Big changes in store: How can the global supermarket sector accelerate to Net Zero?

An assessment of the Net Zero commitments and plans of the top ten highest revenue global supermarkets, and the solutions needed to drive progress across the sector

February 2025

CARBON TRUST | Net Zero INTELLIGENCE UNIT

About the report

This is the second report from the Carbon Trust's Net Zero Intelligence Unit offering sector-specific recommendations to accelerate progress to Net Zero, based on an assessment of sectoral commitments and plans for Net Zero.

Acknowledgments

The Carbon Trust's Net Zero Intelligence Unit wrote this report based on an impartial, subjective analysis of publicly available information including sustainability reports, annual reports and emissions reports. We would like to thank many expert contributors from across the Carbon Trust for providing additional research and sectoral insights, particularly Paul Huggins, George Mowles van der Gaag, Anna Giraldi, Joe Turner, Erik Episkopou, James Dunlop, Isabel Di Vanna and Tiphaine Aries.

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About the Net Zero Intelligence Unit

The Net Zero Intelligence Unit provides experience-led insights to accelerate global progress towards Net Zero. The Unit is a dedicated team focussed on raising ambition, awareness and action on Net Zero by drawing on the Carbon Trust's 20 years of experience in working with businesses, governments and financial institutions globally.

The Carbon Trust is a global network of 400 experts with offices in the UK, the Netherlands, Germany, South Africa, Singapore and Mexico. To date, the Carbon Trust has helped set over 200 science-based targets and guided more than 3,000 organisations and cities across five continents on their route to Net Zero.

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Executive summary

Supermarkets sit at the centre of the global food system

The food system is both a leading cause of climate change, responsible for up to a third of global emissions, and acutely vulnerable to its impacts.[1] Rising global temperatures could render many of our daily essentials unavailable or unaffordable, from potatoes to coffee. Supermarkets are already feeling these impacts and are key to breaking this vicious cycle, given their position of relative power and influence in the value chain.[2] Supermarkets can play a pivotal role in driving the collaboration needed to enable a Net Zero and climate resilient food system, acting as the touchpoint between millions of customers, and thousands of food producers and consumer packaged goods companies.

Building on the work already underway across the retail sector, accelerating the Net Zero transition can help unlock significant benefits for supermarkets, from reduced exposure to the physical risks of climate change to new commercial opportunities in low carbon markets. However, the journey to Net Zero is challenging, especially as the vast proportion of supermarkets' emissions lie outside of their direct control, throughout the supply chain.

Cutting the sector's emissions remains a challenge and an urgent priority

Tracking emissions across thousands of products, which often pass through farmers, commodity traders, and processors before reaching supermarket shelves is a mammoth task. Some carbon-intensive products have also historically been profitable for supermarkets, which makes shifting consumer demand away from these products challenging amid the sector's intense competition and low margins. Recent high food inflation has also put pressure on suppliers to prioritise cost reduction and potentially delay sustainability investments. Amid these obstacles, the sector has been able to make some valuable progress on climate, largely through interventions such as using renewable electricity in stores, minimising retail food waste and reducing plastic packaging.

However, making a dent in the sector's biggest source of emissions – food procurement – remains both a challenge and an urgent priority. Doubling down on material areas will allow supermarkets to address multiple climate challenges at once. By supporting suppliers to improve soil health, for example, supermarkets can reduce emissions, minimise their impacts on nature and improve supply chain resilience, while also scaling up soil carbon sequestration, a key measure to reach Net Zero. Meanwhile, engaging with suppliers on data collection will improve the accuracy of supermarkets' footprints, which in turn will improve sustainability disclosure, target-setting, sourcing decisions and decarbonisation strategies.

This report offers targeted recommendations to accelerate progress to Net Zero. These are based on an assessment of the supermarket sector's current plans using the Carbon Trust's Net Zero Sector Assessment tool

Given the small window of opportunity remaining to limit global warming to 1.5C, it is timely to explore how the barriers to Net Zero faced by the supermarket sector can be overcome and further climate progress can be achieved.

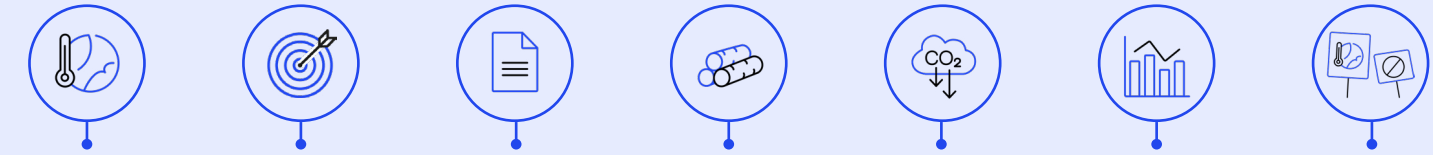
This report draws on the Carbon Trust's experience of working directly with supermarkets and food producers to offer recommendations for advancing towards Net Zero and developing business models that will thrive in a sustainable economy. To provide targeted recommendations, we analysed the most recent annual reports, sustainability reports and emissions reports of ten of the highest revenue supermarkets, hypermarkets and grocery discount stores globally, using the Carbon Trust's Net Zero Sector Assessment tool.[3] The tool was designed to take stock of where individual sectors of the economy stand on their journey to Net Zero to better understand the gaps and identify areas where solutions are most needed.[4]

1 What impact does food production have on climate change? | World Economic Forum (weforum.org)
2 Supermarkets rationing UK: What is causing the fresh produce shortage and how long will it last? | The Independent
3 Global Powers of Retailing 2023 | Deloitte Global. Carrefour requested to be excluded from Deloitte's report, but has been included in our sample based on reported global revenue for 2021. We recognise that Aldi North and Aldi South are distinct entities; for the purposes of our analysis, only Aldi South has been assessed, as the larger of the two.
4 The Net Zero Sector Assessment tool uses seven metrics to assess corporate plans and progress towards Net Zero. Emerging best practice is to address these seven metrics within one Transition Plan. However, as transition planning is relatively nascent in the corporate world, we have used companies' main disclosure documents for this assessment.

The Carbon Trust's Net Zero Sector Assessment: Seven metrics for assessing Net Zero commitments and plans

The Net Zero Sector Assessment looks for seven key approaches that form the basis of a best practice response to climate change:

1. Recognition and ownership of the sector's role in creating and solving climate change
2. Ambitious targets and accountability mechanisms, which enable the organisation to meet its targets
3. A robust Net Zero implementation strategy, setting out how targets will be met
4. Responsible use of natural resources, which accounts for planetary boundaries
5. An approach to carbon offsetting and carbon removal in line with international best practice
6. Transparent disclosure and external verification of environmental claims
7. Engagement with stakeholders to secure external drivers for action on climate



Our seven key findings

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have a Net Zero commitment

Recognition and ownership:

The world's ten largest supermarkets all recognise the climate impacts of the sector and the need for food systems change, and 5 out of the 10 translate this into a commitment to Net Zero.

10/10

have near term Scope 1 and 2 targets

Targets and accountability mechanisms:

All ten supermarkets have ambitious near-term targets for their operational emissions, but the sector does not appear to show a similar level of ambition for the supply chain, where over 90% of emissions lie.

4/10

have detailed plans for decarbonising agriculture

Robust implementation strategy:

All ten supermarkets have plans in place to reduce emissions from operations, and all ten are tackling supply chain emissions in some way, mostly through action on packaging and food waste. That said, 6 out of the 10 are just getting started with the biggest chunk of emissions: food production.

8/10

have targets to eliminate deforestation

Use of natural resources:

8 out of the 10 supermarkets have ambitious targets to eliminate deforestation from product supply chains, but as with many other sectors, transparency and traceability challenges are restricting progress.

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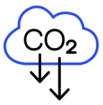

have a plan for carbon dioxide removals

Approach to offsetting and carbon dioxide removal:

In the context of the ongoing debate around the value and integrity of voluntary carbon markets, supermarkets correctly recognise the need to prioritise emissions reduction over offsetting but are generally not clear enough about their approach to using carbon offsets in public reports. Long term, supermarkets will also need carbon removal technologies to reach Net Zero. Plans for scaling carbon removals are at a very early stage, partly due to uncertainty around the type and volume needed, with 2 of the 10 supermarkets setting out a plan for neutralising residual emissions to reach Net Zero by 2050.

3/10

have a validated Net Zero target

Disclosure and verification:

With complex supply chains and data collection challenges, only half of supermarkets assessed disclose their main source of emissions (purchased goods and services) and only 3 of the 10 have a science-aligned Net Zero target that has been externally validated by the Science Based Targets initiative (SBTi).

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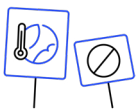


detail Net Zero policy asks

External drivers for action on climate:

Supermarkets are adapting quickly to changing regulations and consumer demand but could accelerate progress by actively advocating for policies and consumption habits that would help the sector transition to Net Zero. Currently only 2 of the 10 highlight Net Zero policy asks, while 4 of the 10 detail steps they take to encourage and enable more sustainable diets.

Our seven key recommendations for the sector

1. To drive recognition and ownership

Supermarkets should undertake a climate compatibility check for their business models given their dependence on nature and vulnerability to extreme weather.

- Routinely monitor and quantify climate and nature-based risks to the business, in order to build resilience and make the internal case for change. The food supply chain is a hotspot, so supermarkets must look upstream.
- Use these insights and convene senior-level working groups to stress test whether the current business model is compatible with Net Zero and develop options as to how the model could evolve.

2. To enhance targets and accountability

Supermarkets should ensure that climate action trickles down into every part of the business; getting finance teams on board is key to empowering procurement teams.

- Set targets which reflect the urgency of the climate challenge, including for Scope 3 emission reductions.
- Drive alignment between Net Zero and other business priorities by ensuring finance, procurement and sustainability teams speak each other's language. Confirm that Net Zero plans are properly costed and resourced, and that CFOs and investors understand the cost of inaction.
- Develop supplier finance programmes to close the food system's climate finance gap. Explore premium pricing, volume guarantees, early access to payments and low-interest loans to suppliers that take ambitious climate action.

3. To develop robust implementation plans

As supermarkets' biggest challenge and biggest opportunity, supply chain emissions must be the focus of climate action plans. Food products make up the bulk of emissions and revenue and must take centre stage.

- Root climate and sourcing plans in sustainable agriculture. Supermarkets can influence food standards and farm practices, with enormous repercussions for carbon emissions. Partner with key suppliers to create decarbonisation strategies for carbon-intensive commodities, and make sure targets, metrics and certifications for sustainable sourcing include carbon.

- Collaborate with food producers and innovators to develop low carbon products using regenerative farming practices, and pilot, test and scale these with customers.
- Create a winning supplier engagement strategy, which educates and incentivises suppliers to measure and reduce emissions. Supermarkets should target suppliers they have most influence over or which contribute most to their Scope 3 emissions.
- Outside of food, tackle emissions hotspots such as fuel sales, logistics and packaging; explore opportunities to co-invest in the technologies and infrastructure needed to decarbonise these areas.

4. To improve use of natural resources

In a Net Zero world, healthy soils and flourishing ecosystems will balance out the food system's most stubborn emissions; supermarkets cannot tackle climate change without protecting and enhancing nature.

- Branch out by collaborating with competitors on deforestation. Work to establish consistent supplier expectations, enable a common approach to investment and develop a collective roadmap for action.
- Invest in healthy soils. Regenerative agriculture can boost soil's health and ability to absorb carbon, as well as reduce the impact of emission-intensive commodities. Strike a balance that optimises use of fertilisers, pesticides and herbicides (including use of natural fertilisers) and minimises land use change, supporting suppliers to assess the most suitable measures for individual farms and crops.
- Embed planetary boundaries into climate strategies, starting with your food waste strategy. Reduce food loss and waste throughout the supply chain by identifying on-farm hotspots, implementing sustainable cold chains and engaging with consumers on household food waste.

5. To ensure a best-practice approach to offsetting and carbon dioxide removal

Supermarkets' supply chains contain some of the toughest emissions to cut; it is in the sector's best interests to scale up removals, even if they don't have all the answers yet.

- Outline how the supermarket invests in climate and nature today by publishing a carbon credit strategy. The strategy should clarify what projects supermarkets are funding, the due diligence steps taken to identify high-quality carbon credits and how these credits are being used.
- Over time, adapt the strategy to pivot towards removals. Within the next five years, supermarkets should start investing to scale the provision of high-quality carbon removal technologies that will be needed to tackle the final 10% of their emissions. Allocate a percentage of turnover to these investments and look to increase this year on year.

6. To reap the benefits of disclosures and verification

In supermarkets' complex but common supply chains, continuous improvement and collaboration are key to winning the Scope 3 battle.

- Share as much as possible now and be prepared to refine information over time. Be clear about any data gaps, changes and steps being taken to improve data quality.
- Come together to raise the bar on disclosure. Collaborate with suppliers, industry initiatives and environmental service providers to improve and streamline measurement and reporting.
- As well as verification for climate targets through the SBTi, consider seeking independent third-party opinions of climate risk assessments and implementation strategies.

7. To support the development of external drivers for action on climate

With only a tiny fraction of emissions within their direct control, supermarkets' power lies in influencing policymakers, consumers and suppliers.

- Take bigger and bolder action to nudge shoppers towards healthy sustainable diets by making them easy, affordable and attractive to adopt. Supermarkets have the opportunity to influence shopping habits by reshaping the choices available to customers; consider removing the most carbon-intensive products from shelves altogether.
- Highlight policy barriers to Net Zero and propose policies that support a just transition to a sustainable, resilient food system.

Our findings and recommendations point to three priority issues for the sector to rally around

Our research indicates that supermarkets are making progress on climate, particularly on reducing Scope 1 and 2 emissions. The most recent sustainability and annual reports of the ten highest-revenue supermarkets globally demonstrate increased ambition in target-setting and a growing focus on sustainable agriculture compared to previous years. However, there remains a significant gap between the sector's progress to date and the transformational change needed to deliver Net Zero.

Our key findings and recommendations reflect three overarching and interconnected issues:

1. **Emissions from industrial agriculture and deforestation**
2. **Access to Scope 3 data**
3. **The need for policy and dietary shifts**

These shared challenges are currently holding supermarkets back across all seven metrics of the Net Zero Sector Assessment, but for this same reason, they also represent critical opportunities for sector-wide collaboration. For example, shared data platforms can reduce the burden on each supermarket and supplier to track links to deforestation and collect emissions data. Co-investment and partnerships can help to scale regenerative agricultural practices and technologies like carbon dioxide removal.

Adopting a collective vision and voice will also give supermarkets much more influence over shopping habits and the policy environment. Working together and with their supply chain, supermarkets can unlock a step change in progress towards Net Zero.

About the supermarket sector

About the supermarket sector

The food system is both a leading contributor to climate change, responsible for up to a third of global emissions, and acutely vulnerable to its impacts.[5]

Rising global temperatures could render many of our daily essentials unavailable or unaffordable, from potatoes to coffee. Food retailers are key to breaking this vicious cycle. Supermarkets have the opportunity to play a pivotal role in driving the collaboration needed for system-wide change, acting as the touchpoint between millions of customers, food producers and consumer packaged goods companies.

Vulnerability to climate change

Empty supermarket shelves may not be the prevailing image associated with the impacts of climate change. Yet, as food retailers, supermarkets are extremely dependent on the reliable supply of produce, and global warming is already wreaking havoc on the food system.

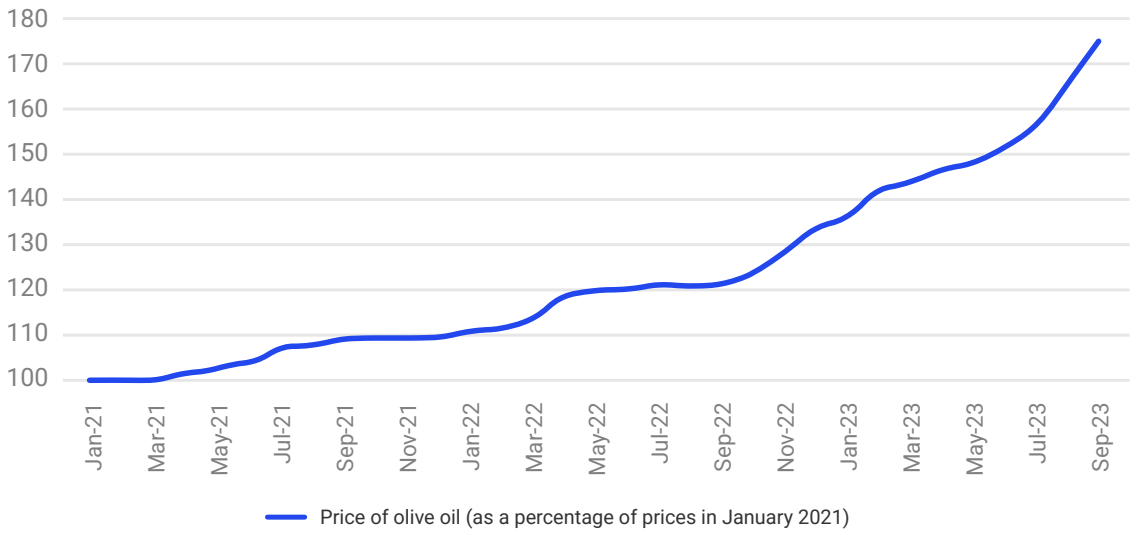
Brazil, the world's leading exporter of oranges, is expected to experience its worst orange harvest in 36 years in the 2024-25 season, due to flooding and drought.[6]

Hurricanes and droughts also hit other prominent orange-growing regions in 2023, including Florida and Spain. In the UK and China, meanwhile, extreme rainfall is reducing yields of other crops. As the UK experienced one of its wettest years on record in 2023, months of waterlogged soils saw cauliflower yields drop by 9% (and overall vegetable production by 4.9%). In China, extreme rainfall between 1999-2012 claimed 8% of rice yields.[7]

Supermarkets are implicated even if they operate far away from the affected regions, due to their global supply chains. For example, according to the British Retail Consortium, the UK imports 95% of tomatoes and 90% of lettuces in winter, mostly from Spain and Morocco.[8]

When these countries were hit by floods, storms and abnormal temperatures in early 2023, resulting shortages forced UK supermarkets to introduce limits on how many of these items each customer could buy. As the distinct extreme weather events in multiple orange-exporting countries show, even supermarkets with a diversified supply chain are not guaranteed protection.

The price of olive oil in Europe increased by 75% from January 2021 to September 2023



Source: EU food prices: olive oil up 75% since January 2021 - Eurostat (europa.eu)

5 What impact does food production have on climate change? | World Economic Forum (weforum.org)
6 High orange juice prices may be on the table for a while due to disease and extreme weather | AP News
7 Five charts: How climate change is driving up food prices around the world - Carbon Brief
8 Why is there a shortage of tomatoes and other fruit and vegetables in the UK? - BBC News

Shortages are also driving up the price of supermarket staples and, for retailers, it is not as simple as pushing these additional costs onto customers. Olive oil prices have sky-rocketed around the world, due to droughts and heatwaves in the Mediterranean, which have been exacerbated by climate change and have restricted olive oil production. As a result, olive oil has become the most commonly stolen product from Spanish supermarkets.

If the global goal of reaching Net Zero is met, these impacts will plateau. But as long as emissions continue, these repercussions will only get worse. The world has already warmed by around 1.2C. If global warming exceeds 2C, the adverse effects of climate change on food production become even more severe, and the risk of food supply instabilities becomes very high, according to the The Intergovernmental Panel on Climate Change (IPCC). The window for growing maize in China, for example, is expected to shrink by up to 22.5% under a 2C global warming scenario.[9]

In the highest emission scenario considered by the IPCC, a third of the area currently suitable for growing crops and grazing livestock globally will no longer be usable by the end of the century. Indeed, even the temperature increases already projected for 2035 in Europe could amplify food inflation by an estimated 30-50%.[10]

Increases in global warming above 1.5C also risk triggering critical tipping points which would have catastrophic impacts on food production. A tipping point of particular concern is the collapse of the Greenland ice sheet, which could disrupt the circulation of our oceans, bringing extremely dry summers and Siberian winter temperatures to Western Europe, with disastrous consequences for agriculture.[11]

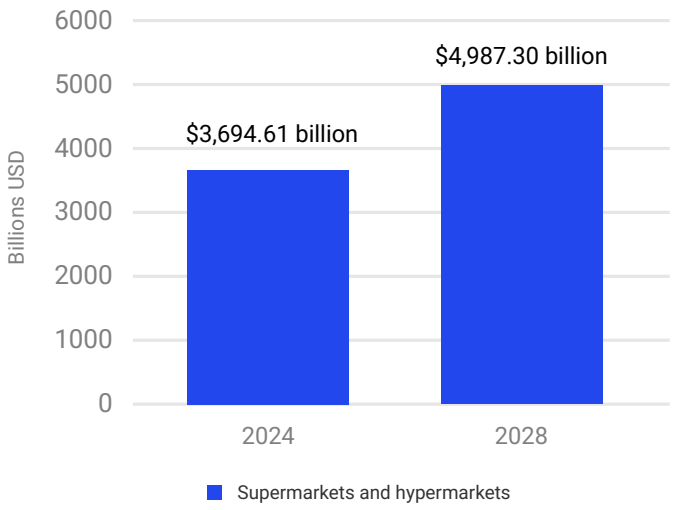
Contribution to climate change

Supermarkets have a significant contribution to climate change due to the sheer volume of products they produce, procure and sell. The global supermarket and hypermarket sector was valued at $3694.61 billion in 2024 ($1769.68 billion for supermarkets alone) and is expected to reach $4987.3 billion by 2028 ($2405.78 billion for supermarkets alone).[12,13]

Large supermarkets in particular have an outsized contribution to the sector's overall climate impact. In many regions, the industry is dominated by a handful of players. As of July 2024, in Great Britain, France, Spain and the US, the single leading supermarket in each country was responsible for around a quarter of all sales.[14,15]

In both Great Britain and France, the four leading supermarkets in each respective country made up around two thirds of grocery market share. That said, some markets are more fragmented than others; Ireland's top four supermarkets occupied 80% of the market while in China, the top ten supermarkets share roughly a third of the market.[16]

The global supermarket and hypermarket secor is expected to grow to a $5 trillion industry by 2028



Source: Supermarkets and Hypermarkets Global Market Report 2024 (researchandmarkets.com)

9 The People's Republic of China Third National Communication on Climate Change (mee.gov.cn)
10 Global warming and heat extremes to enhance inflationary pressures | Communications Earth & Environment (nature.com)
11 The 1.5C challenge: How close are we to overshooting, triggering critical climate tipping points, and needing to go beyond Net Zero? | The Carbon Trust
12 Supermarkets and Hypermarkets Global Market Report 2024 (researchandmarkets.com)
13 Supermarkets Global Market Report 2024 - Research and Markets
14 Grocery Market Share - Kantar (kantarworldpanel.com)
15 The most popular grocery stores in the U.S. (axios.com)
16 Grocery Market Share - Kantar (kantarworldpanel.com)

The overwhelming majority of supermarket emissions are found in their value chain

The Greenhouse Gas Protocol categorises greenhouse emissions into three 'Scopes':

Scope 1	Includes emissions that organisations emit directly. For supermarkets, the main sources are fuel used in company-owned vehicles and leakage of refrigerant gases from delivery vehicles and refrigeration units.
Scope 2	Covers indirect emissions from the electricity, steam, heating and cooling that organisations purchase and use in their operations. For supermarkets, this is mainly the electricity used in stores and warehouses.
Scope 3	Includes all other indirect emissions occurring throughout an organisations value chain, from the procurement of raw materials right through to the use and disposal of the products they sell.

