies need to make delivering net zero integral to the organisation, rather than delegated to one or two isolated departments. To this end, they could adopt an **internal carbon price** for project evaluations and portfolio choices across the company. This will clarify the economics for capital investments proposed in the net zero strategy and strengthen the business case for emissions-cutting innovation generally. Using the internal carbon price in assessments of collaborations with external suppliers will drive reductions in GHG emissions along their value chains. Applying it to procurement decisions will optimize the balance between ingredient quality, supply security, cost and emissions.

Companies could also add detailed, practical net zero **targets and delivery metrics**. For example, procurement departments could aim to source at least 50% of ingredients from enterprises using regenerative agriculture by 2030. Pepsico's Positive Agriculture goal is to spread regenerative farming practices across 7 million acres by 2030, approximately the area of land used to grow ingredients sourced by Pepsico.

Companies will need to strengthen their emissions tracking and reporting infrastructure to get accurate numbers on their reductions and feed this data into business decisions. They will also need to add new internal **capacities and capabilities**, for example, by hiring more agronomists and renewable energy experts.

To maintain their commitment to their net zero strategies over the long term, companies may consider ring-fencing funding for their investments. Possible **funding mechanisms** include dedicated transition funds and incorporating anticipated costs associated with reaching net zero in current and future business planning cycles. Nestlé has set up an internal transition fund which is expected to invest \$1.2 billion over the next five years in engaging with the roughly 500,000 farmers and 150,000 suppliers in the company's value chain. Other companies are co-investing in professionally managed external funds set up to finance the transition to regenerative farming for specific commodities or in a particular region. One such is the Tikehau Capital Regenerative Agriculture transition fund, which has raised €1 billion. AXA and Unilever are anchor investors.

*“Companies need to make delivering net zero integral to the organisation, rather than delegated to one or two isolated departments”*

## ACTION 5: CATALYSE SYSTEM CHANGE BY FORMING PARTNERSHIPS

Food companies are just one group of actors in food and land use systems. But significant reductions in emissions from their value chains require changes in the behaviour of companies, consumers and farmers across the entirety of those systems. Food companies have to work closely with actors beyond their corporate boundaries to achieve these essential systemic changes.

In particular, food companies need to redefine how they engage with suppliers to make sure they incentivise the supply of low-emission inputs. One option is to partner with suppliers that have also set SBTs, and launch joint pilot projects producing ingredients sustainably. Companies with limited market power might join forces with other buyers keen to source ingredients sustainably and use their combined influence to shift suppliers into sustainable practices. In some cases, food brands may need to adopt direct sourcing and invest in transitioning landscapes to regenerative agriculture in priority regions.

Companies need to be open to working with partners other than their suppliers. Progressive policy can play an important role in supporting companies to take bold action without facing competitive disadvantages; collaborations with competitors, governments and philanthropic organisations can help all involved to get the best carbon and financial return on available funding for the transition to net zero and nature-positive food and land use. This is particularly true of the shift to regenerative agriculture.

At the same time, global food companies can use their visibility and influence to lead the food industry to a sustainable future. Leveraging their flagship brands and ingredients, global food giants can spearhead initiatives to cut emissions from entire sub-sectors, driving systemic change from the top as well as bottom-up. Together they can advocate for and set new industry standards. They can collaborate in industry-working groups and standard-setting organizations, such as the [Sustainable Markets Initiative](#), [Consumer Goods Forum](#) and One Planet Business for Biodiversity ([OP2B](#)), to build consensus on industry best practice. And they can be active in the growing number of global and local coalitions bringing together representatives from industry, policy, civil society and consumer groups. These are already defining and promoting actions that will speed up changes in consumer behaviour and the deployment of low carbon solutions in food and land use systems.



## SECTION 4

### HOW SYSTEMIQ ADVANCES FOOD SYSTEMS' TRANSITION TO NET ZERO

Systemiq has been working with actors across the global food system since 2016 to catalyse its transition to net zero. We collaborate on six main related activities.

#### Measuring corporate baseline GHG emissions

In cooperation with **Altruistiq**, Systemiq provides credible measurements of businesses' environmental impact, including their Scope 1, 2, and 3 emissions.

Altruistiq enables businesses to segment, view and analyse GHG emissions data to set SBTI-aligned targets and model decarbonisation scenarios. With a more than 100k emission factor database, Altruistiq builds on granular company data, automating data ingestion and calculations to develop accurate and actionable insights. Linking real-time emissions data to solutions enables effective prioritisation and tracking of progress.

#### Building net zero strategies and pathways

We help businesses with the financial evaluation of alternative emissions-cutting scenarios, so they can choose the pathway to net zero with the strongest business case. We can support food brands in developing and costing alternative net zero pathways with different mixes of technical levers, product portfolio reformulations and nature-based levers. We can also help senior executives draw up a net zero transformation strategy that will win internal commitment and motivate action across all the relevant departments.

#### Defining the vision for a just and nature-positive food system

We help the industry's players reach for the same goals. As a founding partner of the **Food and Land Use Coalition**, in 2019 Systemiq published **Growing Better**, a report presenting a science-based vision for a net zero global food and land use system, along with 10 actions critical to realising that vision.

We support and undertake related research to specify global and national pathways to net zero as well as **positive tipping points** to get there. FOLU's series of four briefs that are forthcoming, entitled 'The FLAG Sector Business Case for Net Zero', will provide support to FLAG sector companies, helping them to understand the regulatory, strategic and financial implications of setting climate and nature targets.

#### Defining key industry standards

This work is also aimed at co-ordinating actions across global food and land use. In 2021, Systemiq co-launched **Regen10**, a multi-stakeholder initiative to scale regenerative food production systems worldwide in a decade. The initiative is bringing together diverse food system stakeholders to build a global community of farmers. This community is defining and harmonising standards governing outcomes and metrics for regenerative farming. It also specifies pathways to the regenerative production of food at scale. We are also involved in defining corporate targets for land occupation and transformation as part of the science-based targets for nature within **SBTN**.

*"Systemiq has been working with actors across the global food system since 2016 to catalyse its transition to net zero."*

#### Connecting corporate demand to nature-positive supply

Through **Regeneration**, our partnership with the development advisory and program implementation firm **Palladium**, we are connecting food companies with suppliers of regeneratively produced tropical commodities, such as agroforestry coffee and cocoa, and also wild forest commodities, such as forest honey and brazil nuts. The resulting trade benefits local communities and nature while enabling corporate buyers to build resilience in their supply chain, and meet their climate targets.

Regeneration has more than seven years' experience of using catalysing finance and other forms of support for transitions to sustainable land management through programs such as Partnerships for Forests. These programs have now leveraged more than GBP 1 billion of private and public capital to transition over 5 million hectares of land to sustainable land management and protected forest in the tropical South.

#### Financing nature-based solutions

Lombard Odier Investment Managers (LOIM), the asset management arm of Swiss banking group, Lombard Odier, and the systems change firm Systemiq have recently partnered to launch **holistiQ** Investment Partners. **holistiQ** will operate as an investment platform within LOIM to deploy capital for a net-zero and nature-positive economy. **holistiQ** will have a dedicated pillar on nature-based solutions including focus on the Global South. There will be opportunity for food companies to engage with **holistiQ** to explore financing solutions to green their tropical commodity supply chains.

\* \* \*

Global food companies need to reach net zero for the sake of both the planet and their business performance, given the scale of their emissions and mounting regulatory pressures. But a set of obstacles particular to the food sector is slowing their progress. Food companies can overcome them by focusing on their emission hotspots, evaluating alternative ways to cut emissions from them, and building a business case for pursuing net zero that highlights the costs of inaction.