Scope 3 is typically responsible for 70-90% of a company's emissions, although this varies greatly between sectors.[17] The supermarket sector is particularly weighted towards Scope 3, with an average of 93% of emissions found in the value chain.

93% of supermarkets' emissions occur outside of their operations

Source: Decarbonizing grocery | McKinsey, 2022

17 CDP-technical-note-scope-3-relevance-by-sector.pdf

Within supermarkets' value chains, food procurement and consumer use of products are major sources of emissions

The Greenhouse Gas Protocol identifies 15 categories of Scope 3 emissions. For supermarkets, the most material emissions categories are:

- **Purchased goods and services:** The graph above demonstrates that around 63% of supermarkets' Scope 3 emissions come from procurement of the products they sell.
- **Use of sold products:** Products sold in supermarkets continue to generate emissions after they leave the store. For example, when customers operate electronic appliances, cook or refrigerate their food or burn fuels purchased on supermarkets' forecourts. As shown above, these activities typically make up around 28% of supermarkets' Scope 3 emissions.

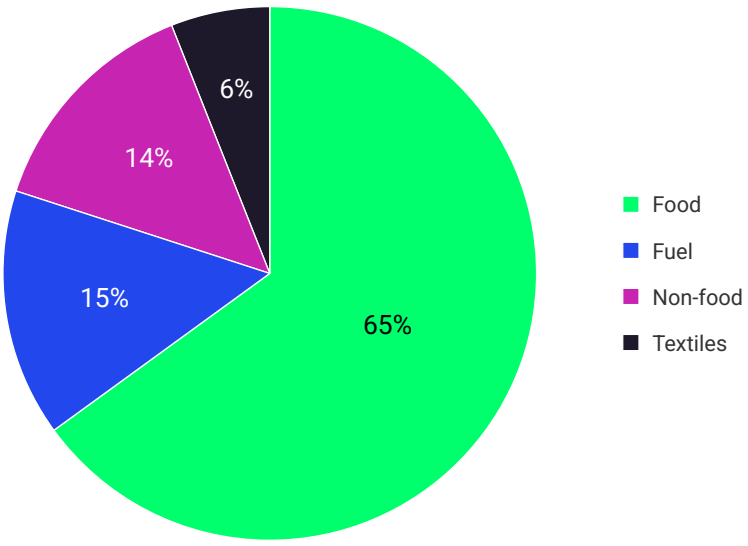
Purchased goods and services

Most supermarkets' procurement-related emissions can be attributed to food, although exact proportions will vary depending on which product categories supermarkets offer. We isolated the upstream product-related emissions of three UK supermarkets (all of which sell fuel) and found that food is responsible for 65% of upstream product-related emissions.[18]

Some products contribute much more towards supermarkets' carbon footprint than others. Our analysis of the same three UK supermarkets reveals that meat and dairy make up over half of emissions from food procurement, with beef and lamb the most emissions-intensive types of meat.[19]

Emissions are released at every stage of the food value chain before food reaches supermarkets. Preparing land to grow food (commonly referred to as 'land use change') releases stored carbon. This includes deforestation to clear space for growing crops or grazing livestock and turning wild meadows into farmland. Agricultural practices generate several types of greenhouse gases: ploughing releases carbon stored in soil (CO_2), fertilisers generate nitrous oxides (N_2O), and food waste and livestock release large quantities of methane (CH_4), which traps heat much more effectively than CO_2.

Almost two thirds of supermarkets' procurement-related emissions come from food

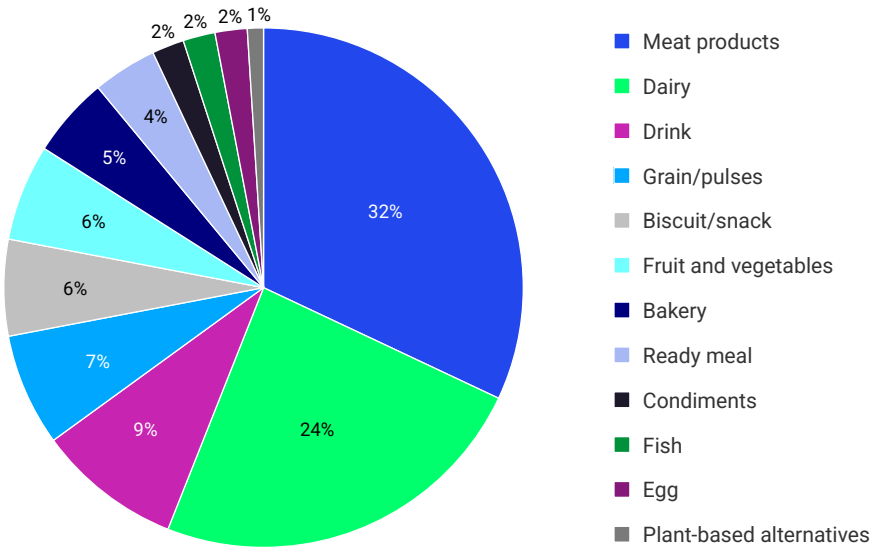


Source: The Carbon Trust analysis, based on data from three UK supermarkets

18 Cradle to supplier gate emissions (Scope 3 Category 1) excluding transportation from Tier 1 suppliers to supermarkets, due to lack of company-specific data and the fact that transport emissions are not easily attributable to specific products. All three supermarkets assessed

19 This chart shows the relative contribution of each product group to the supermarkets' overall footprint, but does not show the relative carbon intensity per kg sold.

Meat and dairy are the biggest contributors to supermarkets' food emissions

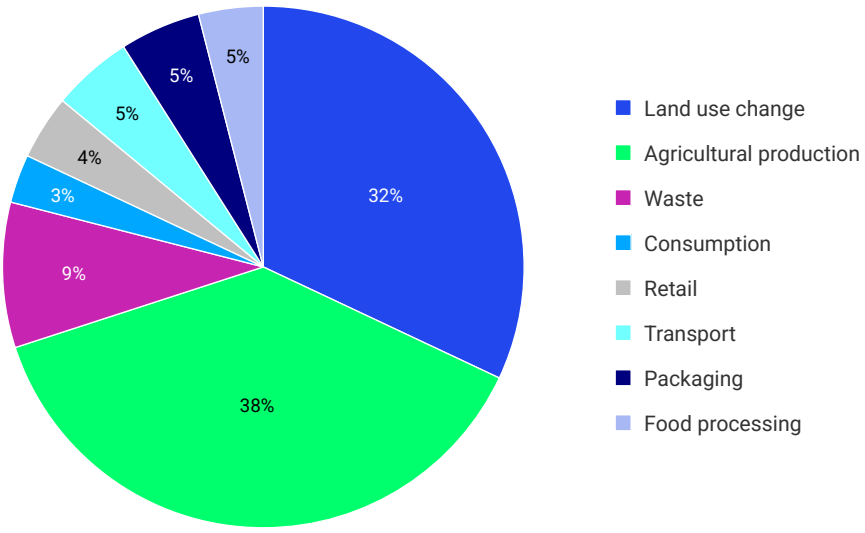


Source: The Carbon Trust analysis, based on data from three UK supermarkets

Indeed, while the agriculture system made up 1% of global CO_2 emissions in 2019, it was responsible for 38% of methane and 79% of nitrous oxide emissions.[20] Fossil fuels are also used throughout the various stages of food production, in use of on-farm machinery, refrigeration units, food processing equipment, and vehicles to transport food. Supermarkets strive to procure vast quantities of produce at low prices and in constant supply, which in turn encourages intensive agricultural practices, associated with high energy and chemical use, and infrequent fallow periods. The graph below illustrates the proportion of emissions released at each stage of the food system, most of which are generated before the retail stage.

Again, the most emissions-intensive stage depends on the product (as well as where it comes from). Methane (mostly from digestion) makes up around 61% of emissions from a kg of UK beef and 64% of emissions from a kg of UK lamb, compared to 4% for a kg of UK chicken, most of which comes from manure. Meat products sourced from regions at high risk of deforestation, such as Brazil, would have a much bigger proportion of CO_2 emissions released during deforestation.

Globally, around three quarters of food system emissions are released during agriculture and land use change



Source: Food systems are responsible for a third of global anthropogenic GHG emissions | Nature Food

20 the-net-zero-transition-executive-summary.pdf (mckinsey.com)

Consumer use of products

The second largest source of supermarket emissions occurs downstream, specifically during consumer use of supermarket products. These emissions mostly arise from customers burning fossil fuels in their vehicles and running electrical appliances in their homes. When calculating the emissions that occur during the use of their products, supermarkets should include any products which *directly* use energy when used.

Additionally, supermarkets can choose to disclose use-phase emissions for products which *indirectly* use energy when used. For supermarkets, this includes food products (which use energy when cooked or refrigerated) and clothing (which uses energy when washed).[21]

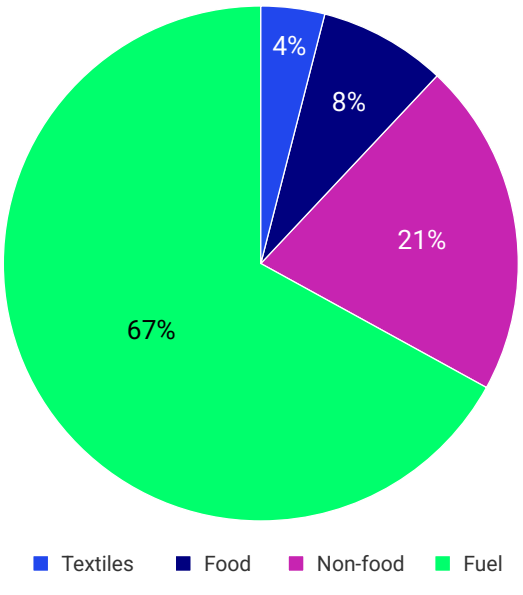
Looking again at our analysis of three UK supermarkets, but focusing solely on emissions from the consumer use, fuel stands out as the biggest contributor. It is important to mention that this picture may vary significantly between supermarkets, depending on the volume of each product sold.

Food waste

Food waste is also a material source of supermarket emissions, despite not fitting neatly into one of the Greenhouse Gas Protocol's Scope 3 categories. As well as being an inefficient use of scarce natural resources, food waste exacerbates climate change and food insecurity. Around a third of food produced globally is lost or wasted, representing 8-10% of global emissions.[22]

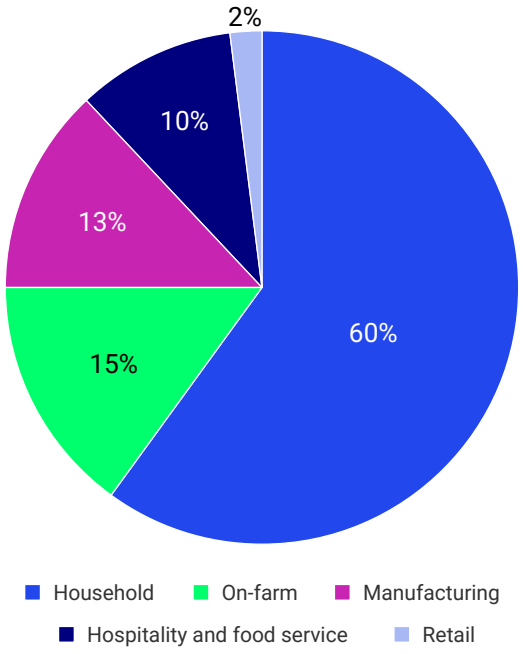
One 2023 study estimated that greenhouse gases from food loss and waste make up almost half of all food-system emissions.[23] However, food is lost and wasted at every stage of the value chain, and depending on whether it occurs on farms, during transportation, in supermarket stores or in customers' homes, it is recorded in separate Scope 3 categories. Additionally, supermarkets have limited insight into the proportion of food they sell that gets wasted by customers, which in some regions is likely to be substantial. In the UK, for example, an estimated 10.7 million tonnes of food is wasted annually, 60% of which occurs at the household level. UK supermarkets have claimed that this lack of traceability around food waste is costing the economy over £20 billion per year.[24]

For some supermarkets, two thirds of use-phase emissions can be attributed to fuel



Source: The Carbon Trust analysis, based on data from three UK supermarkets

In the UK, 60% of all food waste ocurred at the household level in 2021



Source: WRAP-Food-Surplus-and-Waste-in-the-UK-Key-Facts November-2023.pdf

21 The Science Based Targets Initiative does not permit indirect use-phase emissions to be included in emissions reduction targets.
22 Action on food waste | WRAP
23 Cradle-to-grave emissions from food loss and waste represent half of total greenhouse gas emissions from food systems | Nature Food
24 Mandatory food waste reports: supermarkets demand go-ahead | The Grocer

Supermarket business models

The contribution of any individual supermarket to climate change, and therefore its journey to Net Zero, is dependent on its business model. Supermarket business models are characterised by selling a diverse range of consumer staples in large volumes at relatively low margins. Individual business models differ across several areas, including:

Size

The grocery sector covers a spectrum, from convenience stores to supermarkets and hypermarkets, which often combine a department store alongside a supermarket. Some grocery stores, such as Carrefour, operate hypermarkets, traditional supermarkets and smaller convenience formats, in contrast with convenience store pure-players, like 7-Eleven.

Supply chain

Some supermarkets are purely retailers whereas others are vertically integrated, meaning they own or operate other parts of the supply chain. Schwarz Group's own facilities produce and recycle some of the packaging used in its supermarket chains. Additionally, some supermarkets source directly from farms while others have more complex supply chains, including purchasing through wholesalers.

Product range

Supermarkets are primarily viewed as food retailers, but often sell a range of toiletries, household cleaning products, homeware, clothing, and electronics. Most sell a combination of own-brand products and items produced by other well-known brands.

Price point and target market

Discounters, like Aldi and Lidl specialise in low-cost produce. At the other end of the spectrum, supermarkets like Whole Foods specialise in organic and minimally processed food, sold at higher price points.

Revenue streams

Beyond these traditional products, some supermarkets have additional revenue streams like car fuel, in-store pharmacies and cafes, or their own banks or mobile phone networks.

Channels

Supermarkets can sell products exclusively in-store (e.g., Aldi), exclusively online (e.g., Ocado) or via both channels.

Ownership structure

Supermarkets may be owned by shareholders (e.g., Ahold Delhaize), private investors or founders (e.g., Aldi), employees as a co-operative (e.g., Publix) or consumers (e.g., The Cooperative Group).

Transitioning to Net Zero

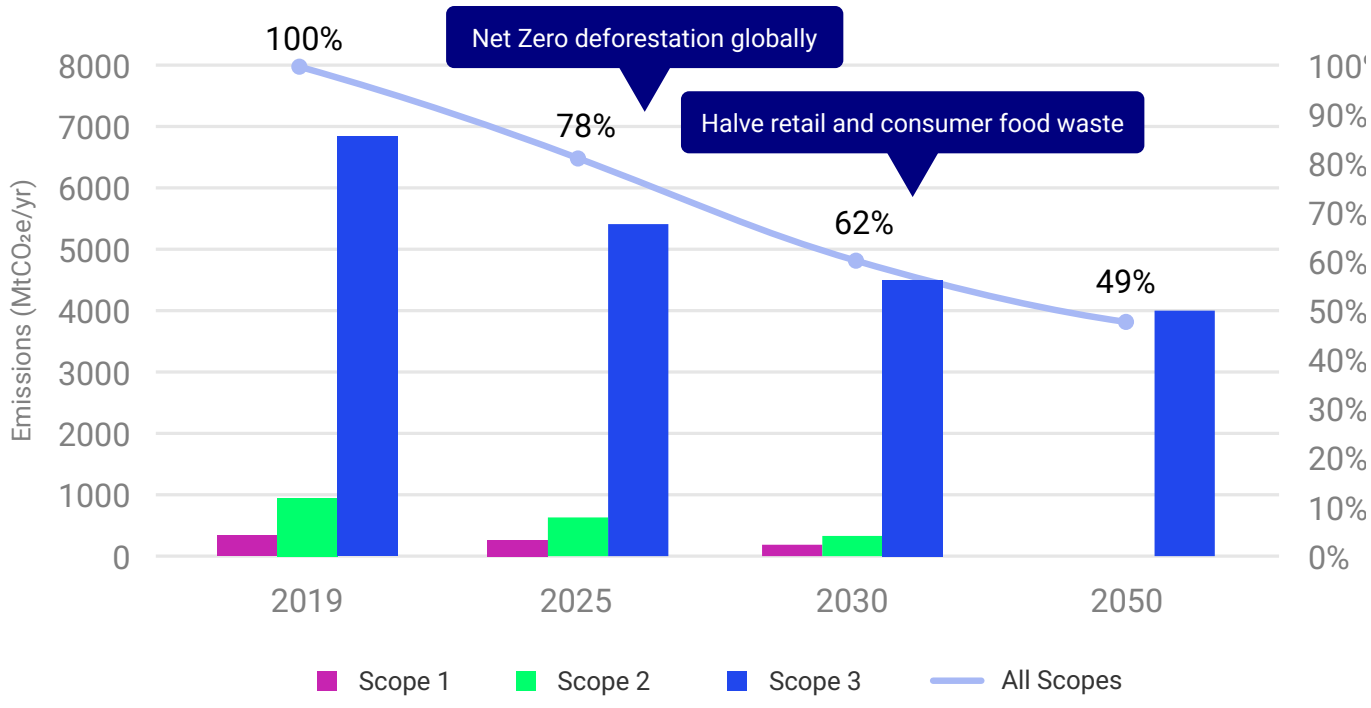
Supermarkets are already feeling the impacts of climate change, which are contributing to supply chain disruptions and soaring food prices. As global warming worsens, so does the risk it poses to food supply. Given the food system's responsibility for around 30% of global emissions, and supermarkets' links to intensive agriculture, ending supermarkets' contribution to climate change by reaching Net Zero is therefore essential to limit warming within acceptable levels.

What the transition looks like

Each supermarket will have slightly different considerations as it works towards Net Zero, depending on its exact business model. For example, publicly listed companies may be subject to additional sustainability disclosure requirements and groups of independent cooperatives may face structural challenges in rolling out a group-wide decarbonisation strategy. Vertically integrated supermarkets may face higher investment costs to implement decarbonisation measures throughout their operations, but may also have greater transparency and control over supply chain decarbonisation.

Nevertheless, there will be some common milestones and key decarbonisation levers that apply to the sector at large. For instance, a Net Zero pathway for supermarkets involves drastically reducing Scope 1 and 2 emissions before 2030. This can be achieved largely by reducing refrigerant emissions; procuring and generating renewable electricity for use in stores, depots and other facilities; transitioning logistics fleet to electric vehicles and using renewable heat sources in manufacturing processes such as food processing.

Agriculture, food processing and tobacco 1.5C emissions pathway



Source: UTS_Limit-global-warming_Sectoral-Pathways-and-Key-KPIs.pdf (unepfi.org)[25] and Achieving SDG 2 without breaching the 1.5C threshold: FAO's global roadmap

25 Supermarkets and hypermarkets are categorised under food processing in the One Earth Climate Model

As the largest portion of supermarket emissions, tackling Scope 3 is critical to the sector's Net Zero transition, especially key sources of greenhouse gases like food production and fuel use. For Scope 3 emissions, examples of key milestones for supermarkets include eliminating deforestation from supply chains as soon as possible and halving food waste at the retail and consumer stages by 2030. The Food and Agriculture Organisation (FAO) outlines one possible Net Zero pathway for the sector, in which emissions from deforestation and food waste reach zero by 2050. At this time, the food system's biggest sources of remaining emissions will come from livestock, manure, and energy in agri-food systems.[26]

However, these residual emissions will need to be neutralised with permanent carbon capture and removals. In the FAO pathway, increased soil carbon sequestration, ecosystem restoration and bioenergy combined with carbon capture and storage neutralise the food system's residual emissions in 2050, and these carbon sinks enable the entire agri-food system to remove more emissions from the atmosphere than it produces.

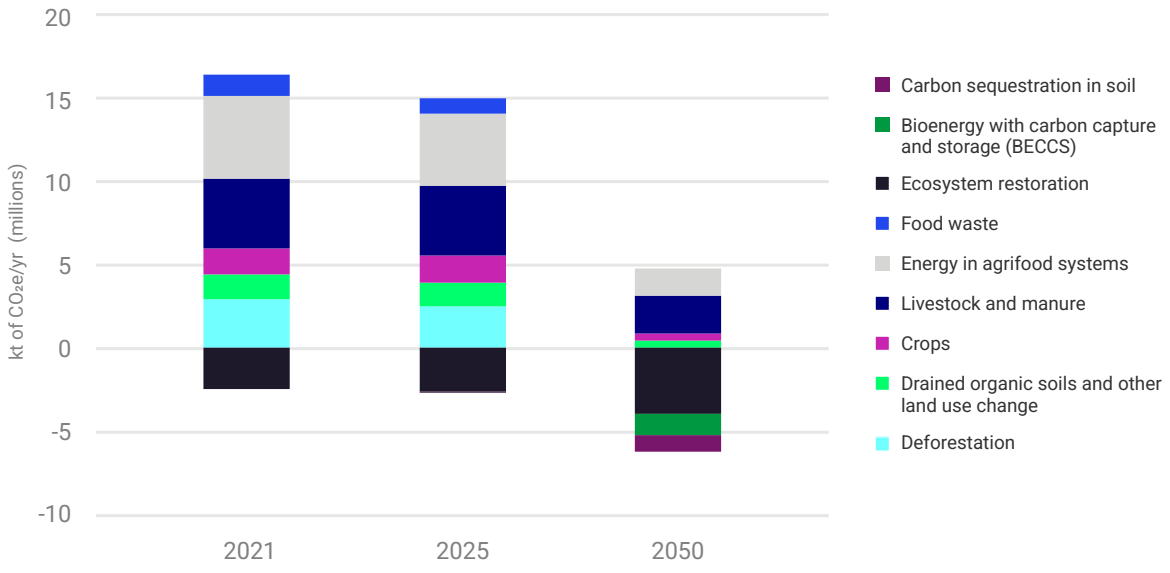
In the near term, well-understood and ready-to-deploy measures like renewable energies and agricultural efficiencies will deliver most of supermarkets' emissions reductions across all Scopes. Between 2030 and 2050, after the low hanging fruit has been picked, emissions reductions must be delivered in more challenging areas, including methane from ruminant animals within supply chains.

Own brand products and Scope 3 decarbonisation

Across the world, an increasing proportion of revenues comes from supermarkets' own-brand (also known as 'private label') products. In Europe, where own-brand products perform best, market share grew to 38.1% as of July 2023.[27] In UK supermarkets in particular, own-brand sales grew by 14.1% in 2023, twice as fast as branded products.[28] In the US, meanwhile, own-brand products reached a record high of 20.4% of market share as of June 2024, gaining ground in several supermarket categories including general food, home care, pet care, beverages and frozen food.[29] In Asia, own-brand sales have also been growing, albeit more slowly, making up 6.1% of market share in 2022, with shoppers in Singapore, Hong Kong, India and South Korea most likely to embrace own-brand products.[30]

The global growth in own-brand is partly as a result of supermarkets improving the quality of own-brand ranges and expanding into new categories, and partly due to the impact of food inflation on consumers. This trend could afford supermarkets more influence over their supply chain in terms of sustainability; manufacturing and sourcing for own-brand products is not necessarily tied to specific regions and suppliers, and supermarkets may have more influence over own brand suppliers compared to large, well-known consumer packaged goods companies.