Finding and following the right pathway to a net zero, nature positive future entails a full-scale transformation for global food companies. Making this transformation a corporate strategic priority is critical to their future financial performance. By collaborating with partners within their value chains and beyond, food companies can speed the cost-effective global shift to net zero food and land use that they and the world need to make.

# SCIENCE-BASED TARGETS

To meet the Science Based Targets initiative's (SBTi) Corporate Net Zero Standard, a company must design and execute a plan to reach targets to reduce their greenhouse gas emissions in line with limiting global warming to 1.5 degrees, as agreed in the 2015 Paris climate accord. The plan must show how the company is drawing on the latest science to make deep and rapid cuts in its Scope 1, Scope 2 and Scope 3 GHG emissions.

- **Scope 1 emissions** are GHGs that a company emits directly in the course of its operations, for example, by driving a vehicle fleet.
- **Scope 2 emissions** are GHGs a company is indirectly responsible for emitting through its purchases of electricity, steam, heat or cooling.
- **Scope 3 emissions** are GHGs emitted along a company's value chain for which the company is indirectly responsible. They comprise upstream GHGs emitted by suppliers while making what they supply to the company and downstream emissions from the use and disposal of the company's products. Scope 3 emissions are generally the hardest for companies to tackle.

The SBTi requires a corporate to set GHG emissions reduction targets in the near term (within 5-10 years) and also long-term GHG reduction targets before 2050 to qualify as net zero. Companies must neutralize any residual GHG emissions that they can't prevent before 2050 by financing permanent emissions removal projects that meet the highest certification standards.

SBTi also strongly recommends that companies take immediate action above and beyond their science-based targets through beyond value chain mitigation (BVCM). BVCM refers to investments outside a company's value chain that could include tropical forest protection activities and peatland restoration initiatives. Such landscape-level nature protection can support societal goals for nature, climate and sustainable development.

The **Science Based Targets Network (SBTN)** is specifying similarly detailed standards defining what it will take for companies to have a demonstrably positive impact on nature. To be on a nature positive pathway, a company needs to set ambitions and targets to protect and restore nature in line with staying within the **Earth's planetary limits** and meeting societal sustainability goals.

The SBTN is defining standards covering biodiversity, land use, fresh water and ocean health. The first versions of the Freshwater and Land Targets were released in May 2023. The full set of SBTN targets, giving companies a comprehensive picture of what becoming nature positive entails, is expected by 2025.

# APPENDIX

1. *Why Nature, Why Now*, Food and Land Use Coalition, 2021
2. United Nations Environment Programme
3. Food and Agriculture Organization of the United Nations
4. Based on internal calculations of all food companies with SBTs that are currently disclosing their emissions and their fair share of global food and land use sector emissions
5. OECD, *Pricing Greenhouse Gas Emissions: Turning Climate Targets into Climate Action*, OECD Series on Carbon Pricing and Energy Taxation, OECD Publishing, Paris, 2022
6. The US Government will require most federal contractors receiving over \$50m annually to incorporate and publish SBTs and disclose Scope 1,2 and 3 emissions via CDP on their websites from 2024 (GHG Protocol Blog, 2022)
7. The Carbon Disclosure Project (CDP) collects data on companies' environmental practices and performance using a standard questionnaire. Companies are scored based on their answers, which is one means of comparing companies' environmental impact.
8. Intergovernmental Panel on Climate Change, Special Report: *Climate Change and Land*, 2022
9. Boston Consulting Group, *Food for Thought: The Protein Transformation*, 2021
10. Good Food Institute, 2023 outlook: The state of the plant-based meat category, 2023
11. Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES), Assessment Report: *Land Degradation and Restoration*, 2018
12. 'Regenerative agriculture' refers to a set of practices that generally aim to improve soil health, enhance water infiltration and storage, increase the climate resilience of farms, and reduce reliance on chemical inputs. For more, see the Food and Land Use Coalition, *Aligning regenerative agricultural practices with outcomes to deliver for people, nature and climate*, January 2023
13. South Pole, 2022 Net Zero Report, 2022



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