According to FAO, by 2050, the food system should have no emissions from deforestation or food waste



Source: Achieving SDG 2 without breaching the 1.5C threshold: FAO's global roadmap

26 Achieving SDG 2 without breaching the 1.5C threshold: FAO's global roadmap
27 PLMA-EU-PLMarketShares2023Oct-Update.EN.pdf
28 UK supermarket own-label sales growing twice as fast as branded goods, NIQ says | Reuters
29 Store Brands Set New Market Share Records: Outperform National Brands | PLMA
30 Private Label Report: Asia

Challenges

Delivering Net Zero presents an enormous challenge for supermarkets. Consumers demand variety, quality and convenience, including fully stocked shelves, products with no cosmetic defects and produce available out of growing season. This drives food waste, air miles, packaging, intensive production processes and high fertiliser use. Supply chains are also complex; supermarkets offer thousands of products, and each one may be handled by a raw material producer and several processors before reaching the retailer, making it difficult to understand and control the climate impact at each stage.

Even when supermarkets do have visibility and control over product design and manufacturing, there are many tensions at play. Supermarkets must balance multiple, sometimes competing priorities, including credible climate action, minimising impacts on nature, ensuring acceptable working conditions for farmers, and providing healthy, affordable food to customers. For instance, plastic packaging generates significant volumes of waste but by reducing damage and spoilage it also minimises food waste, a big emitter. Similarly, many fertilisers and pesticides generate emissions and damage soils, but can increase crop yields, helping to feed a growing population.

Economic pressures add further complexity. Intense competition between supermarkets keeps profit margins low, and inflation and cost of living crises around the world impact consumers' ability and willingness to pay more for sustainable products, even if they want them. Despite high overall revenues, the supermarket sector is characterised by low profit margins. In 2021, the fast-moving consumer goods companies that ranked among the 250 highest-earning retailers in the world reported an average net profit margin of 2.6%. By comparison, fashion retailers averaged at 9.8% and the average across all 250 retailers was 4.3%.[31]

On top of already tight margins, supply chain disruptions, food inflation, growing demand for e-commerce and increased competition in the sector create additional economic pressures for supermarkets around the world.

In recent years, supply chain disruptions, the Covid-19 pandemic and geopolitical factors have driven up the cost of food in many regions. In 2023, UK food prices were 19% higher than the previous year, and in Europe food price inflation of 12.8% outweighed the 8.6% growth in grocery sales.[32] This cost-of-living crisis is a significant growth driver for discounters and own-brand ranges as consumers seek to cut costs. For instance, in Great Britain, discount grocers have rapidly gained in market share over the past decade, from 7.1% in 2014 to 18.1% in June 2024. While inflation and its impact on real wages are easing in some regions, many supermarket CEOs are still concerned with margin pressure and losing customers or sales volumes.[33]

Online grocery sales are growing worldwide, presenting economic challenges and opportunities for supermarkets. By some estimates, e-commerce could represent up to 30% of sales in the UK, France and the Netherlands, and around 25% in the US by 2030.[34] Demand for online grocery shopping is growing quickly across Asia too as shoppers increasingly value convenience, although the e-commerce segment is currently a smaller proportion of the market.[35] The economics of online grocery retail are challenging for supermarkets; although they can take advantage of advertising revenue on their websites, the additional labour costs relating to picking products from shelves and delivering to customers eats further into profit margins. However, if supermarkets fail to embrace e-commerce, (either through their own channels or by partnering with ultra-rapid grocery delivery players like Getir or Zapp) they could struggle to remain competitive.

Many of the ten supermarkets assessed point to additional barriers to decarbonisation, such as a fragmented regulatory landscape, ongoing innovation needs for refrigeration, electric vehicles and agricultural technologies, and a lack of recycling infrastructure. In many regions, the demand for recycled plastics is growing faster than supply, which threatens to hold supermarkets back from delivering on their climate goals.[36, 37]

32 Private-Label Sales In UK Growing Twice As Fast As Branded Goods: NIQ | ESM Magazine
33 Although economic uncertainty will likely persist in 2024, grocery retailers could fuel growth by pursuing innovative offerings, investing in tech and sustainability, and attracting top talent. | McKinsey
34 The state of the grocery retail industry | McKinsey
35 The state of the grocery retail industry | McKinsey
36 Plastics recycling - How to square supply and demand - RECYCLING magazine (recycling-magazine.com)
37 Boosting the supply of recycled materials for packaging | McKinsey

Existing drivers of change

Despite these challenges, the sector is taking steps to reduce its impact on the climate, in response to a number of drivers:

Regulation

A changing regulatory landscape is driving action. For example, in the European Union alone, the 2023 Deforestation Regulation impacts companies' use of natural resources.[38] Its Corporate Sustainability Reporting Directive dictates how supermarkets disclose sustainability information.[39] Mandatory extended producer responsibility, and the policies set out in the Farm to Fork Strategy, have a bearing on several aspects of a Net Zero implementation plan, from facilitating the recovery and reuse of plastic packaging to livestock feed additives and logos on food products.[40]

Emerging best practice and guidance

As well as mandatory compliance, emerging best practice in the voluntary space is rapidly affecting climate action in the supermarket sector. As of May 2023, the SBTi requires companies with significant emissions arising from forest, land and agriculture activities (FLAG) to set specific targets for these emissions, drawing on WRI's draft 'Land Sector and Removals Guidance'.[41] As a result, supermarkets in our sample which have published reports in 2024 are more likely to have set FLAG targets and mention exploration of carbon dioxide removal.

At COP28 in December 2023, the UN's Food and Agriculture Organization (FAO) also launched a roadmap for a food system which meets food security and nutrition needs while delivering on the goal of the Paris Agreement to limit warming to 1.5C. This roadmap will be refined over the next two years, but supermarkets are already committing to key milestones set out in the roadmap, such as halving food waste by 2030 and reaching Net Zero deforestation by 2025.[42]

Consumer pressure

Additionally, research shows that consumers worldwide are becoming more attuned to climate change, both as it affects them and as they themselves want to take action.[43] Supermarkets which are making clear and positive strides to tackle their emissions and reduce the risks of climate change will find themselves at a competitive advantage. From environmental labels on products which build consumer trust, to better operational practices from packaging to waste collection, supermarkets are set to gain new markets, and new demographics in existing markets, as they act on and communicate about their efforts to Net Zero.[44]

Commercial advantage

Supermarkets can reduce operating costs by implementing energy efficiency measures in stores, depots and logistics fleet. Generating renewable energy on site can also reduce supermarkets' reliance on international energy markets and exposure to volatile fossil fuel prices. Recent research also indicates that the financial benefits of tackling supply chain emissions outweigh the upfront investments required; according to CDP, companies that are actively managing their Scope 3 emissions have already saved $13.6bn.[45]

Additionally, introducing low carbon products and services can enable supermarkets to explore new revenue streams. For example, supermarket forecourts can be utilised for electric vehicle charging, vehicle rental and parcel collection among other uses. As well as generating new revenue streams, these ancillary services create more reasons for customers to visit stores and help customers to reduce their own emissions.

38 ENVIRONMENT - Regulation on deforestation-free products adopted | 31 May 2023 (europa.eu)
39 Corporate Sustainability Reporting Directive (CSRD) explained | The Carbon Trust
40 New EU rules to reduce, reuse and recycle packaging | News | European Parliament (europa.eu)
41 A grocer's guide to SBTi FLAG targets (brc.org.uk)
42 Achieving SDG 2 without breaching the 1.5 °C threshold: A global roadmap, Part 1 (fao.org)
43 New Report: Unlocking sustainable living through global consumer insights - Consumers International
44 Product carbon footprint labelling: Consumer research 2020 | The Carbon Trust
45 CDP report reveals untapped business gains of $165 billion from tackling supply chain climate risks - CDP

The Net Zero Sector Assessment

The Net Zero Sector Assessment

Tool

In recent years, Net Zero has become a buzzword, and over half of the world's largest 2,000 businesses have set some form of Net Zero target. However, not all targets or plans are equally robust; just 4% of corporate Net Zero targets meet minimum integrity criteria, such as including Scope 3 emissions.[46] Similarly, of the 5,900 companies that reported having developed a 1.5C-aligned climate transition plan to CDP in 2023, only 2.4% provided sufficient detail to align with CDP's criteria for credible climate transition plans.[47]

Taking a closer look at corporate climate plans is therefore essential to accurately track progress and spot urgent opportunities to course-correct in this critical window of opportunity for tackling climate crises.

The tool used in this report to assess the Net Zero targets and plans of supermarkets was developed by the Carbon Trust to provide a consistent framework to review organisational public climate commitments.[48] The Net Zero Sector Assessment looks for seven key approaches that form the basis of a best practice response to climate change:

- **Recognition and ownership** of their role in creating and solving climate change
- **Ambitious targets** and **accountability mechanisms** which enable the organisation to meet them
- A **robust Net Zero implementation strategy** setting out how targets will be met
- Responsible **use of natural resources** which accounts for planetary boundaries
- An approach to **carbon offsetting and carbon dioxide removal** in line with international best practice
- Transparent **disclosure** and external **verification** of claims
- Engagement with stakeholders to secure **external drivers for action** on climate

Although each company will need to develop its own plan, reaching Net Zero requires collaboration around shared challenges. The assessment is therefore applied at a sector level, in order to highlight leading practices, assess where a step change in approach is needed and identify priority areas for collaboration. It can also help policymakers understand where the sector needs additional support to decarbonise.

46 Net zero targets among world's largest companies... | Net Zero Tracker
47 The State of Play: 2023 Climate Transition Plan Disclosure - CDP
48 For more information on the Net Zero Sector Assessment tool and our methodology, see Appendix 1

Sample

Using the Carbon Trust's Net Zero Sector Assessment tool, we assessed a sample of the ten largest supermarkets in the world by revenue against these seven metrics. Half of these companies are headquartered in continental Europe, with the remainder based in the US, Japan and the UK, although collectively the sample operates in over 50 countries.

We selected the ten largest supermarkets by revenue due to their level of influence over emissions. As large, often multinational corporations, these supermarkets not only have a significant impact on the environment but also the relative influence and financial ability to drive change throughout the supply chain.

These large players are also better positioned to encourage the customer behaviour change needed for Net Zero, as market share is often dominated by a handful of supermarkets.

Our sample excludes online-only supermarkets, and companies which primarily operate convenience stores or wholesale clubs. When we look at sectoral trends beyond our sample, and identify supermarkets from external registries like the Science Based Targets initiative or the Forest 500, the same exclusions apply. Where it is not possible to isolate supermarkets from external data sources, we use proxies.

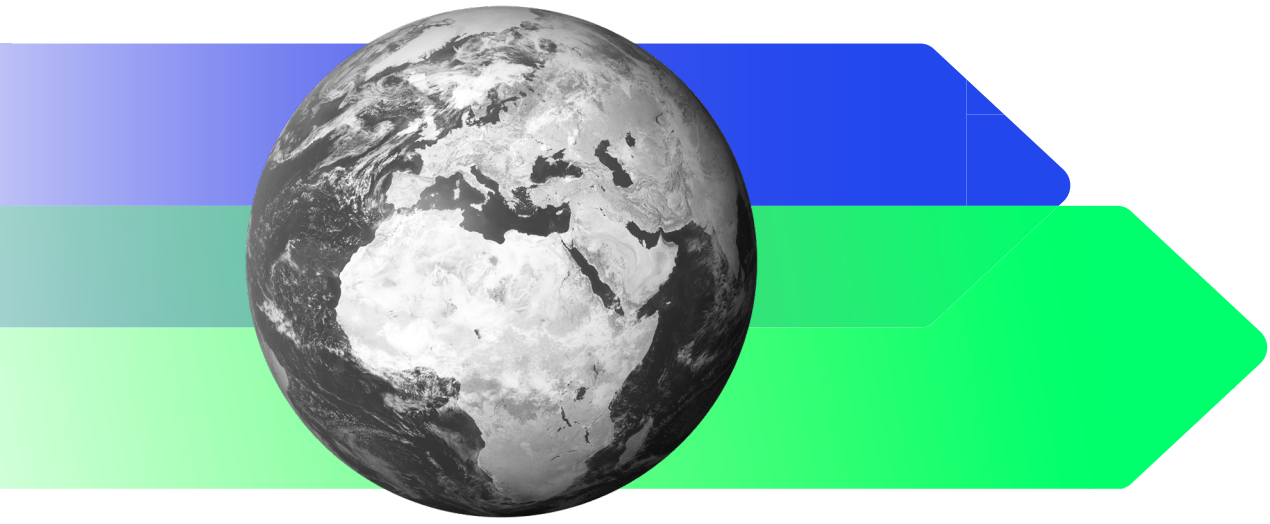
Sources

Tackling climate change requires a fundamental shift in the way we do business. A company's response to climate change should therefore be a core part of business strategy. For this reason, we chose to assess supermarkets' main disclosure documents: annual reports, sustainability reports and emissions reports. In response to evolving regulations and voluntary standards, companies will increasingly be required to address all seven of the Net Zero Sector Assessment's metrics within a single transition plan.[49]

We limited the scope of our assessment to these publicly available documents in order to promote transparency, which helps to eliminate greenwashing and enables investors, consumers and other stakeholders to make informed decisions on climate action.

Following our assessment, we reached out to all ten supermarkets in our sample to better understand the context behind our findings. We are grateful to the supermarkets that responded and shed light on the barriers to climate action in the sector; insights from these conversations are reflected throughout the report.

To contextualise our findings, we also supplemented our assessment with external sources of data on the wider food retail sector. These include the Science Based Targets initiative, CDP, Madre Brava, Forest 500, Eurocommerce, Net Zero Tracker and the British Retail Consortium.



49 Understand the requirements of Net Zero transition plan disclosure - Net Zero Guidebook (EN) (theclimatedrive.org)

Our findings

Our findings

1. Recognition and ownership

Recognition of the sector's impact on climate and the need for food system change is high, and 5 of the 10 companies translate this into a commitment to Net Zero.

To deliver credible and meaningful change, supermarkets must understand the implications of the climate crisis and their own contribution to it. This will involve three steps:

1. Assessing how climate change and a global transition to Net Zero will impact their business and supply chain.
2. Measuring their own emissions and recognising which aspects of their operations and business practices have the biggest carbon footprint.
3. Committing to use these insights to make urgent and transformational change, if necessary, to make their business models compatible with a Net Zero world and more resilient to climate change.

In our assessment of the publicly disclosed climate plans of the world's ten highest revenue supermarkets, we were looking for information relating to each of these points.

1.1. Acknowledging the impact of climate change

Supermarkets are exposed to a variety of climate-related risks, from both the physical impacts of climate change and the transition to a low carbon economy.

Physical risks include damage or disruption to stores, manufacturing and distribution facilities, crop yields and consumers' lifestyles. For example, extreme heat, droughts and flooding could force supermarkets to close stores or replace assets, thereby incurring costs and losing revenue.

Transition risks include changes in regulation, consumer habits and preferences and market dynamics as the world transitions to a low carbon economy; these may increase costs, place restrictions on how supermarkets can operate, lead to reputational damage, or even make current business models unviable.

The sector is already experiencing these impacts. In the UK alone, soil erosion is already responsible for an estimated £40 million loss in productivity every year and one arid summer in 2018 cut carrot production by 25-30%, and onion yields by 40%.[50] Due to global supply chains, climate change impacts experienced in one country can impact retailers and consumers around the world. For example, global olive oil prices reached record highs in 2024, after prolonged droughts in Spain, the world's largest olive oil producer, reduced yields by 50%.[51]

Supermarkets should first assess how exposed they are to different climate-related impacts. The ten supermarkets assessed demonstrate broad understanding of how they are likely to be impacted by climate change:

- **All ten companies acknowledge the physical threat that climate change poses to the food systems** which underpin their business models.
- One highlights that commodities such as nuts and coffee supply chains have already been disrupted by extreme weather events in South and Central America, with reduced supply raising costs for customers.
- **Seven companies have carried out an assessment to identify the risks which are materially significant to their individual businesses**, including physical risks and transition risks. Among those publishing the results of these assessments, supply chain disruption, physical damage or disruption to owned-facilities, carbon pricing regulations and changing consumer habits are commonly identified as significant risks.
- Eight companies are conscious that food systems, business models and/or supply chains will need to transform, although only **half of the ten supermarkets assessed quantify the financial implications of these risks to their businesses** within their public reports.

50 CCRA3-Briefing-Agriculture-and-Food.pdf (ukclimaterisk.org)
51 Olive oil prices hit record highs due to bad weather in Spain (cnbc.com)

Climate-related risks commonly disclosed by the world's ten largest supermarkets

Physical risks	
Operations	• Increased heating, cooling and logistics costs due to temperature changes. • Lost revenue due to store closures because of natural disasters. • Damage and disruption to stores, facilities and assets due to extreme weather and associated costs.
Supply chains	• Supply chain disruptions, including shortages and higher costs, due to decreased crop yields or regions becoming unsuitable for growing.
Customers	• Displacement of communities, leading to customers being further away from stores. • Financial and mental instability due to physical and economic impacts of climate change and food shortages.
Transition risks	
Policy and legal	• Changing legislation which could incur higher operating costs or impose new requirements on businesses. These regulations may relate to: » Refrigerant phaseout » Carbon pricing » Waste and circular economy » Labelling and sustainability claims » Product requirements (including carbon taxes, deforestation requirements, etc.) » Energy (national renewable energy targets, energy efficiency standards, etc.) • Exposure to litigation risks which could incur financial or reputational damages.
Technology	• Transition to low carbon technologies requiring emissions-intensive assets to be phased out. • Unsuccessful investments in new technologies.
Reputation	• Stakeholders and customers having a negative perception of the supermarket's approach to climate action could damage reputation and compromise profitability.
Market	• Changing purchasing behaviours and consumer demand, such as eating less animal protein or wanting more local produce, making certain product lines unprofitable or requiring supermarkets to adapt their offering. Another example is widespread adoption of electric vehicles which would impact the business case for selling fuel. • Increased energy costs due to market dynamics. • Increased procurement costs due to raw material shortages.

1.2. Owning the contribution of supermarkets to climate change

In order to determine the type, scale and urgency of the changes they must implement, businesses will need to recognise their own contribution to the problem of climate change. This begins with taking stock of their emissions, and which business activities, products or services are hotspots.

- **All ten of the supermarkets assessed evidence understanding of how the sector contributes to climate change.** These companies point to processes within their operations and supply chains that produce greenhouse gases, such as agricultural production, food going to waste, chilling food and using packaging to keep it fresh, transporting products in fleets powered by oil and gas, and heating stores.
- Eight supermarkets go one step further by recognising that most of their emissions come from their supply chains (rather than powering stores and company-owned vehicles).
- **7 of the 10 supermarkets acknowledge the scale of their contribution**, recognising that their businesses (and/or the wider food system) have a large, negative impact on the climate.

The leading practice is to trace significant proportions of their footprint directly to specific activities such as land-use change, or individual product categories (like dairy, beef, cereals and fuel) and use this information to develop product-specific decarbonisation plans.

1.3. Recognising the need to transition to Net Zero

Global warming will stop increasing once we reach a global state of Net Zero emissions. To get there, a fundamental change in business practices will be needed to decouple profits from emissions. For an individual business, this shift will often start with a pledge to reach Net Zero at the highest level of the organisation. The We Mean Business Coalition asserts that publicly committing to this level of climate ambition (alongside commitments to minimise impacts on nature and people) will spur governments to set stronger policies that, in turn, will allow businesses to deliver against these pledges.[52]

Increasingly, the world's largest supermarkets are recognising the need to align their business models with Net Zero. **5 out of the 10 supermarkets have active commitments to set a Net Zero target covering their full value chain emissions** (four of which have already set a target). However, 3 of the 10 supermarkets have had previous commitments removed by the SBTi for not submitting a target within the 24-month window.

Beyond our sample of ten supermarkets, however, there seems to be a disconnect between the broad recognition of the consequences of climate change, the contribution of the sector and the need for a global solution, and what this means for individual businesses. According to the Science Based Targets initiative registry, 27 supermarkets have at least committed to Net Zero through the SBTi compared to 59 supermarkets which have at least committed to setting near-term targets.[53]

52 The Ambition Loop

53 Includes supermarkets which have set targets or have formally committed to doing so through the SBTi. Excludes companies which have had commitments removed for failing to submit targets within 24 months of committing.

Recommendations

Supermarkets should check whether their business models are compatible with a Net Zero world, given their dependence on nature and vulnerability to extreme weather.

Supermarkets understand that radical change to food systems, supply chains and even business models is needed. However, setting this in motion is a complex task. Assessing the climate and nature-related risks facing your business can help highlight which aspects of your business model need to change and how you might unlock opportunities in the Net Zero transition to maximise sustainable growth.

1 Look upstream, accepting suppliers' risks as your own

To futureproof your business, start by getting to grips with how climate change could affect your business. Looking at risks to operations alone (such as floods which force stores to close) won't be enough. As supermarkets' biggest emissions hotspots and climate vulnerabilities are found upstream, in the food production supply chain, any climate risk assessment must take these into account. Most, but not all, supermarkets in our sample are currently considering supply chain risks.

Linked to the climate crisis, biodiversity loss and ecosystem collapse are two of the fasting deteriorating global risks over the next decade.[54] As supermarket business models are so dependent on nature for continued agricultural production, assessing nature-related risks such as soil degradation as well as climate risks is particularly important for the sector.

Use the following approach to understand exposure to climate and nature-related risks:

- **Start by creating a long list** of the risks and opportunities that climate change, nature loss and a societal transition to Net Zero will bring to your business. The Taskforce for Climate-related Financial Disclosures (TCFD) and the Taskforce for Nature-related Financial Disclosures (TNFD) outline the types of risk and opportunities to consider, including physical and reputational risks and resource efficiency opportunities. At this stage, consider every stage of your value chain, from raw material procurement to sales, and every location where you have stores, manufacturing facilities, or source commodities from.

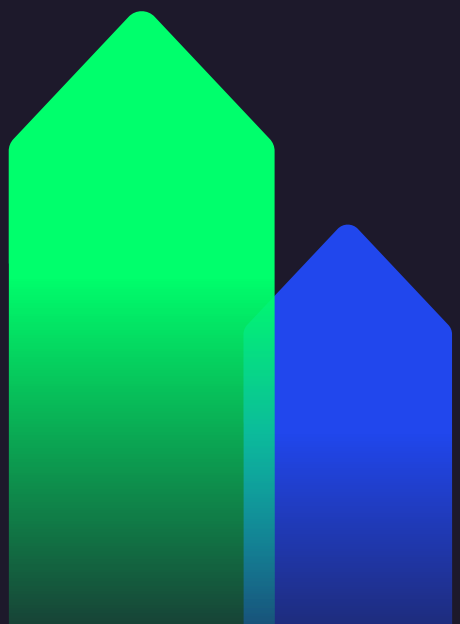
54 WEF_Global_Risks_Report_2023.pdf (weforum.org)

- **Rank and prioritise** the risks and opportunities which will have the most material impact on your business. To narrow these down, look at emissions and revenue hotspots, or where most of your assets are. For supermarkets, this will inevitably mean paying close attention to risks in the upstream food supply chain. Long-term physical impacts of climate change are particularly high risks for supermarkets, as they lead to lower agricultural yields, soil erosion and food scarcity. Equally, less intensive agricultural practices and growing consumer demand for alternative proteins represent important opportunities for supermarkets. Determine which risks can, and should, be modelled financially.

- Where possible, **quantify the potential financial impact** of risk and opportunity on your organisation under different climate and policy scenarios, otherwise known as the value at stake. Even though this value will be based on a number of assumptions, estimating the financial value at stake from not mitigating climate risks can be a powerful tool for building the internal business case for Net Zero. Consider how revenue, costs (including procurement, operating, energy, transport and raw materials costs), consumer demand and access to investment would change under different scenarios, such as whether global warming reaches 1.5C, 3C, or 4C, or the price of carbon increases, be it through a carbon tax or cap and trade scheme. This will reveal the value-at-stake from inaction.

- **Develop a plan of action.** Different risks and opportunities merit different responses. For physical risks to operations, such as flooding near stores and depots, site-specific risk assessments or climate-resilient building adaptations might be appropriate and may be best led by the operations and logistics team. For chronic physical risks in the supply chain such as water scarcity, a number of different departments may need to come together to monitor the risk and explore mitigation options, including product development, procurement, sustainability and strategy teams. To monitor evolving consumer demand, ongoing market research carried out by marketing and product development teams may be useful. Determine which risks can be mitigated immediately by optimising processes or leveraging readily available technologies (like repairing refrigerant leaks) and which require more radical changes.

Risks and opportunities evolve over time. Supermarkets that have already carried out these steps therefore should focus on setting up internal processes to make this risk assessment dynamic, rather than a one-off or annual task.



2 Put your business model in the hotseat to transform the food system from within

Supermarkets are an influential part of the food system, acting as intermediaries between thousands of consumers and other companies, as well as often producing and processing food themselves. As an illustration, the ten largest fast-moving consumer goods brands and retailers in the UK and Europe influence an estimated 40% of agricultural land in the region.[55]

Use the insights gleaned from assessing your climate-related risks and opportunities to answer key strategic questions about your business model and how it might need to transform. This involves asking difficult questions, but ultimately the process will help to decouple your profits from resource depletion and create a resilient business model that is fit for the future. As well as helping to transform the food system, you will also be turning your biggest risks into strategic opportunities.

The fundamental questions to ask are:

➔ **Is your business model compatible with Net Zero?**

➔ **Are you taking your role in creating a more regenerative and resilient food system seriously?**

To answer these questions, supermarkets should convene senior-level working groups, feeding into the board. Ensure that buyers and merchandisers, who hold direct relationships with suppliers, are part of the conversation, as well as those responsible for corporate strategy. To answer the fundamental questions, the working group should consider the following:

- **Will your current strategy** or Net Zero transition plan adequately mitigate the biggest climate risks and capture the biggest opportunities facing the business?
- **Does your C-suite and/or board understand how environmental, regulatory and consumer behaviour changes could affect the business?** Equally, do they understand the strategic opportunities and brand benefits of aligning with Net Zero? For example, consider whether climate change is recognised as a principal risk in your business strategy, as well as your sustainability strategy.
- Does your business model rely on, or perpetuate, unsustainable patterns of consumption? **Which products, services or aspects of your operations are most resource-intensive?**
- **What new products and services could you offer** that would help radically reduce carbon intensity, while exploring new commercial avenues? How can you drive consumers to choose these sustainable products and services?
- **What technologies would you need to rely on and invest in?** For example, some food retailers are investing in or acquiring startups in the alternative proteins space.
- **Who would you need to engage or partner with to bring about the transformational changes to the food system you need?** For example, supermarkets have the power to fundamentally redesign product portfolios to use more diverse, regenerative ingredients, which would have a significant impact for climate and nature. Our conversations with supermarkets revealed that many feel unable to make this change, as the risk of losing customers to competitors is too high. Pre-competitive collaboration between supermarkets could help address this concern.

55 The big food redesign, making nature-positive food the norm (ellenmacarthurfoundation.org)

2. Targets and accountability mechanisms

All ten supermarkets assessed have ambitious near-term targets for their operational emissions, but the sector does not appear to show a similar level of ambition for Scope 3.

Building on their ambition to limit global warming to 1.5C and mitigate climate-related risks, supermarkets should set ambitious targets and embed these into all aspects of their organisation in order to drive accountability. This will require three areas of focus:

1. Formalising a commitment or pledge to reach Net Zero through setting detailed targets to reduce emissions at the rate needed to limit global warming to 1.5C. Supermarkets, and other companies with a significant proportion of emissions coming from forest, land and agriculture activities will also need to set specific targets to curb these.
2. Allocating funds and internal resources to delivering against these targets.
3. Ensuring sufficient resourcing and governance structures to equip, incentivise and support business leaders to make the transition to Net Zero.

We looked for signals of ambition and accountability in these three areas as part of our assessment of the world's ten highest revenue supermarkets.

2.1. Setting Net Zero-aligned targets and interim milestones

To mitigate the worst impacts of climate change, global emissions must halve this decade and reach Net Zero by mid-century. To match this level of ambition, businesses should set targets to reduce emissions in line with a 1.5C global warming pathway. This means setting targets to reach Net Zero emissions from all greenhouse gases and across their value chains (across Scope 1, 2 and 3 emissions) by 2050, as well as interim targets to stay on track.

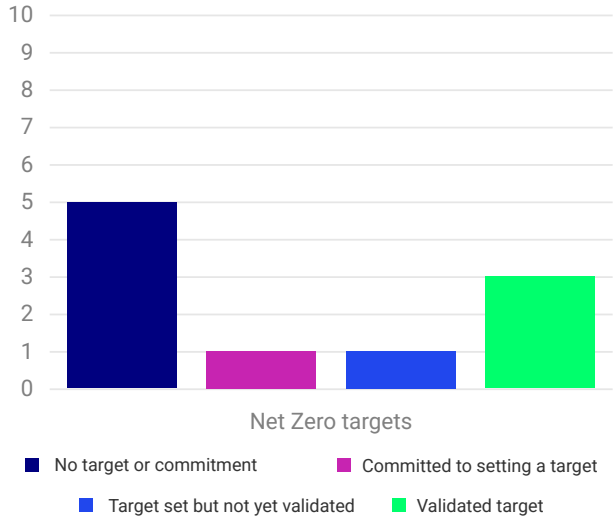
2.1.1. Net Zero targets

Science-based targets are rooted in climate science and reflect the rate of emissions reduction needed to limit the world's temperature in line with the Paris Agreement.

- **4 out of the 10 supermarkets assessed have set a Net Zero target across Scope 1, 2 and 3 emissions**, three of which have already had their targets validated by the SBTi.
- One further supermarket has yet to set a Net Zero target but has registered a commitment with the SBTi to set a one within 24 months.
- **Five companies currently have no such commitments or targets** to achieve Net Zero across Scope 1, 2 and 3 emissions.

Across all sectors of the economy, common barriers to setting Net Zero targets include Scope 3 emissions and uncertainty surrounding future technology developments.[56] Our own research highlights additional barriers: sustainability professionals often struggle to make the business case for Net Zero when it competes with other business priorities and growth targets, and businesses at earlier stages of their sustainability journeys often delay taking action for fear of taking the wrong steps or being subject to external scrutiny.[57]

Five of the supermarkets assessed have committed to Net Zero, of which four have set targets



Source: The Carbon Trust analysis of ten highest revenue supermarkets globally

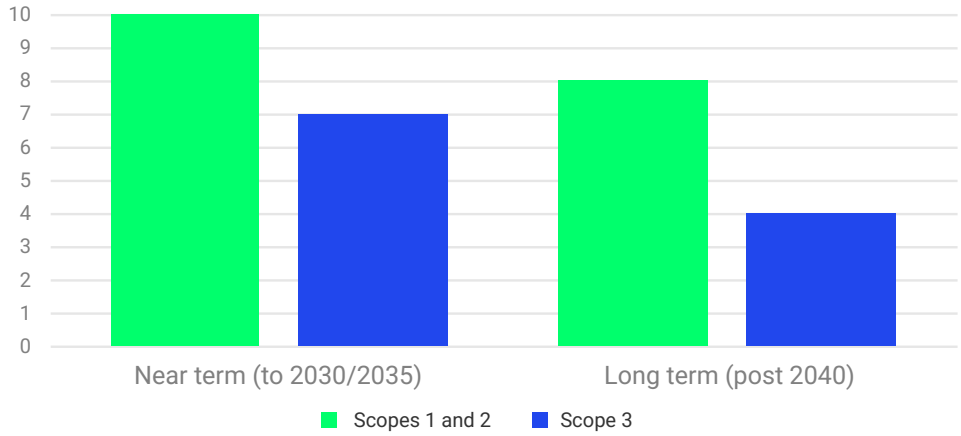
56 SBTi-Business-Ambition-final-report.pdf (sciencebasedtargets.org)
57 Breaking business barriers to Net Zero | The Carbon Trust

2.1.2. Scope 1 and 2 targets

All ten of the supermarkets in our sample have set targets to reduce operational (Scope 1 and 2) emissions by 2030.[58] Operational targets drop off slightly for long term ambitions; 8 of the 10 supermarkets assessed have long term targets (for 2040 and beyond) to reduce their operational emissions.

Near-term operational targets are also prevalent beyond our sample, while long-term targets are in the minority. 48 supermarkets have set science-aligned, near-term targets through the SBTi registry, and 11 additional supermarkets have committed to doing so within the next two years. In comparison, only 16 supermarkets have submitted a long-term target to the SBTi.[59]

Supermarkets are struggling to show the same level of ambition for Scope 3 targets as for Scope 1 and 2



Source: The Carbon Trust analysis of the ten highest revenue supermarkets globally

2.1.3. Scope 3 targets

Like many sectors, supermarkets struggle to show a similar level of ambition for Scope 3 emissions, where the bulk of their footprint lies.

- All ten supermarkets have set near-term targets which have the co-benefit of helping to reduce specific sources of Scope 3 emissions. The most common of these are near-term targets to reduce volumes of food waste (all ten supermarkets) and to increase recyclability and/or recycled content within plastic packaging (nine supermarkets).
- **7 of the 10 companies assessed have active near-term targets to reduce Scope 3 emissions**, expressed either in terms of absolute reductions or a percentage of suppliers with science-based targets. The most advanced have set individual targets for the most carbon-intensive parts of the supply chain, notably procurement, logistics, and consumer use of products.
- For two of the supermarkets in our sample, it is unclear whether they have active Scope 3 targets, due to discrepancies between wording in the company's own sustainability reports and the SBTi registry.
- **Supermarkets' sustainability reports highlight the difficulties that Scope 3 emissions pose.** For example, one supermarket explains that progress towards its supply chain emissions target cannot be used to track year-on-year reductions in Scope 3 emissions, while another explained its decision not to set 1.5-aligned science-based targets, after a lengthy target feasibility study, in part due to Scope 3 requirements.

For long-term targets in particular, Scope 3 proves challenging. **Only 4 of the 10 supermarkets assessed have a long-term Scope 3 target**. This trend continues beyond our sample. According to CDP, only 0.2% of the agriculture sector's emissions and 3.5% of the retail and services sector's emissions were covered by any sort of reduction target by 2022.[60,61] Our own research indicates that high investment costs and inconsistencies in carbon footprinting methodologies are major barriers to setting and delivering against Scope 3 targets.[62]

58 It is worth mentioning that one supermarket in our sample has submitted a near-term target to the SBTi for absolute emissions reduction in their own operations, but do not include this in their own reports.
59 Under SBTi rules, companies submitting targets to the SBTi must include a Scope 3 target if Scope 3 makes up more than 40% of the company's overall emissions. As a result, all 40 companies with near-term Scope 1 and 2 targets on the SBTi registry also have a Scope 3 target.
60 Corporate Environmental Action Tracker - CDP
61 The six sectors assessed are Power and heat, industry, retail and services (including transport), aviation and shipping, agriculture, and waste. Though they are much broader in scope, retail and services and agriculture are most relevant for supermarkets.
62 Breaking business barriers to Net Zero | The Carbon Trust

2.1.4. Specific targets for agriculture emissions

In May 2023, the SBTi updated its requirements to require businesses with significant emissions arising from forest, land and agriculture (FLAG) activities to set specific targets for these emissions. There is evidence that the sector is rising to this challenge, as FLAG targets are emerging in more recent reports. In fact, the introduction of FLAG targets may even help to alleviate some of supermarkets' difficulties in setting Scope 3 targets. Previously, a 1.5C-aligned target would require supermarkets to reduce all absolute emissions by around 4.2% (annual linear reduction). Under the SBTi's new rules, non-FLAG emissions would still need to follow this trajectory, but FLAG absolute emissions can reduce at a slightly lower rate (~3.03%), which could make targets more achievable for the sector. To date, 5 of the 10 companies assessed have already set FLAG targets.

2.2. Aligning finances with Net Zero

Supermarkets will require significant resources and finances to dramatically reduce emissions and increase their business' resilience to the impacts of climate change. As well as financing their own transition to Net Zero, supermarkets should embed climate considerations in all financial planning, in order to avoid 'locking in' carbon by continuing to invest in emissions-intensive infrastructure with long lifetimes, like inefficient refrigeration units.

There are some promising signs that supermarkets are incorporating climate considerations into financial plans:

- **6 of the 10 companies assessed indicate how they plan to finance their transition to Net Zero**, through green bonds to the tune of $1bn, revolving credit facilities tied to emissions reduction targets or allocating CAPEX to decarbonisation in near-term business plans.
- One company demonstrates best practice by employing all of these strategies, as well as taking steps to align all of its investments with Net Zero.

Notably, **our analysis revealed a correlation between companies that have assessed the climate risks impacting their business and those detailing measures they have put in place to finance the company's transition** to Net Zero. This underscores the importance of quantifying climate risks and opportunities, and making sure that boards and leadership teams are educated on these, so that CFOs can calculate the cost of climate inaction and embed Net Zero into financial planning.

2.3. Creating governance structures to deliver Net Zero

Robust internal governance structures help to create accountability for delivering against climate targets and clarify who is responsible for operationalising a business' climate ambitions. Even if a central sustainability team is leading this process, teams such as sourcing, merchandising and IT will all need upskilling on sustainability topics. Best practice is to introduce structures that help embed sustainability ambitions within business planning as well as the wider culture of an organisation.

- **9 of the 10 supermarkets assessed highlight specific teams, committees or functions dedicated to sustainability.**
- **Three supermarkets also indicate that climate is being embedded into business planning**; in these structures, Chief Sustainability Officers are members of Executive Committees or report directly into them, and executive-level climate committees are chaired by senior commercial leaders.
- **However, three supermarkets house sustainability within corporate affairs functions**, suggesting that climate action is considered important for marketing activities but might not yet be part of core business strategy.

Endorsement of Net Zero ambitions from the highest levels of leadership inspires confidence among employees, shareholders and consumers that climate is being treated as a priority within the business. Our research suggests that large supermarkets are engaging senior leaders in sustainability decision-making; all but one of the ten supermarkets assessed mention board-level involvement in sustainability strategies.

Although executive teams and boards are assuming responsibility for sustainability, it is not always clear that climate is a priority**.** For example, while one supermarket explicitly highlights that its board is responsible for the delivery of the company's Net Zero commitments, another notes that its board seeks to align spending with the group's ESG strategy, but only social metrics are provided, with no mention of climate.

Looking beyond our sample, 68% of the retail and services companies and 70% of the agricultural companies reporting to CDP in 2022 have established board-level oversight and C-suite responsibility for climate-related issues.[63]

One mechanism for driving accountability is the creation of direct incentives for climate progress:

- **2 of the 10 supermarkets assessed mention tying executive compensation to climate targets**, with climate performance making up 10% of performance-related criteria on average.
- Two more companies tie compensation to ESG performance more broadly, but do not indicate climate-specific metrics.

CDP data suggests a similar trend among retail and agriculture companies more generally; 33% of the companies in these sectors reporting to CDP in 2022 have monetary incentives at board or C-suite level for the management of climate-related issues.

63 Corporate Environmental Action Tracker - CDP

Recommendations

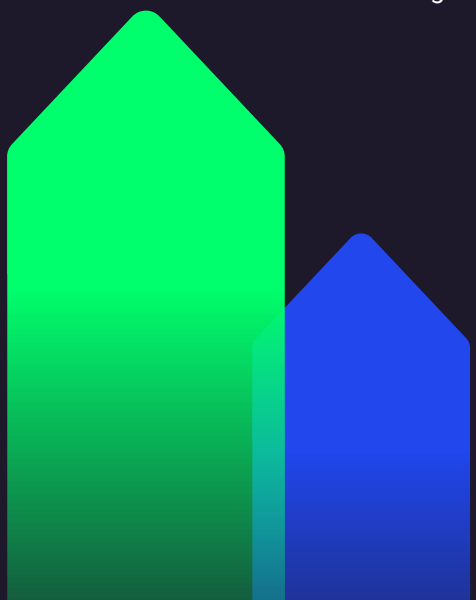
Supermarkets should ensure that climate action trickles down into every part of the business; getting finance teams on board is key to empowering supply chain and procurement teams.

1 Set targets which reflect the urgency of the climate challenge

Supermarkets are right to prioritise near-term action and tackle low-hanging fruit first, such as emissions from store operations. However, the only way for supermarkets to play their full part in minimising their vulnerability to climate change and end their contribution to it, is to **tackle the lion's share of emissions: Scope 3 emissions**. Demonstrating a long-term commitment to ambitious climate action will also give other actors within the food system the confidence to act. Supermarkets should ultimately set long-term targets to reach Net Zero across their full value chain (Scope 1, 2 and 3), by 2050 in most regions. As significant proportions of supermarkets' emissions come from forest, land and agriculture (FLAG) activities, best practice as of 2023 is to set separate targets for FLAG emissions.

Begin by conducting a hotspot analysis of your value chain. From there, you can begin to set targets and plans to reduce product-related emissions. **Identify which Scope 3 areas you can easily influence** (such as reducing retail food waste) **and which areas require wider systemic change** (such as selling less meat), as these will demand different strategies.

That said, supply chain complexity and a lack of available data makes the calculation of Scope 3 emissions a major challenge for the sector. While working to quantify Scope 3 emissions and the year-on-year reductions you need to make, set targets to engage a proportion of key suppliers to reduce emissions and set their own science-based targets. To ensure that targets lead to real world reductions, ensure that emissions reduction targets are separate from any targets to avoid or sequester emissions.



2 Ensure finance teams and sustainability teams speak each other's language

Once targets are in place, ensure your internal governance structures empower and incentivise teams to deliver against them. Alignment is important throughout the business, but particularly between sustainability and finance teams.

➔ Open communications channels throughout the business

Because Net Zero requires a fundamental change to business-as-usual, all functions and employees at all levels of seniority must play their part. It is encouraging to see supermarket boards and leadership teams taking ownership of the sustainability agenda; they can provide strategic oversight, set the overall vision and create an organisational culture that prioritises and rewards ambitious climate action. However, colleagues across the business will be responsible for operationalising these targets day-to-day, and a central sustainability team can provide project management and climate expertise.

Upskilling teams on sustainability topics and empowering them to work effectively together is vital, but can be challenging. A key recommendation for effective governance, as endorsed by the Transition Plan Taskforce, is to implement communication channels to ensure each of these groups are aligned, communicating regularly and not working in silos. For example, delivery teams can provide senior leadership with updates on progress and any challenges to delivering climate plans. Senior leadership can take these into account when signing off on objectives or making strategic decisions which may affect the company's climate targets, or make individual board members directly accountable for targets being met.

➔ Get finance teams on board

Competing priorities can make climate action difficult to implement, even when there is a high-level commitment to Net Zero. Financial teams responsible for creating and delivering business strategies are often under pressure to maintain market share, profitability, and competitive advantage in the two or three years ahead. However, protecting the business against climate change requires looking much further ahead, and many of the financial benefits of Net Zero will be felt long term.

- **Ensure finance decision-makers understand the cost of inaction.** Budget holders must quantify the financial impact of climate risks (the value at stake), as well as the commercial benefits of futureproofing the business to climate shocks and pursuing opportunities in the low carbon economy. For example, investing in on-farm climate solutions could provide the food and agriculture sector with savings and/or increased yields worth up to $30bn per year.[64]

- **Prepare a business case for the Net Zero transition,** setting out investment needs and return on investment. Detail the costs per tonne of CO_2e that will be reduced, the expected timeframe for commercialising and any external sources of finance you can leverage including subsidies, grants, and financing from other supply chain partners. Specify how contractual arrangements will work and how investment risks will be managed.

64 Future Fit Food and Agriculture - Food and Land Use Coalition

3 Develop supplier finance programmes to close the food system's climate finance gap

As supermarkets take steps to align finances with Net Zero, a priority should be to build sustainable supply chain finance programmes. Climate finance channelled towards agriculture and food projects is currently far too low to enable a low carbon and climate resilient system, and often, the responsibility falls on farmers, who are least able to pay.[65] For a typical beef farmer, cutting 30% of agricultural emissions could cost up to 17% of their revenue; an international supermarket could achieve the same impact by investing just 1% of revenue.[66]

Supermarkets can therefore support farmers and food producers by providing financial support and training on how to make the transition happen. When designing financial support programmes, consider:

- Providing **early access to payments, direct capital or preferential pricing** for suppliers that commit to setting science-based targets, reporting emissions data, reducing their footprint or avoiding deforestation, or can prove that they have done so.
- Paying **premium prices** for sustainably produced goods. One study found that regenerative farms can take between three and twenty years to become profitable; as well as paying farmers a premium, provide long-term security in the form of long-term, flexible contracts, or price and volume guarantees for sustainable products.[67]
- Providing **low-interest loans or grants** to allow farmers to invest in the infrastructure they need to decarbonise, such as hydroponic equipment which conserve water and soil or precision farming software to conserves resources.

65 Landscape-of-Climate-Finance-for-Agrifood-Systems.pdf (climatepolicyinitiative.org)
66 FOLU-Future-Fit-paper-2_compressed.pdf (foodandlandusecoalition.org)
67 The big food redesign study.pdf (thirdlight.com)

3. Robust implementation strategy

4 of the 10 supermarkets assessed are putting sustainable agriculture at the heart of their climate strategy.

Implementation is a core part of a climate transition plan; to turn ambition into action, supermarkets will need a robust strategy setting out the concrete steps they will take to reach Net Zero in a way that responds to key climate risks and contributes to a more just and equitable society. Given the transformational changes to the food system that the sector recognises is necessary, supermarkets' implementation strategies may involve radical innovations or changes to business models. This will involve three main steps:

1. Publishing a plan of action which is embedded within a supermarket's corporate strategy and is informed by an assessment of the biggest climate risks and opportunities facing the supermarket.
2. Outlining actions the supermarket will take to deliver deep emissions cuts from business operations.
3. Detailing a comprehensive set of actions to reduce emissions from products and services, including a strategy for engaging with suppliers. This aspect of the strategy should pay particular attention to key sources of emissions. For supermarkets, this will be:
    - Emissions from food production
    - Emissions from consumer use of products

We used these broad criteria to determine whether the climate plans of the world's ten highest revenue supermarkets included robust implementation plans for reaching Net Zero.

3.1. Publishing a strategy

International best practice from the UN specifies that companies should publish a plan setting out the quantifiable, time-bound actions they are taking to reduce emissions and how these will enable them to meet their short, medium and long-term aims.[68] Ideally, this should also highlight assumptions, barriers, data limitations and social consequences as well as what the company is doing to address these.

- Among the ten supermarkets assessed, just three have published an extensive, forward-looking strategy detailing how they intend to reduce emissions across Scope 1, 2 and 3.
- Two of these companies demonstrate best practice by also estimating the volume of emissions reductions they expect from individual decarbonisation measures and using this to illustrate how measures come together to help meet their 2030 targets.

According to CDP, implementation strategy is a commonly missing element from corporate transition plans across sectors. In 2023, 25% of companies disclosing to CDP claimed to have a 1.5C-aligned climate transition plan. However, only 9% disclosed, in sufficient detail, a strategy for achieving Net Zero. Similarly, only 8% disclosed robust plans to engage their value chain on decarbonisation or transition their offering towards low carbon products and services.[69]

68 Integrity Matters: Net-Zero Emissions Commitments of Non-State Entities | United Nations
69 CDP The State of Play 2023: Climate Transition Plan Disclosure

3.2. Reducing operational emissions

Although operational emissions represent a relatively small proportion of a supermarket's overall footprint, they are often the most straightforward to tackle. Firstly, these emissions lie within a supermarket's direct sphere of influence, and many decarbonisation levers (like energy efficiency) will also bring energy and cost savings. Therefore, given the need for deep and immediate cuts in emissions, reducing emissions from supermarket operations is an important starting point.

All ten companies assessed are taking sensible steps to reduce key sources of emissions from their operations. These include transitioning to renewable energy and refrigerants with lower global warming potential in stores, as well as electrifying company-owned fleet.

The table below illustrates mitigation actions that the ten supermarkets assessed are taking across each source of operational emissions.

Mitigation measures commonly deployed by large supermarkets to reduce operational emissions

Scope	Emissions source	Example actions
Scope 1	Refrigerants	• Managing leaks • Retrofitting refrigerants with low global warming potential into existing systems and eventually switching to systems that use natural refrigerants
	Stationary fuel (for heating and cooling)	• Using waste heat from refrigeration systems to heat buildings • Switching to low carbon forms of heating such as heat pumps and district heating (where applicable) • Using renewable energy for refrigerated trucks
	Mobile fuel (for powering vehicles)	• Electrifying company fleet, especially for last-mile delivery and using low carbon fuel alternatives for long-haul journeys • Maximising fuel efficiency, including through optimised delivery routes • Reducing idle time (i.e., switching engines off when stationary) • Exploring alternative mobility solutions as an alternative to company cars for employees
Scope 2	Electricity	• Purchasing 100% renewable energy for stores, processing facilities and distribution centres, increasingly through PPAs and on-site generation • Increasing energy efficiency in stores and processing sites (e.g., by installing doors on refrigerated display cabinets)

3.3. Addressing supply chain emissions

While reducing operational emissions is often a sensible place to start, a robust implementation strategy must pay particular attention to major emissions hotspots.

For supermarkets, this means focusing on the >90% of emissions which fall under Scope 3. All sectors of the economy are in early stages when it comes to Scope 3 decarbonisation, and supermarkets are no exception; a 2024 study of the top ten European grocery retailers found that none are reporting any progress on reducing Scope 3 emissions yet.[70] Similarly, in the UK, 50% of retailers surveyed by the British Retail Consortium reported that they are off-track to meet their Scope 3 targets, with 81% citing limited influence over the value chain as a reason.[71] Reducing these emissions relies on suppliers taking action, which is more challenging for some than others. Smaller suppliers are likely to be less advanced on their sustainability journeys and have fewer resources to dedicate to decarbonisation. Suppliers that have short-term relationships with retailers may be less incentivised to decarbonise compared to those with longer-term, more strategic relationships that can benefit from incentives such as price and volume guarantees and co-investments.

That said, it is encouraging that 6 of the 10 global supermarkets we assessed are providing suppliers with training and resources to help them measure and reduce emissions and set science-based targets. Supplier engagement of this kind should play a prominent role in all supermarkets' climate strategies.

Within Scope 3, the vast majority of supermarkets' emissions are associated with producing and procuring the products they sell. Therefore, reducing the carbon intensity of the product range must play a central role in supermarket climate strategies.

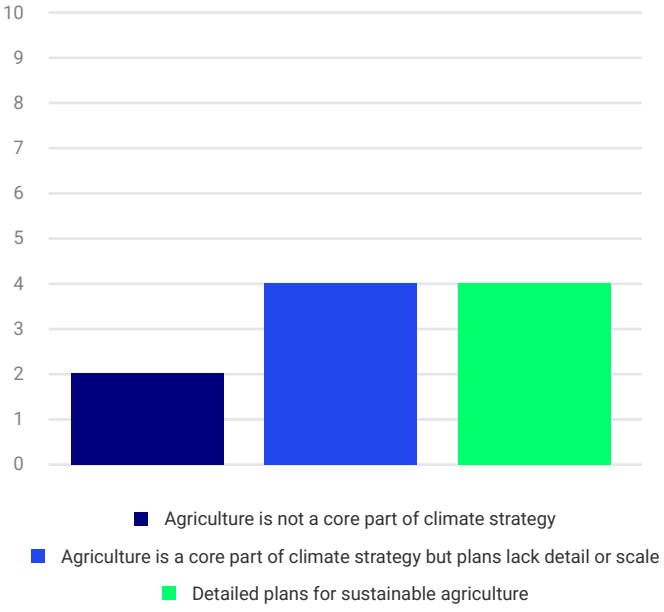
- All ten supermarkets are taking some steps to reduce product-related emissions even in the absence of high-quality emissions data, notably on food waste and plastic packaging.
- **All ten supermarkets assessed plan to reduce food waste this decade**; the strongest plans involve optimising forecasting and ordering to reduce on-farm food loss, as well as finding other uses for unsold food at the retail gate.

In packaging design, the more robust plans we assessed involve both minimising virgin plastic use and increasing recycled content as well as increasing reusability and recyclability. **Refill and reuse schemes are emerging** – including a deposit return scheme for salad bar containers – **but will need to be dramatically scaled** to reduce the amount of packaging supermarkets procure and supply.

3.3.1. Centring agriculture in climate strategies

Nevertheless, given the proportion of supermarket emissions coming from food, decarbonising food products (beyond reducing food waste) must be a core component in supermarkets' climate strategy. Our analysis showed that **food production features less prominently in climate strategies than would be expected** considering its relative share of emissions and the need to triple the rate of reducing the emissions intensity of agricultural production globally.[72]

Four of the ten supermarkets assessed have detailed plans for agriculture at the heart of their climate strategies



Source: The Carbon Trust analysis of the ten highest revenue supermarkets globally

70 Although economic uncertainty will likely persist in 2024, grocery retailers could fuel growth by pursuing innovative offerings, investing in tech and sustainability, and attracting top talent. | McKinsey
71 Reaching Net Zero by 2040 (brc.org.uk)
72 SoCA_2023_rev7.pdf (systemschangelab.org)

The majority of the supermarkets assessed are in the early stages of tackling food-related emissions.

- 8 out of the 10 supermarkets recognise that sustainable agriculture will be key to decarbonisation.
- Only 4 of these 8 currently have detailed plans. The others indicate that agriculture will play an increasingly big role in their decarbonisation strategies going forward, but do not yet have detailed plans in this area.
- The two supermarkets in the sample which do not mention regenerative agriculture at all are supporting the implementation of measures such as organic farming and vertical farming which could incidentally reduce agricultural emissions. However, these are either being piloted on a very small scale or as part of nature protection efforts, not tied to a coordinated climate strategy.

As an example, the majority of the supermarkets assessed are expanding their range of vegetarian and vegan products, but only 4 of the 10 are doing so as part of a comprehensive plan to reduce emissions across the entire product range, which may involve the phase-out of products alongside the development of new ones. **Two of the supermarkets we assessed have demonstrated best practice by setting a target for a certain percentage of protein sales to come from plant-based sources**.

Beyond our sample, a July 2024 study found that three of Europe's 15 biggest supermarkets have targets to increase the balance of alternative proteins in their protein mix. One UK supermarket has pledged to rebalance their protein mix.[73,74]

The **four companies within our sample that stand out from the crowd outline detailed plans to embed regenerative and agroecological practices** throughout their own-brand supply chains, and provide incentives for farmers to adopt these practices. One company demonstrates leading practices: it aims to roll out a sustainable farming certification across all fresh produce suppliers, and provides preferential contract terms, co-investments on farms and targeted financial support for smaller suppliers.

3.3.2. Targeting emissions from consumer use of products

The second biggest source of supermarket emissions is consumer use of products, where three companies have set specific reduction targets. Here, car fuel and electronic devices are the most significant opportunities for decarbonisation.

- While **none of the ten companies in our sample have committed to stop selling fuel**, those which currently sell petrol are all rolling out electric vehicle charging infrastructure at their sites.
- One company is going further by actively taking steps to create demand for these by offering periods of free charging. Disappointingly one other company reports that it is still offering discounts and loyalty rewards on traditional fuels.
- For electronics, two companies are helping to drive a more circular economy by creating **marketplaces for second-hand products** and offering gift vouchers in exchange for used electronics.

73 Madre Brava — European supermarkets race to lead global protein transition
74 Madre Brava — A year in the protein transition

Recommendations

As supermarkets' biggest challenge and biggest opportunity, supply chain emissions, particularly from food, must take centre stage in implementation plans.

1 Produce products better and produce better products by rooting climate and sourcing plans in sustainable agriculture

There is no 'one size fits all' when it comes to Net Zero implementation plans. Each company's path to Net Zero will vary depending on the regions it operates in, what it sells, and key elements of its business model. Nonetheless, there are key levers which should be central to most supermarkets' plans.

Climate-smart agriculture is an approach which aims to optimise food security, as well as climate change mitigation and adaptation. It is generally the most impactful solution for reducing the impact of emission-intensive commodities, such as meat and dairy products.[75] Supermarkets should build partnerships with key suppliers to encourage the adoption of climate-smart agricultural practices among producers and create decarbonisation strategies for carbon-intensive products.

Mechanisms to drive adoption may include:

- Providing **technical support** to implement best practice, for example by holding drop-in sessions or providing producers with access to external agronomy experts.[76]
- Designing a **bonus scheme for producers** that adopt sustainable agricultural practices. For example, the dairy producer Arla awards points for farmers taking action in areas such as manure management, sustainable animal feed and renewable energy use on farms. Those taking more impactful action can earn more points, which translate to higher prices for the milk they supply.[77]
- Creating **exclusive membership groups** for committed suppliers. The benefits of joining such groups may include public recognition from supermarkets, the opportunity to co-create commodity decarbonisation plans with supermarkets or access to a space where suppliers can share best practices with one another.

75 Climate-Smart Agriculture training manual (fao.org)
76 Incentivize regenerative agriculture in dairy production - Action Library (EN) (theclimatedrive.org)
77 How Arla farmers are rewarded for their sustainability activities | Arla

High-impact sustainable agricultural practices

Zero-tillage or no-tillage	Minimising soil disturbance, only exposing soil where seeds are placed.
Adoption of nitrogen-efficient crop varieties	Increasing agricultural productivity and minimising nitrogen losses from the soil by using crop varieties that use nitrogen more efficiently.
Adoption of drought and heat-tolerant crop variety cultivation	Increasing agricultural productivity in a changing climate through the use of crops designed to resist specific climate related challenges, like extreme heat, droughts, floods, saline or acidic soils, and pests.
Improved feed management	Storing fodder such as stover, legumes, grass and grain and making better use of feed by combining types and/or growing grass varieties specifically suited to the agro-ecological zone.
Livestock manure management	Collecting and storing livestock manure which dries and composts during storage and can be applied to producers' fields.
Water harvesting irrigation	Collecting water from a surface area for irrigation or improved filtration, either at individual farm level or on a larger scale. Water can be collected in open water ditches and water pans as well as closed tanks and cisterns.
Drip irrigation	Dripping water slowly and directly to the base of plants using a network of narrow tubes, pipes and emitters to save water and fertilisers.

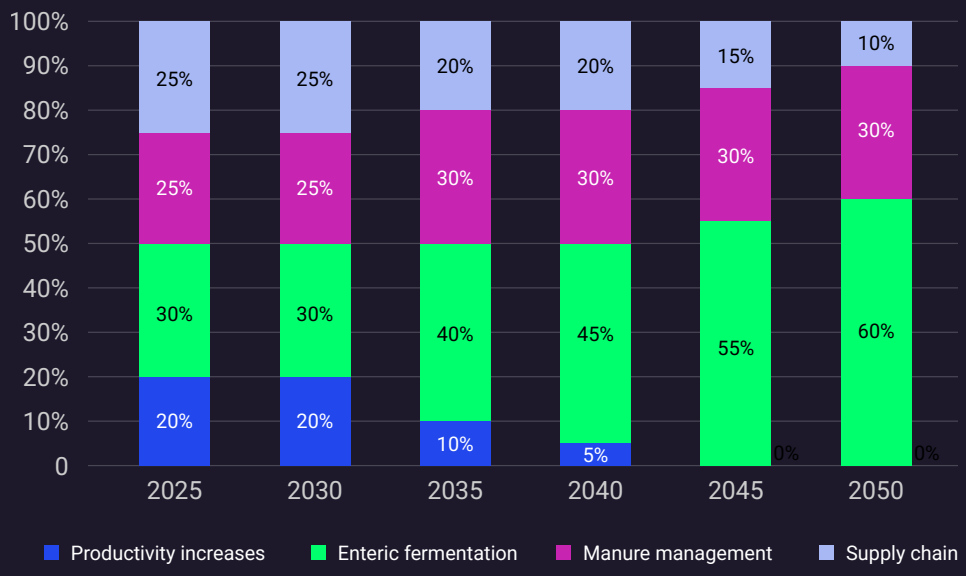
Source: Climate-Smart Agriculture training manual (fao.org)

The most appropriate emissions reduction levers under the umbrella of climate-smart agriculture will vary between different commodities:

- For **livestock**, impactful interventions include enteric fermentation (for ruminant animals) and feed optimisation
- For **fresh produce**, nutrient management, efficient fertiliser application and improved genetics are most impactful
- For **rice and grains**, alternate wetting and drying can help to reduce methane emissions while maintaining yields

The exact volume of emissions reductions that each measure produces will vary on a farm-by-farm and region-by-region basis. Additionally, the impact of different reduction levers will also change over time, even for a single commodity. For example, using food waste for animal feed and improving energy efficiency in the beef supply chain is a big opportunity for supermarkets and their suppliers today. Over time, these interventions will likely become less impactful, as finding additional efficiencies will become more challenging. Conversely, feed additives to reduce the amount of methane released during the digestive process in ruminant animals are not yet commercially available, with many solutions still in development or pending regulatory approval. As such, the impact of these interventions (enteric fermentation) on decarbonising the beef supply chain will likely be captured beyond 2030, and supermarkets will benefit from investing in further innovation in this area.

Weight of different interventions for beef



Source: The Carbon Trust analysis based on data drawn from Global Change Biology | Environmental Change Journal | Wiley Online Library, Achieving SDG 2 without breaching the 1.5C threshold: A global roadmap, Part 1 (fao.org)

Most supermarkets have commitments to improve sustainable sourcing, but this can mean many things, from better working conditions in the supply chain to improved animal welfare, enhanced biodiversity and carbon reduction. Each of these aims is important, but not interchangeable. To tackle the biggest source of emissions in the supermarket supply chain (producing the products they sell), **ensure that metrics and certifications used to track sustainable procurement take carbon into account.**

As well as improving the efficiency of individual commodities, look to lower the carbon intensity of your entire product range by introducing low carbon alternatives to existing products. Most supermarkets within our sample are already innovating and expanding plant-based ranges, but further exploring alternative proteins and setting targets to rebalance the mix of animal and plant-based proteins can shift the dial here. Collaborate with food producers and innovators to pilot, test and scale low carbon products with customers.

2 Create a winning supplier engagement strategy

Engaging with suppliers is vital to overcoming supermarkets' difficulty with measuring, reducing and setting targets for supply chain emissions. To create a winning supplier engagement programme, think '**SCOPE 3**':

S **Strategise:** Set an internal strategy, outlining what criteria you will use to select and retain suppliers (e.g., no links to deforestation) and how you will monitor supplier performance. The strategy should also detail where internal resources for supplier engagement will come from.

C **Categorise and choose:** Identify key suppliers to engage through the programme. Typically, a small number of suppliers account for the majority of total upstream emissions. Use emissions impact, as well as the supplier's sustainability maturity and the level of influence you have over them to guide your decision. Alongside food producers, key supplier groups for supermarkets will likely be in food processing, textiles, chemicals, beauty and hygiene and electronics.

O **Optimise approach:** The type of data and decarbonisation action to request will depend on the supplier. Food and drink processing can be decarbonised relatively quickly and cheaply using renewable energy and energy efficiency. Activities within the chemicals supply chain – such as those used to produce plastic packaging or cleaning products – are more challenging to decarbonise. Suppliers in this area will likely need to rely on low carbon feedstocks and carbon capture. Your approach should also be tailored to the supplier's relative maturity. Depending on where they are in their decarbonisation journey, they may require support with education, footprinting or implementing decarbonisation measures.

P **Prizes and penalties:** A range of factors may prevent suppliers from engaging with climate action initiatives, including a lack of time or capital. As such, it is important to use financial and non-financial rewards – such as longer volume commitments and public recognition – to drive engagement. Including carbon reduction clauses in contracts, imposing financial penalties and committing to end contracts with suppliers that do not comply can also incentivise supplier action.

E **Evaluate:** Use supplier-specific data insights to refine your Scope 3 footprint and make better sourcing decisions.

To guarantee success when following this approach, ensure three essential ingredients are in place:

1. **Clear objectives and metrics** for success, to monitor the effectiveness of your supplier engagement programme
2. **Training and development** for both internal teams and suppliers, on topics such as footprinting, target-setting and reduction levers
3. **Embracing digital tools** such as supplier portals to streamline communication and processes

3 Tackle non-food hotspots

Although food represents the largest portion of supermarket emissions, attention to other hotspots is key for a comprehensive Net Zero plan and staying resilient in a changing world. In addition, supermarkets setting FLAG targets will have to achieve these separately to targets to reduce non-land-based emissions. Key opportunities outside of food include:

Fuel sales

Develop strategies and explore partnerships for expanding electric vehicle charging infrastructure in supermarket forecourts and commit to phasing out the sale of petrol and diesel. Investing in the electric vehicle market sooner rather than later is key: as customers' demand for fuel drops and this business unit becomes less profitable, it will be more difficult to raise the necessary investment to transition away.

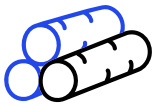
Packaging

Packaging efficiencies can deliver a small but not negligible impact. Implement a sustainable packaging strategy based on circular economy principles, increasing reusability, recyclability, recycled content and use of innovative materials. Consumer takeback schemes and refill schemes are other key opportunities for supermarkets to reduce packaging.

Logistics

Upstream and downstream transportation is typically the third-largest bucket of Scope 3 emissions, after upstream procurement and consumer use of products. Supermarkets are already taking steps to electrify own fleet, address refrigerant leaks in transit and develop low carbon logistics networks by shifting to lower carbon modes of transport. Where external barriers remain, joint commitments to buying low carbon fuels (i.e. offtake agreements) can help to demonstrate demand and build the market.

4. Use of natural resources



All ten supermarkets assessed recognise the need for sustainable sourcing, with 8 of the 10 setting specific targets to eliminate deforestation from product supply chains. However, traceability and implementation are huge challenges for the sector.

Supermarkets depend on the availability of natural resources and ecosystems, from abundant freshwater supplies to healthy fish populations. But many activities in their value chain threaten to deplete natural resources. Supermarkets will need to create plans to operate within planetary boundaries and build resilient supply chains that minimise depletion of natural resources. Not only will this reduce their contribution to climate change and biodiversity loss and ensure they can feed a growing population in an increasingly challenging agricultural environment, but it is also increasingly becoming business critical. Proving that products are deforestation-free is now a prerequisite to selling in Europe, for example. For supermarkets, focusing on the following natural resources will be most impactful:

1	**Forests and other land ecosystems**
2	**Agricultural soils**
3	**Water**

Our assessment of the world's ten highest revenue supermarkets considered supermarkets' approaches to managing these three vital resources, in order to gauge their commitment to operating within planetary boundaries.

4.1. Eliminating deforestation

Agricultural expansion is responsible for around 90% of global deforestation, which is responsible for up to 11% of global emissions as well as destroying habitats and biodiversity.[78] Tackling tropical deforestation is also one of the most impactful land-use measures for combatting climate change, according to the Intergovernmental Panel on Climate Change.[79] At COP28, the final negotiating text included an agreement by countries to halt and reverse deforestation by 2030, and the EU's Deforestation Regulation has since come into force, requiring companies selling into Europe to demonstrate that their products have not contributed to deforestation.

This should be reflected in supermarkets' climate plans. Many supermarket products are associated with high risks of deforestation, notably imported beef, meat and dairy products derived from soy-fed animals and processed foods containing palm oil.

The supermarkets we assessed are acutely aware of the need to eliminate deforestation from their supply chains:

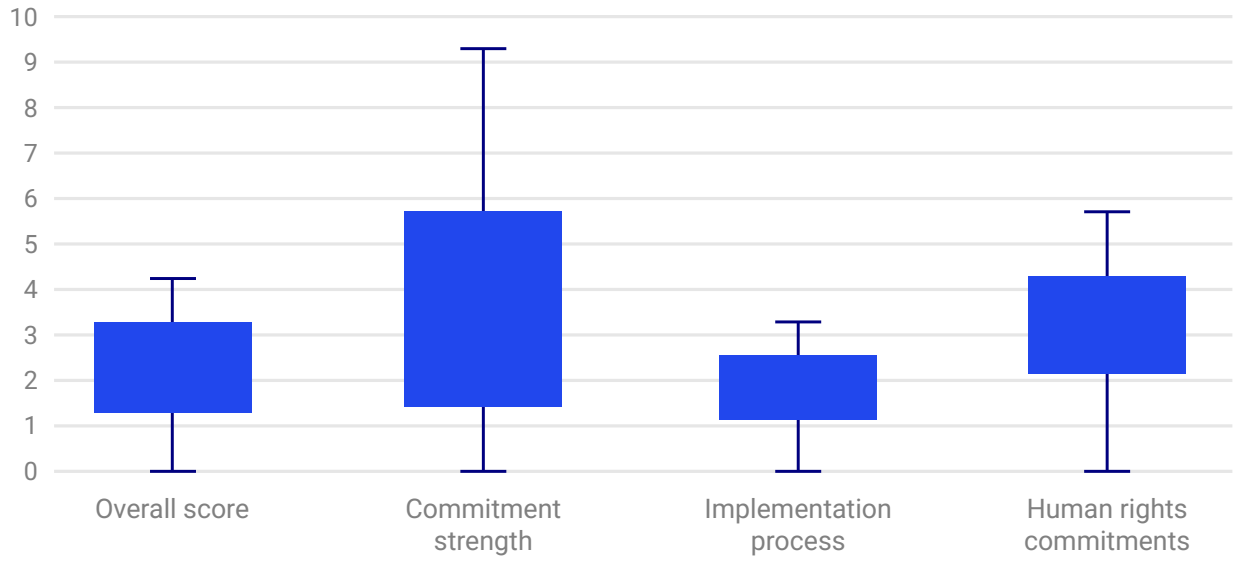
- **8 of the 10 companies assessed have ambitious targets around ending deforestation** and/or land-conversion for key raw materials by 2025.
- Four companies demonstrate awareness of how these targets fit into a wider climate or Net Zero plan, either by quantifying emissions abatement of deforestation or setting forest, land and agriculture targets.
- Companies are also focusing their attention on ingredients which have a high risk of contributing to deforestation, with **8 of the 10 setting targets for deforestation-free soy and palm oil**. These targets range in scope and ambition; for instance, the leading practice is to include both palm oil and its derivatives within scope and if targets are based on certification, to aim for increasingly stringent standards.
- Despite cattle production being the biggest agricultural driver of deforestation globally, only **4 of the 10 supermarkets assessed currently have targets relating to deforestation-free beef**.[80]

78 FRA 2020 Remote Sensing Survey | Global Forest Resources Assessments | Food and Agriculture Organization of the United Nations (fao.org)
79 IPCC_AR6_WGIII_FullReport.pdf
80 Forest500_Annual-Report-2024_Final.pdf

Targets are a good starting point but must be followed by implementation. According to Global Canopy's Forest 500 project, which assesses the 500 companies with the biggest influence on deforestation globally, only a third of companies with deforestation targets evidence actions they are taking to deliver against these commitments. Only 6% of those target-setters evidence action being taken across all of the highest risk commodities in their value chains.[81] This has repercussions for corporate climate plans and the global climate crisis; 94% of those with a Net Zero target are off-track to meet them due to their inaction on deforestation.[82]

According to the Forest 500 project, the supermarket sector is in the middle of the pack in terms of performance on deforestation. Of the nine companies failing to provide any evidence of implementing deforestation commitments, none are supermarkets, but equally no supermarkets feature on the leaderboard of companies that have scored consistently well over the past ten years. Supermarkets comprise two out of the 33 companies which for the last ten years have been on Forest500's list of companies with the biggest influence on deforestation but have not yet set any commitments to reduce deforestation or land conversion.

There is a huge range in credibility of commitments and action to tackle deforestation among the the 23 food retailers, hypermarkets and supercentres with the largest exposure to deforestation globally



Source: The Carbon Trust analysis of data from 2024: A decade of deforestation data – Forest 500

Within our sample of the world's ten largest supermarkets, the metrics used to implement and track progress against deforestation targets vary. For example, supermarkets cite the four tiers of certification in the Roundtable for Sustainable Palm Oil (RSPO) supply chain standard, as well as the more ambitious Palm Oil Innovation Group's standard.

Credible certification schemes can help drive commitments, disclosure and implementation. However, leading practices include working to increasingly strict standards, thinking beyond certification, and conducting monitoring in-house. One company we assessed, for example, has created a designated anti-deforestation fund, a Forest Committee and product-specific risk mitigation plans.

Still, **lack of traceability in complex product supply chains remains a challenge across the board**. To illustrate this, one company highlights that verifying deforestation-free supply chains for finished soy products (e.g., tofu) is very different to tracing the origins of soy used further back in the supply chain, such as soy used in animal feed by farmers, who sell beef to food producers who eventually sell hamburgers to supermarkets. The greater number of intermediaries and food production processes (which may include blending ingredients from multiple different suppliers), as well as the fact that individual commodities may be supplied by smallholder farmers without access to sophisticated monitoring tools, complicates efforts to trace and eliminate deforestation with certainty.

81 An assessment of the progress and commitments of the 350 companies with the biggest influence on tropical deforestation globally, through their link to soy, beef, leather, palm, timber, pulp and paper supply chains, as well as their 150 biggest financial supporters.
82 forest500.org/wp-content/uploads/2024/02/Forest500_Annual-Report-2024_Final.pdf

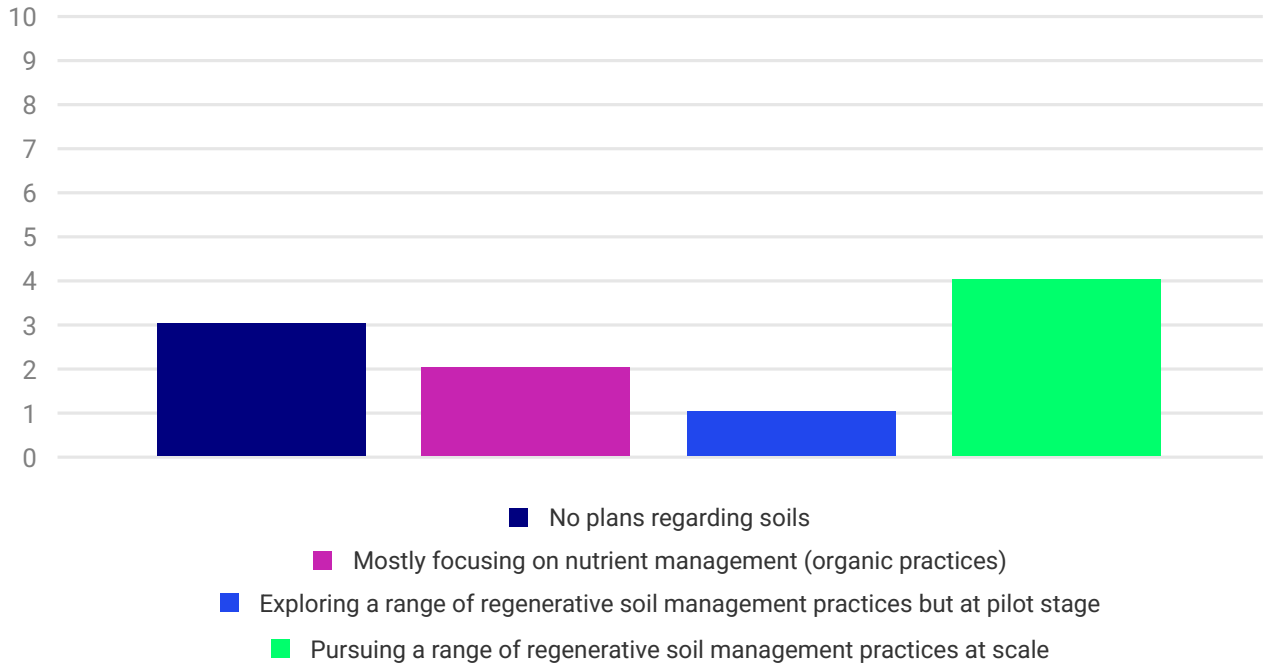
4.2. Protecting soils

It has been estimated that agricultural soils have the potential to absorb 2.5 billion metric tonnes of carbon dioxide globally, roughly equivalent to India's annual emissions in 2021.[83, 84] However, intensive agricultural practices – including monoculture, overturning soil (tillage) and high use of chemical fertiliser and pesticides – reduce soil's ability to absorb carbon. Soil management should therefore be a big focus area for supermarkets and their suppliers. However, public reports of the ten supermarkets assessed give relatively less attention to minimising soil degradation. This may reflect the fact that, compared to deforestation, soil health has not been the subject of as many high-profile campaigns and regulations, which fuel consumer, investor and regulatory pressure for supermarkets to act.

It is important to consider that desirable soil management practices vary greatly by region, food type and other competing priorities such as food security.

- **Half of the ten companies** assessed have detailed and holistic plans to reduce the impact of agriculture on soil. These companies highlight regenerative practices for improved soil health that they are promoting within the supply chain, including low-till farming and cover crop rotation, alongside optimising the use of fertilisers and pesticides.
- **2 of the 10** are mainly focusing on optimising fertiliser and pesticide use.
- Just **3 of the 10 companies** assessed demonstrate awareness of how good soil management relates to Net Zero. One of these supermarkets is funding innovation into low carbon fertilisers as part of its climate strategy, and two have quantified the potential emissions that could be avoided through better soil management.

Around half of supermarkets assessed have detailed plans to minimise soil degradation



Source: The Carbon Trust analysis of the ten highest revenue supermarkets globally

83 Stewardship of Wetlands and Soils Has Climate Benefits (nrdc.org)
84 Global Carbon Atlas

4.3. Avoiding water stress and pollution

70% of the world's freshwater is used in agriculture, for irrigation, livestock, and fish farming.[85] Supermarkets also rely on water supplies for cleaning, cooking, and cooling products (as many frozen and refrigerated food display cabinets use water-cooled condensers). Climate change exacerbates water scarcity and pollution and the supermarket sector is particularly exposed to these risks, given its dependence on freshwater supplies.

- All of the supermarkets assessed acknowledge the need to use water responsibly, but **4 of the 10 detail plans or targets to reduce water use, stress or contamination throughout the supply chain**.
- These more comprehensive approaches include a group-wide water strategy, minimum supplier standards for water management (including irrigation efficiency), targets around water use in agricultural production or food procurement in areas with sustainable water management.
- The remaining six supermarkets in our sample either outline targets for water use in stores and owned facilities but not supply chains, or highlight general ambitions to improve water management without specific targets or plans.

All supermarkets must acknowledge the need to operate within planetary boundaries, and which processes in their supply chains are most resource intensive. Nonetheless, responsible water use is a nuanced topic which varies greatly by region and transcends the scope of this report.

85 Water Use and Stress - Our World in Data

Recommendations

In a Net Zero world, healthy soils and flourishing ecosystems will help to balance out the food system's most stubborn emissions; supermarkets cannot tackle climate change without protecting and enhancing nature.

1 Branch out by collaborating with competitors on deforestation

In response to regulatory and sociopolitical drivers, supermarkets are rising to the challenge of setting ambitious deforestation targets. Yet implementing these targets is a huge challenge for the sector, mostly due to the difficulty of tracing the origins of products and raw materials.

Individual supermarkets can take the following steps to move from ambition towards action:

- **Conduct a hotspot analysis to assess your exposure to deforestation at the product category or commodity level**. At a high level, this involves mapping where your suppliers are based and overlapping this with data on where deforestation is prevalent in different regions and commodity supply chains.
- **Strengthen purchasing policies and enforce standards among suppliers,** committing to increase procurement of certified deforestation-free products for all high-risk commodities, including palm oil, soy, cocoa, beef, timber, and wood fibre. According to Forest 500, palm oil targets are much more widespread than other deforestation targets thanks to public campaigns and well-known certification schemes, but greater attention to beef supply chains is needed.
- **Move beyond certification, working to improve traceability.** Provide training for sourcing teams, so that they can take an active role in supporting suppliers and producers to enhance monitoring and reporting. Explore innovations such as livestock passports which track the movement of cattle, for instance. Cocoa traders are beginning to improve traceability, partly due to the relatively high margins in the cocoa supply chain. Supermarkets with integrated supply chains will have more visibility of supply chains and should therefore pursue higher standards.
- **Switch to lower-risk products** where possible. For instance, switching all meat supply from soy-fed to grass-fed animals would have a transformative impact, not only on deforestation but the wider food system.

Collective action from supermarkets will be essential to really move the dial on deforestation. Key objectives of this collaboration will be to:

- **Establish common standards and expectations for suppliers**, including timelines for phasing out deforestation and a common definition of 'deforestation-free'. While some definitions only refer to illegal deforestation, others incorporate all forms of deforestation, land conversion and peat burning.
- **Enable a common approach to investment:** Producers of food and paper products, especially smallholder farmers, are less able to scale projects demonstrating traceability and regenerative crop production. A joint commitment to invest in this area will allow supermarkets to assume responsibility for scaling deforestation-free practices while remaining competitive, avoiding unfair advantages or wasted efforts.
- **Develop a collective pathway or roadmap, at a national or international level**, for eliminating deforestation. This should outline key actions and government support required. Currently, deforestation targets are outcome-focused, but not linked to specific actions or changes that supermarkets can take; a roadmap can reveal key next steps for supermarkets.
- **Assess existing and future avenues for addressing the systemic drivers of deforestation** to determine what will be most impactful. This could entail joining industry coalitions like the Consumer Goods Forum's Forest Positive Coalition of Action, engaging in advocacy work or funding forest auditors like the Forest Stewardship Council to monitor and enforce progress. As supply chains are global, international collaborations are likely to drive more impact than country-specific initiatives.

2 Invest in healthy soils for sustainable food production

Many climate-smart agriculture practices reduce greenhouse gas emissions while improving soil fertility and increasing soil's ability to sequester carbon. Supermarkets should incentivise producers to adopt a holistic soil strategy.

Nutrient management (the use of pesticides, herbicides, fertilisers and organic manures) is a core part of a sustainable soil strategy. Reducing the use of synthetic agrochemicals, as in organic farming practices, can help to reduce emissions from energy use and bring additional benefits for biodiversity. However, supermarkets should be mindful that organic practices are not necessarily preferable for all food types and regions.[86] To help reduce costs, emissions and reliance on scarce natural resources, encourage supplier farms to optimise fertiliser use by using natural techniques such as adding biochar to the soil, or using precision agricultural techniques that avoid overapplying or mass spraying chemicals. In the UK, for example, the Climate Change Committee recommends the use of controlled-release fertilisers to maximise benefits to climate and nature.

Additionally, encourage producers to look beyond nutrient management to adopt a range of agricultural practices to boost soil health. These include:

Crop rotation	alternating the type of crop grown in the same plot of land each season, avoiding monocropping
Intercropping	growing multiple crops in the same plot of land at the same time
Low or no-tillage	avoiding or minimising soil disturbance through digging or overturning, to reduce soil erosion and allow it to store more carbon
Agroforestry	growing trees alongside crops and livestock

Support or encourage producers to conduct farm feasibility assessments to understand what specific measures are suitable to the farm, for instance whether to grow hedgerows or break crop cycles, and which crops to use between cycles. Depending on the land, regional climate and crops, different regenerative practices will be appropriate.

Again, supermarkets can employ a variety of strategies to encourage producers to adopt these practices, including technical support, price and volume commitments within contract terms, and other financial rewards.

86 Is organic really better for the environment than conventional agriculture? - Our World in Data

3 Embed planetary boundaries into climate strategies, starting with your food waste strategy

Steps to reduce emissions can have trade-offs for nature and our ability to adapt to climate change. For example, using biofuels instead of fossil fuels will lower emissions, but deplete finite resources of land and water needed for food production. As food security is of paramount importance to the viability of supermarket business models, making sure to operate within planetary boundaries as well as reducing emissions is critical.

Minimising food waste is a powerful lever to reduce emissions and ensure that energy, water, fertiliser and land are used efficiently. To deliver on ambitious targets to cut food waste, supermarkets can take the following steps to reduce food waste at all stages of the value chain.

➔ Upstream

The IFC's Food Loss Calculator, developed by the Carbon Trust, is a quick and straightforward tool for estimating emissions from food loss during production, processing, transportation, storage and landfill.[87] It includes 50 commodities and 117 countries. To inform plans to reduce waste before food reaches the shelves, use the tool to identify the products, regions and stages where most food loss occurs in your value chain. Supermarkets can also play an important role in changing aesthetic food standards to reduce food waste and loss at the farm stage.

➔ Operations

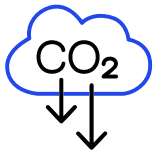
13% of food loss occurs due to inadequate refrigeration.[88] Cold chains preserve temperature-sensitive goods as they are transported throughout the supply chain, from harvesting to supermarket shelves. However, refrigeration equipment consumes electricity and temperature-controlled vehicles often run on fossil fuels. To design sustainable cold chains, invest in the most energy efficient equipment available, and regularly clean and monitor equipment for leaks. To further minimise spoilage during transportation, employ shorter supply chains, and efficient packaging solutions.[89, 90]

➔ Downstream

Encourage consumers to waste less and find ways to reuse and redistribute unsold food to foodbanks and charities.

87 IFC's Food Loss Climate Impact Tool | Global Agriculture and Food Security Program (gafspfund.org)
88 The Role of Refrigeration in Worldwide nutrition... | 2020/03/26 (iifir.org)
89 Reduce food waste with efficient packaging - Action Library (EN) (theclimatedrive.org)
90 Adopt smart storage solutions to reduce food waste - Action Library (EN) (theclimatedrive.org)

5. Approach to offsetting and carbon dioxide removal



Over half of the ten supermarkets assessed recognise the need to prioritise emissions reductions but approaches to offsetting and carbon dioxide removal are often left out of public reports, possibly due to the complexity and controversy surrounding voluntary carbon markets. Only 2 of the 10 set out a plan for neutralising residual emissions to reach Net Zero by 2050.

International best practice guidance on Net Zero is clear: carbon offsetting cannot be a substitute for real emissions reductions.[91] Net Zero requires approximately 90% of real emissions to be abated, and the remaining emissions balanced out using carbon dioxide removal methods, although this varies between sectors. To evidence credible plans for reaching Net Zero, supermarkets will ultimately need to:

1. Prioritise reducing emissions within their direct sphere of influence, and disclose how, if at all, they are using carbon credits to accompany this.
2. Outline a plan to neutralise any residual emissions using high-quality carbon dioxide removal methods to reach Net Zero, including criteria to assess the merits of different technologies and investments to scale their availability.

From an assessment of their primary disclosure documents alone, it is not clear whether the world's ten highest revenue supermarkets are following this best practice.

5.1. Using offsets transparently, and only in addition to emissions reductions

Although reducing emissions within their own value chain should be a company's first priority, there is a market need for additional investment in projects which mitigate emissions, build climate resilience and restore nature and biodiversity. Buying high-quality carbon credits can be an effective way for companies to fund activities like these which lie outside of their own value chains, in order to increase the likelihood that the global community stays within 1.5C of global warming and accelerate an economy-wide Net Zero transition.

For climate plans to be credible, companies must distinguish between real reductions in their own emissions and emissions they have helped to reduce, avoid or sequester through buying carbon credits. Encouragingly, there is a high level of awareness among the ten supermarkets assessed that reducing emissions should take priority over offsetting:

- **Eight companies acknowledge that emissions reduction is the top priority**, either by stating that they will not use offsets at all, or by clarifying that offsets will only be used alongside real reductions.
- **Three companies explicitly specify that offsets will not count towards their emissions reduction** goals and reported progress.

However, perhaps due to the media spotlight on offsetting schemes and their limitations, the sector appears hesitant to provide much detail on its approach to offsets in its major reports.[92]

For some supermarkets, this may simply be because they are not engaging with offsetting or voluntary carbon markets at all, choosing to direct all available resources towards reducing emissions within their own value chains. Given tight profit margins and the level of investment needed to fund a business' own transition to Net Zero, many supermarkets struggle to make the internal business case for purchasing carbon credits to fund decarbonisation outside of their own value chains, particularly if these credits can no longer contribute towards carbon neutrality claims. This will be the case for supermarkets in the EU from 2026 when terms such as carbon neutral or climate positive will be banned if such claims rely on the use of offsets.

91 A comparison of Net Zero guidance from COP27 | The Carbon Trust
92 Revealed: more than 90% of rainforest carbon offsets by biggest certifier are worthless, analysis shows | Carbon offsetting | The Guardian

- However, around **half of the supermarkets assessed do allude to using carbon credits in some way** – by introducing carbon neutral products or funding certified climate projects and environmental protection measures alongside emissions reductions. Still, it was generally **very difficult to discern the volume, type or quality of projects being funded**.
- For example, only 1 of the 10 supermarkets assessed discloses annual spend on offsets.

Detailed information about what supermarkets are funding is essential, especially for those making carbon neutral claims, which may otherwise be misleading for consumers.

Additionally, it is important to distinguish between reduction and avoidance credits and removal credits. Reduction and avoidance credits, such as those which fund clean cookstove projects or forest protection efforts, aim to prevent or minimise future emissions.

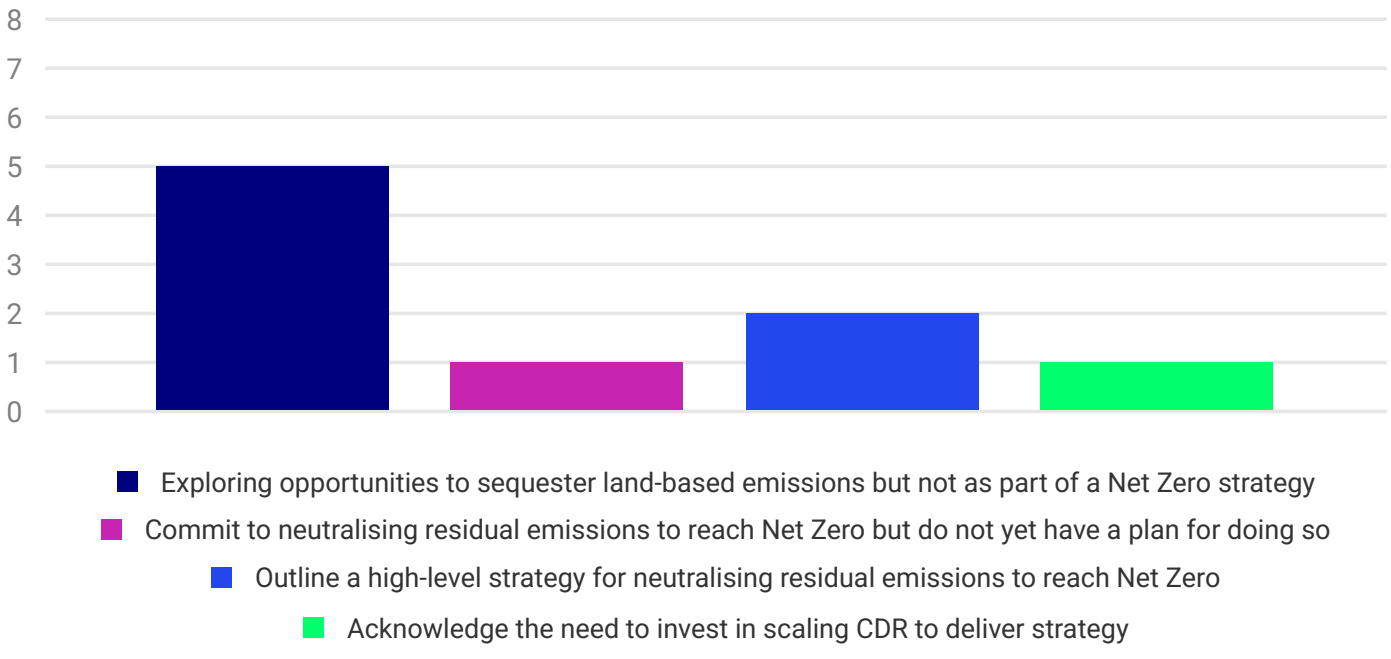
These cannot be used to contribute to a company's emissions reduction or Net Zero goals, but can support economy-wide decarbonisation and bring co-benefits for nature and society, for instance by enhancing biodiversity and reducing air pollution. Removal credits, meanwhile, fund projects which actively remove emissions from the atmosphere and store it durably, such as afforestation or direct air capture.

Most carbon credits purchased through voluntary carbon markets fund projects which reduce or avoid further emissions rather than removing existing carbon from the atmosphere. Supermarkets will need carbon dioxide removals to neutralise the final 10% of their emissions after having reduced their footprints as much as possible. Information about what supermarkets are funding is key to understanding how they are contributing to scaling up these carbon dioxide removal technologies, many of which are not yet widely available.

5.2. Exploring a strategic role for carbon dioxide removal technologies

Alongside deep cuts in emissions, technologies which remove CO_2 from the atmosphere will be necessary to reach global Net Zero by 2050, especially to balance out residual emissions from hard-to-decarbonise sectors like agriculture. In 2050, most of the world's remaining emissions will come from agriculture and heavy industry, making supermarkets highly reliant on carbon dioxide removals to reach Net Zero.[93] One study suggests that carbon dioxide removal technologies with the lowest risk of rereleasing the stored carbon back into the atmosphere will need to be scaled 30-fold by 2030 and one-thousand-fold by 2050 under IPCC scenarios which limit warming to below 2C.[94,95] The private sector will need to support this scale-up by investing a diverse range of removal solutions from the beginning of their Net Zero transition, to ensure that they are available to neutralise the final 10% of emissions by 2050.

Plans for scaling carbon removals are at an early stage, with 2/10 supermarkets setting out a plan for neutralising residual emissions to reach Net Zero



93 Residual emissions in long-term national climate strategies show limited climate ambition: One Earth (cell.com)
94 Trees, for example, rerelease stored carbon when burnt or cut down, whereas carbon stored underground in geological reservoirs has a lower risk of reversal.
95 (PDF) The State of Carbon Dioxide Removal - 1st Edition (researchgate.net)

Creating a carbon removal strategy is a real challenge for supermarkets, for the same reasons that reducing Scope 3 emissions remains the sector's biggest stumbling block. The majority of supermarket emissions, and where there is greatest potential for carbon sequestration in their value chain, are generated at farm level. Accounting for emissions at farm level is a complex process and one which supermarkets have relatively little control over or insight into, being much further down the value chain than farms. As such, although best practice is to limit use of removals to 10% of emissions, supermarkets will not know what exact volume of carbon dioxide removals and investment this equates to until they can accurately calculate their overall footprint. Additionally, most of the existing guidance on carbon dioxide removals is tailored to agriculture and forestry companies rather than food retailers.

As a result, the supermarket sector is in the very early stages of exploring carbon dioxide removal and there is very little mention of it in public reports:

- **3 of the 10 supermarkets commit to neutralising residual emissions** to reach Net Zero, two of which outline a clear approach for doing so.
- These two companies set a leading example by prioritising high-quality, durable technologies, restricting their use to account for around 10% of value chain emissions (in line with the SBTi guidance), and starting work to develop a full strategy in 2024. **One acknowledges the need to invest to scale the availability of carbon dioxide removals.**
- At the other end of the spectrum, one company does not mention removals at all in its reports, leaving it unclear what the 'Net' aspect of its Net Zero goal refers to.

Nature-based carbon dioxide removal solutions (such as soil carbon sequestration) and engineered technologies (like direct air capture) will both be needed for Net Zero.[96]

- Over half of the ten supermarkets assessed are taking steps to preserve natural ecosystems, such as planting trees and hedgerows, protecting soils, and restoring peatlands and wetlands. These measures are all important opportunities to sequester carbon, but specific metrics or targets in this are limited.
- Only three companies articulate how these efforts tie into a wider carbon removal or Net Zero strategy. These companies estimate the volume of removals needed, indicate which emissions sources they will neutralise and when they will be deployed, or set out a strategic approach to engaging with suppliers to maximise opportunities for sequestering emissions within their own supply chains.
- Only one supermarket highlights that engineered carbon dioxide removals technologies will form part of upcoming carbon removal strategies.

This trend can be observed in the wider supermarket industry as well. Of the 49 supermarkets, hypermarkets and other food retailers monitored by Net Zero Tracker (a platform mapping Net Zero commitments of the 2,000 largest companies in the world), only eight are listed as having any plans relating to carbon dioxide removals.[97] Of these eight, three specify an intention to use nature-based removal strategies, while no further detail is recorded for the remaining three.

96 Revised Oxford principles for net zero aligned carbon offsetting
97 Net Zero Tracker | Welcome

Recommendations

Supermarkets' supply chains contain some of the toughest emissions to cut; scaling up carbon dioxide removal is a strategic opportunity, even if they don't have all the answers yet.

1 Demystify how you invest in climate and nature today by creating a carbon credits strategy

Supermarkets that are supporting supplier farms to adopt regenerative agricultural practices are already investing in emissions reductions today which could become carbon dioxide removals tomorrow. Over time, healthier soils will be better able to absorb and store carbon, and engaging with suppliers to build accounting frameworks and incorporate monitoring frameworks will enable better tracking of carbon sinks.

However, supermarkets at all stages of their sustainability journeys can invest in projects that reduce economy-wide emissions, protect nature and develop the carbon removal market, by creating a carbon credit strategy.

This strategy should outline different approaches for the two main categories of carbon credits: reduction and avoidance credits and removal credits. Crucially, the approach to reduction and avoidance credits should make clear that these will not be counted towards a company's emission reduction targets or progress.

For removal credits, demand currently outweighs supply. Supermarkets should invest in scaling up high-quality carbon dioxide removals, as these will be needed in the long-term to reach Net Zero. However, in the early stages, your carbon credit portfolio will be weighted towards reduction and avoidance credits.

Create and publish a carbon credit strategy

Reduction and avoidance credits

This aspect of your carbon credit strategy can be more robust at this stage. Supermarkets should commit to:

- Prioritise emissions reductions in your own value chain and avoid using these credits to make reduction claims.
- Follow best practice on additionality, integrity and quality when selecting credits. Work with ratings agencies to assess individual projects against the due diligence criteria set out by the Voluntary Carbon Markets Integrity Initiative.[98]
- Be transparent about the due diligence steps you are taking to select credits, as well as the type of projects you are funding and the percentage of turnover you are investing.

Removal credits

Supermarkets will need to rely on carbon dioxide removal technologies to reach Net Zero.

Supermarkets should commit to:

- Using removals only to neutralise residual emissions, after reducing emissions as much as possible.
- Using removals for up to 10% of value chain emissions.
- Prioritising additionality, permanence and minimising negative social and environmental impacts when selecting removal credits and technologies.
- Investing in a mixture of nature-based and engineered carbon removals.

98 The Core Carbon Principles | ICVCM

2 Longer term, adapt the strategy to pivot towards removals and reflect your company values

Once supermarkets have robust plans in place for emissions reduction, they should refine their carbon credits strategy to focus on scaling carbon dioxide removals. For leading supermarkets, this should be a priority within the next two years.

Some elements of a removal strategy will be the same for all supermarkets: you will need to decide how to **generate funds**, either through an internal carbon price or allocating a set proportion of revenue to invest in removals, and carry out **due diligence** on different removal options, following existing best practice.

The sector will need a range of solutions, from afforestation, soil carbon sequestration, and bioenergy with carbon capture and storage (BECCS), as most IPCC Net Zero pathways rely on a portfolio of natural, hybrid and engineered removals. **For supermarkets, there is significant overlap between the technologies that are in most need of investment and those which will directly benefit the sector**, such as anaerobic digestion and low carbon enteric fermentation. Supermarkets should look to develop a diverse portfolio of removal options, but your removal strategy also presents an opportunity to build an investment portfolio that aligns with your business's wider ESG priorities. For instance:

- **Local projects** may suit supermarkets committed to improving the local environment.
- **Ocean-based removals** may suit supermarkets prioritising sustainable fishing.

Over time, supermarkets should increase the proportion of carbon removal credits in their portfolio compared to carbon reduction or avoidance credits.[99]

99 Revised Oxford principles for net zero aligned carbon offsetting

6. Disclosure and verification

Owing to complex supply chains and data collection challenges, half of supermarkets assessed have yet to disclose their main source of emissions and only three supermarkets have an externally validated Net Zero target.

Accurate and transparent climate disclosures enable the system-wide change needed for Net Zero, by helping to track and compare progress, improve accountability, and inform decision-making. High quality disclosures are particularly important for supermarkets, as access to accurate, supplier-specific data across large product assortments is one of the sector's biggest barriers to Net Zero. Two broad areas of action are:

1. Reporting greenhouse gas emissions, exposures to climate risks and opportunities, and any targets, strategies and progress for managing these, using recognised accounting and disclosure frameworks to ensure consistency, comparability and verifiability.
2. Seeking external assurance of disclosures from an independent third party to boost credibility.

These two priorities guided our assessment of the climate plans of the world's ten highest revenue supermarkets.

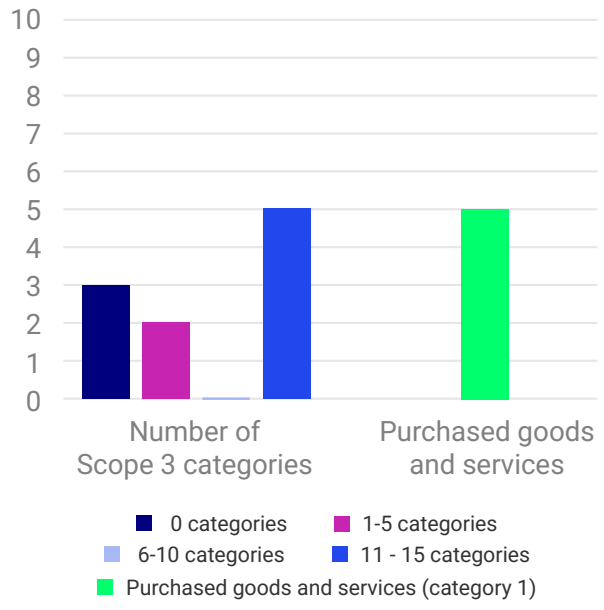
6.1. Disclosing emissions, targets, plans and progress using trusted frameworks

6.1.1. Disclosing information

The more granular a company's disclosures, the easier it is to understand the impact of different decarbonisation levers and pinpoint specific problem areas where corporates, suppliers and governments can work together to develop solutions to speed up decarbonisation. However, tracking these emissions accurately is challenging. Collecting and reporting primary data across thousands of suppliers and products can be a time-consuming and resource-intensive task which in the worst-case scenario could distract from actually reducing emissions. Using estimates or market averages is simpler but makes demonstrating emissions reductions more challenging.

Best practice is to provide a breakdown of emissions by Scope and category. All ten of the supermarkets assessed report greenhouse gas emissions. Eight report Scope 3 emissions, however only half of the companies report emissions from the largest category of Scope 3 emissions: procurement related to the products they sell.

Half of the supermarkets assessed report against at least 11 Scope 3 categories, and half disclose emissions from the most material category



Source: The Carbon Trust analysis of the ten highest revenue supermarkets globally

Over half of globally publicly listed food, beverage, health and beauty retailers and wholesalers report a breakdown of their Scope 3 emissions

Source: NET ZERO GAME CHANGER - Tackling the hidden carbon footprint in European retail and wholesale value chains - EuroCommerce

According to Eurocommerce, a similar proportion of globally publicly listed food, beverage, health and beauty retailers report their Scope 3 emissions, broken down by category. While there is clearly much progress to be made on Scope 3 reporting, Eurocommerce suggest the sector is actually performing better than other retail and wholesale segments; 56% publicly listed food, beverage, health and beauty retailers and wholesalers report categorised Scope 3 emissions, compared to 53% of consumer electronics, 44% of home and DIY, and 36% of textile and apparel retailers and wholesalers.[100]

Where there are gaps, it is essential that companies help tell the story behind the data; for instance, one company in our sample clarifies that the reported reduction in Scope 3 emissions is a result of improved calculations rather than real life reductions, while another indicates that within purchased goods and services, only emissions relating to purchased water have been reported.

6.1.2. Using trusted reporting frameworks

The use of trusted reporting frameworks ensures that information for disclosure is produced using robust methodologies and allows for comparison between disclosures from different companies and years. In recent years, the International Sustainability Standards Board (ISSB) has set the gold standard for sustainability reporting.[101] ISSB standards are becoming mandatory in several jurisdictions, including Hong Kong, Australia and Malaysia, and are designed to be interoperable with other regional requirements like the EU's Corporate Sustainability Reporting Directive.[102]

The supermarket sector aims to demonstrate credibility by using trusted reporting frameworks:

- **7 of the 10 companies assessed report annually to CDP** and six disclose in line with the recommendations of the Taskforce for Climate-related Financial Disclosures (TCFD).
- In line with local regulations, **one company has committed to publishing a transition plan** aligned with the recommendations of the Transition Plan Taskforce, which was launched in 2022 to establish the gold standard for corporate transition plans.

Sustainability reporting is about much more than compliance; it can help companies identify opportunities to course-correct and futureproof their business. For instance, a leading practice adopted by one company is to seek input from a third party to produce a gap analysis of the company's climate risk assessment.

100 NET ZERO GAME CHANGER - Tackling the hidden carbon footprint in European retail and wholesale value chains - EuroCommerce
101 Report to ISSB IFRS S2 - Net Zero Guidebook (EN) (theclimatedrive.org)
102 Five things your business needs to know about the Corporate Sustainability Reporting Directive (CSRD) | The Carbon Trust

6.2. Seeking external verification of disclosures

External verification can increase confidence among consumers, investors and other stakeholders that an organisation's sustainability claims are accurate and credible. One of the 10 supermarkets assessed is on CDP's 2023 'A List' for climate change which, among other criteria, requires organisations to have 70% of emissions data verified by an independent, accredited third party.

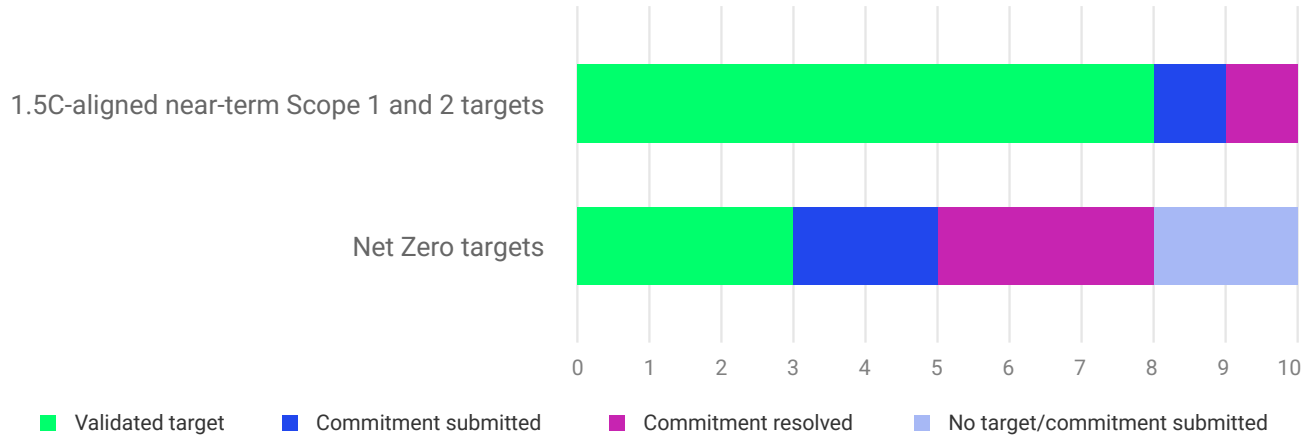
For emissions reduction targets, the Science Based Targets initiative is the most widely recognised validation body. Validation by the SBTi verifies that targets are science-aligned, and helps to uphold the integrity of corporate targets.

- **9 of the 10 companies assessed have sought, or intend to seek, SBTi validation** that their near-term emissions reductions targets are aligned with what climate science deems necessary to limit global warming to 1.5C. One supermarket had a previous commitment removed from the SBTi registry for not setting targets within 24 months.
- However, this drops off significantly for Net Zero targets. Only **3 of the 10 supermarkets have an SBTi-validated target to reach Net Zero** across Scope 1, 2 and 3 emissions by 2050, but this still marks a significant increase from March 2024, when only 1 of the 10 had an externally validated Net Zero target. Two others have committed to submitting Net Zero targets to the SBTi within 24 months.
- **Three companies** which had previously committed to setting Net Zero targets, including through the UN's Business Ambition for 1.5C campaign, have since had their commitments removed from the SBTi registry for failing to submit targets within the 24-month period.
- In line with emerging best practice, five companies have committed to submit forest, land and agriculture (FLAG) targets to the SBTi, three of which have already received validation.

Looking at the sector more broadly, 49 of the world's 2,000 largest companies are supermarkets or food retailers, but only 15 supermarkets have validated Net Zero targets. A further 12 have committed to setting Net Zero targets through the Science-based Targets initiative and 10 have had their previous Net Zero commitments removed.

Nevertheless, food and staples retailers (a close proxy for supermarkets) were the third-highest sector in terms of converting commitments made through the Business Ambition for 1.5C campaign into targets. This is despite the additional requirement to set FLAG targets being introduced part-way through the campaign. 93% of food and staples retailers followed up their 1.5C-aligned near-term and Net Zero commitments with targets within 24 months, compared to only 71% of businesses generally. Across all sectors, Scope 3 emissions and uncertainty surrounding future technology developments were cited as major barriers to setting Net Zero targets.[104]

All ten supermarkets seek external validation for targets, but only three have a validated Net Zero target



Source: The Carbon Trust analysis of the ten highest revenue supermarkets globally

103 Net Zero Tracker | Welcome
104 SBTi-Business-Ambition-final-report.pdf (sciencebasedtargets.org)

Recommendations

In supermarkets' complex but common supply chains, continuous improvement and collaboration on data transparency are key to winning the Scope 3 battle.

1 Share as much as you can now

The Transition Plan Taskforce's guidance for the food and beverage industry sets the gold standard for supermarket disclosures. In practice, supermarkets currently don't have access to the data needed to meet this high bar, especially when it comes to reporting their Scope 3 emissions. Supermarkets have complex supply chains and, at the end of the value chain, are extremely reliant on their suppliers providing high-quality and accurate data.

However, sustainability reporting is a fundamentally iterative process; the best approach is to **disclose as much as you can and be prepared to update this information over time**. This applies to all sectors, but the importance of continuous improvement is particularly pertinent to supermarkets. Products on supermarket shelves can vary greatly from one year to the next, and mergers and acquisitions are common in the sector. As a result, supermarkets are particularly vulnerable to re-baselining (recalculating the company's baseline carbon footprint), making it difficult to monitor progress over time.

As well as the raw data itself, make sure to explain:

- **Any changes which affect your footprint**. For example, an increase in reported Scope 3 emissions might not reflect an increase in emissions in the real world, but improved data collection processes, or logistics being outsourced to a third party, which shifts Scope 1 emissions to Scope 3. Equally, selling a business unit or withdrawing operations in certain regions can make emissions seem artificially lower.
- **Any information gaps and actions you are taking to improve data quality**. Following the 'SCOPE 3' approach to supplier engagement will allow you to refine emissions disclosures over time. To maximise impact, prioritise obtaining high quality data for meat and dairy products, as these represent two-thirds of upstream food-related emissions for many supermarkets.

2 Come together to raise the bar on disclosure

These actions to improve data quality will require collaborating with several stakeholder groups, from suppliers and competitors to external service providers.

Suppliers

Tighten up procurement policies to encourage suppliers to provide the information you need. As well as requesting product carbon footprint data, specify when you expect it, any support you can offer along the way, and any rewards or consequences for providing or failing to provide the data. The leading practice is to maximise efficiency by focusing on mass wholesalers for key products in order to tap into wide pool of suppliers.

Competitors

The time and resources spent on sustainability reporting and compliance is a frequently cited barrier to climate action.[105] Take advantage of sharing the same suppliers as your peers. Sharing data, rather than individually approaching common suppliers, can ease the burden of reporting for all involved. Collaboration with peers also enables consistent data collection and measurement and consistent incentive structures for suppliers.

Industry initiatives

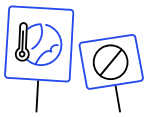
Join, develop or partner on collaborative initiatives that exist to help supermarkets overcome the challenge of reporting product-related emissions. For example, the software providers Mondra and Manufacture 2030, which collectively work with around 90% of the UK grocery market, joined forces to streamline carbon reporting for supermarkets and their suppliers.[106] In addition, the Carbon Trust's Food and Agriculture Systems Technology Accelerator (FASTA) aims to bring together multinational supermarkets and food producers to help scale innovative solutions for measuring, reporting and verifying emissions. These could include IoT sensors to drive efficiencies in water and fertiliser use, on-farm footprinting software or biochar monitoring technologies to track carbon sequestration.

Environmental service providers

Consider how external assurance providers could improve your business' resilience and access to capital, as well as disclosures. Each reporting standard and regulation has different verification requirements. Verification of Scope 1 and 2 emissions is usually expected but just scratches the surface.[107] Verification of implementation strategies or climate risk assessments can help to identify any unrealistic assumptions that undermine your business and climate strategies. For instance, overestimating future fuel demand or fuel prices could lead supermarkets to underprice the risk of selling fuel, and face declining revenues and stranded assets as a result.

105 Majority of sustainability leaders say time and cost spent on carbon reporting is delaying decarbonisation - FMJ
106 Supermarket carbon data platforms announce partnership | The Grocer
107 Identify the assurance requirements required by your chosen reporting mechanisms - Net Zero Guidebook (EN) (theclimatedrive.org)

7. External drivers for action on climate change



Supermarkets are responding to changing consumer demand and regulation but need to go even further; just 2 of the 10 supermarkets we assessed indicate they are actively pushing for policies and consumption habits which would enable the sector to reach Net Zero.

Supermarkets cannot reach Net Zero alone; whole systems change is needed. Supermarkets can help to drive these wider changes through educational campaigns, incentives and advocacy. Two priority focus areas are:

1. Encouraging customers to consume lower carbon products, waste less and travel to stores in low carbon modes of transport.
2. Asking for policies and regulations that would enable supermarkets, their suppliers and their customers to take more action on climate.

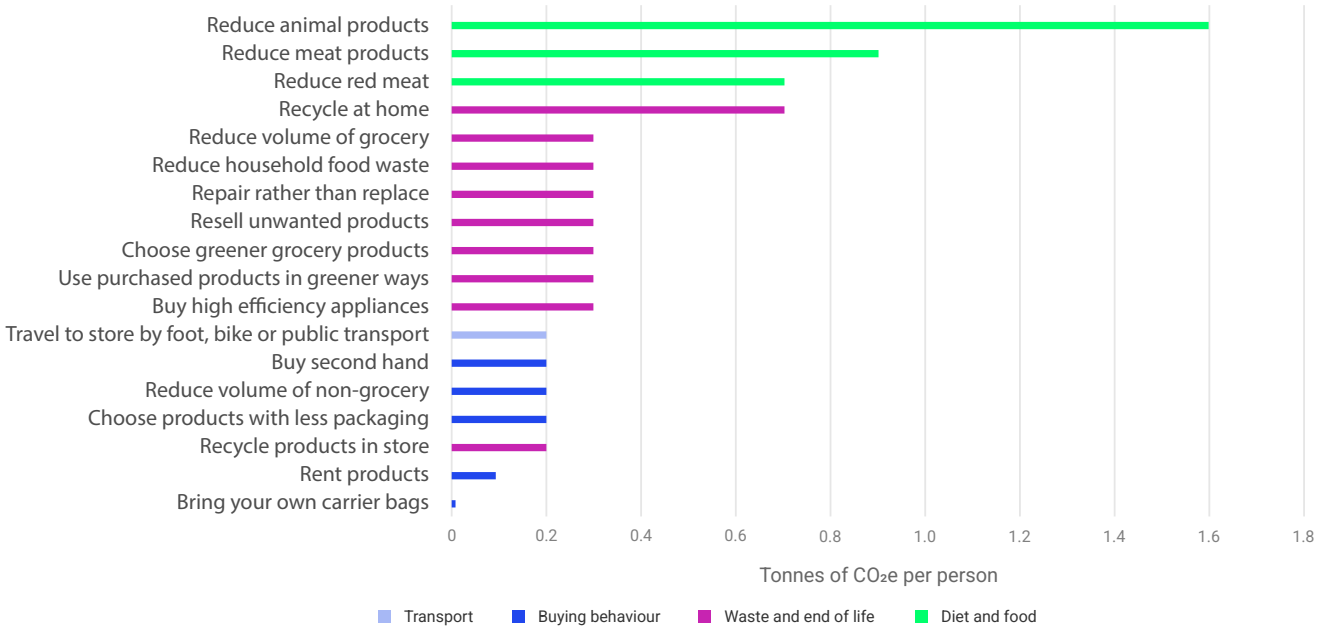
We looked for information in public reports about the steps companies were taking in these two spheres of influence.

7.1. Driving Net Zero-aligned behaviours among consumers

In the UK market, research from the British Retail Consortium (BRC) evidences a disconnect between the most impactful actions consumers can take to reduce their carbon footprints and actions they are willing to take. This suggests that supermarkets will need to create incentives or ask for policy support to drive necessary behaviour changes.[108] Education is also key; 70% of consumers surveyed by the BRC reported that they didn't understand how different actions contributed to their overall carbon footprint, and respondents tended to overestimate the impact of actions like reusing plastic bags while underestimating more impactful actions like reducing meat consumption.

Encouragingly, **9 of the 10 supermarkets we assessed are taking steps to encourage their customers to reduce food waste**, a relatively low-cost and easily implementable option for reducing agricultural emissions, which also brings co-benefits such as improved land efficiency and nutrition.[109] Steps include discounts for products nearing their expiry date, more precise expiry information, removing expiry dates from products which do not require them, and educational campaigns promoting imperfect produce.

Changes to diet are the most impactful actions UK supermarket consumers can take to reduce their personal carbon footprint



Source: Moving Consumers to Sustainable Choices (brc.org.uk)

108 brc-occ-moving-consumers-to-sustainable-choices-fv.pdf
109 https://www.ipcc.ch/report/ar6/wg3/downloads/outreach/IPCC_AR6_WGIII_FactSheet_AFOLU.pdf

This is welcome, though given the proportion of emissions coming from agriculture, we expected to see more efforts to engage consumers on other aspects of a low carbon diet. For instance, recent evidence suggests that making food supply chains more local (and therefore shorter) could save more food on a global level than improving refrigeration.[110]

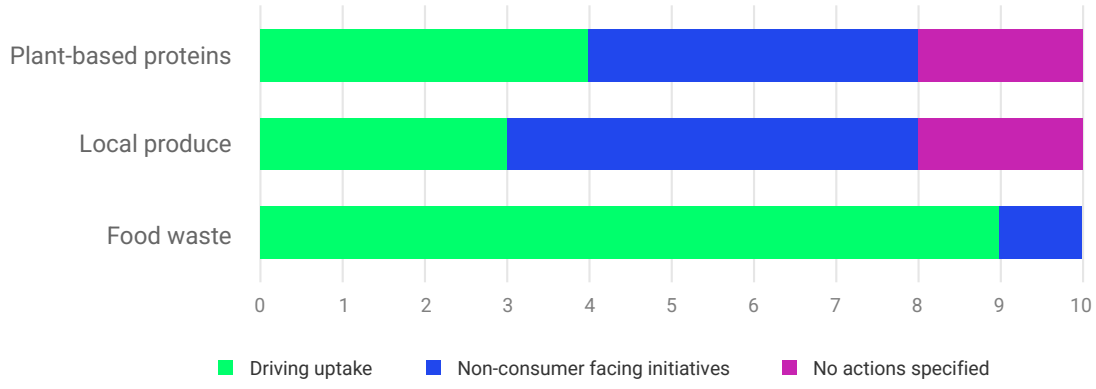
- Only **three supermarkets detail active steps to encourage customers to buy local produce**. These strategies include labels to distinguish locally produced food, store formats specialising in local fruit and vegetables, promotions and tasting sessions, and collating domestic produce together onto one page of the e-commerce website.
- Eight supermarkets are nurturing relationships with local producers – both to support local economies and reduce emissions from transporting products – and could therefore benefit financially from driving demand for these products and educating consumers on the climate benefits of eating local produce.
- Encouraging consumers to eat seasonally would help to increase consumption of locally grown produce and reduce demand for imported products out of season. Currently, **2 of the 10** supermarkets assessed highlighted initiatives to this effect, including by displaying calendars in stores **letting customers know which fruits and vegetables are in season**.
- Although seven companies mention expanding their plant-based ranges, only **four are employing a range of methods** to actively drive demand for these products **to encourage customers to eat less meat**. These leading practices include offering free samples and discounts for plant-based products and displaying low carbon products more prominently both in store and online, alongside educational materials and labelling.

There are various reasons why supermarkets may not be more advanced in engaging with customers on the topic of diets. There will be unique considerations for customers in different markets, and messaging will need to be tailored accordingly. For instance, customers in the US may view efforts by supermarkets to promote low-carbon diets as infringing on their freedom of choice; German customers, however, may respond well to a similar campaign, as long as the messaging emphasises the health co-benefits. Additionally, the way in which supermarkets communicate with customers is an increasingly regulated space. These regulations are intended to eliminate greenwashing and any unfounded or misleading sustainability claims but need to be carefully designed to avoid unintended consequences such as restricting efforts to educate customers on how they can reduce emissions through their shopping habits.

On the topic of labelling, all ten companies use third-party labels or certifications to communicate to customers about a product's sustainability credentials. This is welcome; labelling can empower consumers to make informed and more sustainable purchasing decisions and over 60% of customers in 11 global markets reported being willing to pay more for a product that carried a recognisable carbon label.[111]

However, transparency and wider educational efforts are essential to minimise confusion; there is a wealth of different ecolabels and certifications for food products, each reflecting a different aspect of sustainability (the most popular among supermarkets being Fairtrade and Organic). Furthermore, labels often occupy a small space on the back of product packaging where only the most environmentally-conscious consumers will notice. To maximise the impact of product labelling within an effective decarbonisation strategy, supermarkets should ensure that certification schemes take carbon into account, that labels are easy for consumers to see and understand, and that consumers can easily access to further information via weblinks or QR codes.

60% of the supermarkets which are expanding plant-based and home-grown offerings are encouraging customers to choose these products



Source: The Carbon Trust analysis of the ten highest revenue supermarkets globally

110 The impact of refrigeration on food losses and associated greenhouse gas emissions throughout the supply chain - IOPscience
111 Five tips to communicate your environmental action with transparency | The Carbon Trust

To address the fact that the range of different carbon accounting methodologies and their rapid evolution can act as a barrier to communicating clearly with customers about the carbon footprint of products, common standards should be pursued for carbon accounting, allowing customers to more easily compare the carbon impact of similar products.

Outside of food and diet, the most impactful consumer behaviour changes relate to the reuse, repair and resale of products. There are some encouraging examples of creative tactics to encourage behaviours in line with a more circular economy that keeps products in use for longer, such as offering gift vouchers in exchange for sending used electronics for resale. Some supermarkets are also introducing incentives for choosing green delivery slots (where routes are optimised for efficiency).

7.2. Advocating for 1.5C-aligned policies and regulations

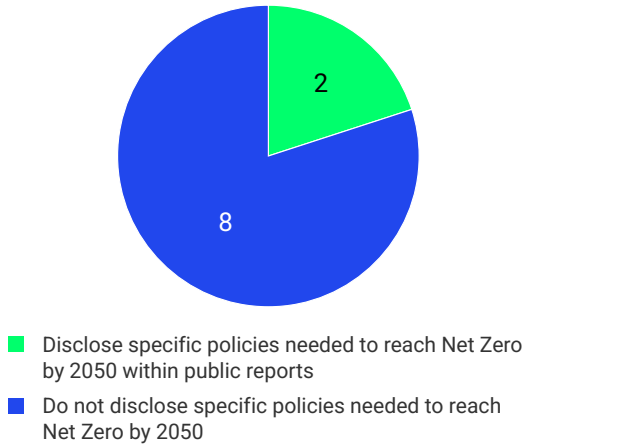
A supportive policy environment can help drive demand for low carbon products, and reduce risks and costs associated with bold climate action. For supermarkets, policies which shift agricultural subsidies away from activities causing land conversion and degradation and dramatically scale public climate finance for agrifood systems will be needed to tackle the significant proportion of emissions linked to food production.[112,113] As vehicle fleets and refrigerating food are largely responsible for supermarkets' direct emissions, policy measures to decarbonise power grids, drive investment and deployment of EV charging infrastructure, and phase out ICE vehicles and harmful refrigerants will also aid the sector's transition to Net Zero.

7.2.1. Disclosing the specific policies needed for the sector to reach Net Zero

6 of the 10 supermarkets assessed express support for existing climate policies, including the EU's Deforestation Law, and three describe broad topics on which they are engaging with policymakers, such as refrigerants, soy procurement or food system sustainability.

However, only **two demonstrate best practice in disclosing the specific policies and regulations that would enable them** to reduce emissions in line with 1.5C.[114] One company is advocating for national recycling infrastructure, which would enable the sector to deliver on packaging commitments and mandatory food waste reporting for retailers and food producers. Another company goes further by advocating for changes that would unlock progress in each Scope of emissions. These include an economy-wide carbon price to encourage a transition away from fossil fuels, phasing out refrigerants with high global-warming-potential and support for farmers to adopt more regenerative agricultural practices. Given the sector's intense competition, tight profit margins and adherence to consumer preferences, supermarkets could be much more vocal about the support they need to go further on climate.

Two of the world's ten largest supermarkets explain which policies and regulations would help them reach Net Zero by 2050 in their public reports



Source: The Carbon Trust analysis of the ten highest revenue supermarkets globally

7.2.2. Aligning advocacy and memberships with Net Zero

7 of the 10 sample supermarkets submit climate disclosures to CDP, of which five state that they have a public commitment to align their policy engagement with the goals of the Paris Agreement and that they have evaluated their engagement with specific policies and trade associations to ensure alignment.

As well as engaging directly with regulators and policymakers, supermarkets push for regulatory changes through trade associations and industry-wide initiatives. Best practice is to ensure that membership of these organisations aligns with a supermarket's own climate ambitions. Although only 2 of the 10 supermarkets detail the enabling policies that would help them to reach Net Zero, **all ten are members of at least one sector body calling for additional climate policy**. The table below provides an overview of the Net Zero-related policy asks of relevant sector bodies.[115] One of the asks that deserves particular attention is Eurocommerce's call for a policy environment which allows and encourages pre-competitive collaboration on climate issues, as overly strict or unclear competition regulations can hinder the collaboration needed to overcome the sector's biggest sustainability challenges.

112 How Countries Can Use Farm Subsidies to Aid Land Restoration | World Resources Institute (wri.org)
113 Landscape-of-Climate-Finance-for-Agrifood-Systems.pdf (climatepolicyinitiative.org)
114 high-levelexpertgroupupdate7.pdf (un.org)
115 Climate is not a priority policy area for the National Supermarket Association or the National Grocers Association which represent independent food retailers in the US, or the National Retail Federation.

Policy needs identified by UK, European, US and global food and retail associations[116, 117, 118, 119]

Association	Supermarket membership	Policy asks
British Retail Consortium (UK)	16 supermarket members, of which 13 support the Climate Action Roadmap campaign All UK-headquartered supermarkets in our sample are members	• Consistent carbon accounting frameworks • Clear policy on carbon removal • Energy efficiency requirements for buildings and landlords • Support for upgrading refrigeration systems • Accelerated grid decarbonisation and deployment of zero carbon heat • Support for uptake of electrification of light commercial vehicles • Clear policy to accelerate deployment of zero-carbon heavy goods vehicles • Stronger deforestation requirements • Integrating climate mitigation as a core part of agricultural policy • Educational campaigns to drive adoption of low carbon products and lifestyles
Consumer Goods Forum (Global)	56 supermarket members, including 7 of the 10 supermarkets assessed Plastic waste coalition members: 10 supermarkets Food waste coalition members: 9 supermarkets Sustainable supply chain initiative: 3 Net Zero Coalition (established June 2023): 3	• Clear standards, incentives and regulations around carbon labelling • Support for precision agriculture and alternative proteins • Regulation for recycling systems • Financial support to offset CAPEX investments for fleet electrification
Eurocommerce (Europe)	17 supermarket members All EU-headquartered supermarkets in our sample are members.	• Supportive regulatory environment to encourage pre-competitive collaboration on climate challenges • Clearer guidance on beyond value chain mitigation • Simplifying permitting processes and upgrading infrastructure to guarantee affordable, green energy for Europe • An EU legal framework for digital labelling • Financial support for energy efficiency, investment in renewables
FMI, the Food Industry Association (USA)	247 supermarket members, as well as ~200 independently owned supermarket members All supermarkets in our sample that have operations in the US are members.	• Harmonised packaging regulations

116 Pathway milestones (brc.org.uk)
117 eurocommerce-manifesto-final.pdf
118 https://www.fmi.org/industry-topics/corporate-social-responsibility/sustainability
119 Accenture-Net-Zero-Playbook-for-Consumer-Industries.pdf (theconsumergoodsforum.com)

Recommendations

With only a tiny fraction of emissions within their direct control, supermarkets' climate impact is reliant on influencing policymakers, consumers and suppliers.

1 Nudge shoppers towards healthy sustainable diets

Encouraging customers to make more sustainable food choices is an extremely impactful area of climate action for supermarkets. However, in a highly competitive sector, the pressure to deliver on current customer expectations is strong, and customers can often be reluctant to change their habits. Nevertheless, subtle strategies can make dietary changes easy, affordable and appealing, benefiting supermarkets, customers and the planet.

➔ Make it easy

Reimagine store layouts so that healthy, sustainable choices are front and centre. Similarly, optimise your website so that these options appear first in searches. Reformulating products to change the balance of ingredients, swapping in lower-carbon ingredients, or reducing choice architecture can have a similar effect, making it easier for consumers to reduce their footprint with minimal change to their habits. Carbon labelling, when information is clear, specific and backed up with evidence can make informed decision-making easier and build trust with customers.

➔ Make it affordable

Offer discounts or rewards for buying sustainable products, while limiting markdowns on carbon-intensive items, such as red meat. In the UK, 83% of consumers surveyed by the British Retail Consortium said that financial incentives would encourage them to change their behaviour. Harness the goldmine of consumer data from loyalty programmes to offer personalised promotions or tailored messaging that will resonate with different customer groups. Innovation can also help bring down the cost of sustainable products.

➔ Make it attractive

Adverts, in-store demos, recipe magazines, and social media can make sustainable choices look, sound, smell and taste appealing. At the same time, they help to educate customers on the carbon and health benefits of low carbon diets and provide recipe inspiration. Partnering with influencers including celebrity chefs and food writers can also help shift public tastes and increase customers' willingness to make positive changes.

Deploy a combination of these strategies to promote diets that boost human and planetary health, such as eating local, seasonal, unpackaged food, a diverse range of proteins, and plenty of vegetables and grains.[120] Outside of food, these strategies can also encourage customers to embrace circular habits like bringing old clothes, electronics and packaging back to stores for reuse, resale or recycling. Selling refurbished goods can open up additional revenue streams and the lower price points for these products could enable supermarkets to reach new customer groups. Take-back schemes can also help to build brand loyalty.

120 The Planetary Health Diet - EAT (eatforum.org)

2 Use the 5As of climate advocacy to create the food system of the future.

The 5As of climate advocacy[121]

Public affairs is a powerful but often overlooked function for delivering corporate Net Zero commitments. As part of a credible approach to delivering Net Zero, companies are increasingly being expected to push for climate-positive policies, or at the very least, ensure that any existing engagement with policymakers is not undermining the company's climate goals. A UN High Level Expert Group on Net Zero commitments emphasises the importance of leveraging lobbying and advocacy to help de-risk the Net Zero transition, capture its economic benefits and create a level playing field among businesses.[122] Similarly, the Transition Plan Taskforce includes engagement with governments, the public sector, civil society and community groups as an essential part of a Net Zero transition plan.

International best practice is broadly aligned on the key steps that businesses should take to persuade policymakers and regulators to enable the economy-wide transition to Net Zero:[123]

1. **Affirm**
   Make a public commitment to align your policy engagement with Net Zero. The most credible pledges will come from the highest levels of leadership and feature in key disclosure documents like annual reports.

2. **Advocate**
   Be vocal about the policies you need to succeed. As well as engaging directly with policymakers, add your voice to industry-wide initiatives.

3. **Align**
   Check that your trade associations membership reflects your stance on climate polices. If any associations are lobbying for policies, which will hinder progress towards Net Zero, work with them to change their position and take a hard line if you don't see any change.

4. **Allocate**
   Leverage funds to further climate policies, either through allocating funds to in-house policy research or organisations developing strong climate policy or policy recommendations, such as the World Business Council for Sustainable Development.

5. **Announce**
   Use your annual reports, sustainability reports or transition plans to explain how you are addressing each of the previous steps.

121 Aligned with and adapted from Ceres and We Mean Business Coalition's Principles for Responsible Policy Engagement, and UNFCCC's The 5th P (Persuade) Handbook.
122 Integrity Matters: Net-Zero Emissions Commitments of Non-State Entities | United Nations
123 Race-to-Zeros-5th-P-Persuade-Handbook-2.pdf (unfccc.int), which brings together UN HLEG Recommendations, Race to Zero, ISO Net Zero Guidelines, Global Standard on Responsible Climate Lobbying, AAA Framework for Climate Policy Leadership and RPE Framework.

Use this framework to call for policies which would spur faster climate action among your suppliers, customers and peers. In particular, support policies that enable a just transition to regenerative food systems, and that level the playing field for supermarkets in key areas of climate action. For example:

- **Mandatory decarbonisation pathways for commodities.** In Ireland, food producers are required to reduce farm-level emissions in line with national targets. Supermarkets would benefit from advocating for similar policies in other regions, given that their climate plans depend on suppliers reducing emissions from food production.
- **Reforming agricultural subsidies.** Governments in high-income countries which are less dependent on animal protein shift agricultural subsidies from meat and dairy products to less carbon-intensive foods. Subsidies can also help support farmers to transition to more regenerative practices, which use land efficiently, reduce emissions and build resilience to climate change.
- **Policies to reduce food waste,** such as consumer facing campaigns on household food waste and mandatory food waste reporting for retailers.
- **Consumer incentives to adopt climate-friendly diets,** including dietary guidelines and restricting adverts and discounts for carbon-intensive products.
- **Building food systems transformation into national climate plans,** considering the policy options set out in the Food Forward NDCs tool.[124]
- **Support for the energy transition,** such as public electric vehicle charging infrastructure, carbon taxes and other incentives to strengthen the economic case for ending supermarket fuel sales.
- **Support for industry collaboration,** including anti-trust laws which enable supermarkets to work together on sustainability initiatives.

124 NEW TOOL LAUNCHED TO HELP COUNTRIES TRANSFORM FOOD SYSTEMS FOR THE BENEFIT OF NATURE, CLIMATE AND PEOPLE | WWF (panda.org)

Conclusion

Conclusion

To turn climate ambitions into actionable plans, supermarkets must use their power of influence and embrace collaboration to address system-wide challenges: agricultural emissions, deforestation, Scope 3 data and dietary shifts.

Our Net Zero Sector Assessment highlights that the world's highest revenue supermarkets recognise that climate change poses a threat to their businesses and in response, have put in place ambitious near-term plans to reduce emissions from their operations.

However, at present, the sector lacks joined-up, forward-looking plans, detailing specific measures to mitigate its biggest climate risks and cut supply chain emissions at pace. In particular, supermarkets are struggling to decarbonise their biggest sources of emissions: food production and selling fuel.

Fortunately, there is a growing consensus within the sector that sustainable agriculture will play a crucial role in supermarkets' sustainability plans and business models. This is a significant development; intensive agricultural practices are a core emissions hotspot for supermarkets, and a leading contributor to climate change, which in turn will disrupt food supplies and supermarket operations. Yet plans to reorient supermarket supply chains around the principles of sustainable or regenerative agriculture are mostly in very early stages. Transitioning to a Net Zero-aligned, climate-resilient food system that provides healthy, affordable products to customers and rewards farmers for climate action is a significant global challenge, and one that supermarkets cannot tackle alone, particularly as around 93% of emissions lie outside of supermarkets' direct control.

Our recommendations for the sector therefore emphasise the importance of collaboration and leveraging supermarkets' power of influence.

As well as collaborating with food producers and innovators to pilot, test and scale low carbon products, supermarkets will need to engage in pre-competitive collaboration with peers. Shared challenges like Scope 3 and FLAG emissions are holding supermarkets back from meeting climate targets and creating climate-resilient businesses; it is in the sector's best interests to work together to plot a way forward. Promising examples of sectoral collaboration are emerging – several UK and Danish retailers have invested in dairy cooperative Arla's initiative to support farmers to cut emissions from milk to name an example –and will need to be replicated in other parts of the value chain, and at an international level.[125]

The influence piece starts with building the internal business case for Net Zero, urging key decision-makers to view decarbonisation as business critical and dedicate sufficient resources to tackling climate change. Externally, this means incentivising producers to measure emissions, monitor links to deforestation, and adopt low carbon, resource-efficient production methods, prioritising suppliers over which they have the greatest influence. Finally, supermarkets will not reach ambitious climate targets without supportive policies and customers making changes to their diets and buying habits. Influencing customers and policymakers is therefore a critical ingredient for overcoming supermarkets' biggest challenges to decarbonisation.

125 Arla partners with UK retailers for emissions reduction programme

Our recommendations also encourage supermarkets to think long term and consider the big picture.

This will entail setting targets post-2035, investing now to scale up the technologies they will rely on in 2050, and starting difficult conversations which will lead to transformational rather than incremental change. While a near-term priority may be to reduce the carbon and resource intensity of specific products or commodities, the urgency of the climate and ecological crises ultimately requires supermarkets to rethink whether a product should be sold at all.

Adopting this holistic approach to the Net Zero transition is challenging, but fortunately, supermarkets can address multiple climate challenges at once by focusing collaborative action in a few priority areas.

Adopting climate-smart agricultural practices will reduce agricultural emissions, and at the same time help to protect natural resources and scale nature-based carbon dioxide removals. Meanwhile, improving Scope 3 data quality and collection will not only improve disclosure, but also enable supermarkets to set Scope 3 reduction targets, optimise sourcing decisions, communicate with customers about the impact of different products, and determine the best strategy for decarbonisation.

Our key recommendations for the sector

- **Check whether your business model is compatible with Net Zero,** accepting suppliers' risks as your own and considering how the business model can be evolved to transform the food system from within.
- **Ensure climate action trickles down into every part of the business,** setting targets which reflect the urgency of the climate challenge, ensuring finance teams and sustainability teams speak each other's language and developing supplier finance programmes to close the food system's climate finance gap.
- **Put climate-smart agriculture at the heart of climate and sourcing plans** and create a winning supplier engagement strategy using the 'SCOPE 3' approach.
- **Tackle climate change while protecting and enhancing nature** by collaborating on deforestation, investing in healthy soils, and embedding planetary boundaries into climate strategies, starting with your food waste strategy.
- **Scale up removals for your own benefit.** Even if you don't have all the answers yet, publish a carbon credit strategy and adapt it over time to reflect your company values and pivot towards carbon dioxide removals.
- **Take advantage of common supply chains to collaborate and continuously improve Scope 3 reporting,** while sharing as much as you can now.
- **Be vocal about the buying habits and policies you need to reach Net Zero;** use your collective power of influence to nudge shoppers towards healthy sustainable diets and demand policy support for a just transition to regenerative food systems.

Appendices

Appendix 1: Methodology

The Carbon Trust's Net Zero Sector Assessment

1. Purpose and alignment with international Net Zero guidance

Since the publication of the IPCC's special report 'Global Warming of 1.5C' in 2018 there has been a significant increase in the number of Net Zero targets set at national, subnational and corporate levels.[126] As of November 2023, more than half of the world's 2,000 largest businesses have set Net Zero commitments.[127] This broad spread of targets is very welcome, but across the world, businesses are facing barriers to delivering the ambition, action and accountability needed for Net Zero.[128]

Although details will vary, and not all sectors will reach Net Zero by 2050, every sector will have to follow a similar route to Net Zero. To get there, interim targets must reflect the urgent need for greenhouse gas emissions reductions this decade. Long-term plans should reflect a credible commitment to reducing approximately 90% of emissions around mid-century, at which point carbon dioxide removal can be used to neutralise any remaining emissions.

However, it can be challenging to assess the strength of corporate action within a sector, leading to risks of greenwashing and delay. Transparency and consistency, both across and between sectors, is essential to drive urgent and effective climate action, and prevent complacency. Standardised international best practice on Net Zero has emerged in recent years. The report of the UN High-Level Expert Group on the Net Zero Emissions Commitments of Non-State Entities (UN HLEG) and the ISO Guidelines on Net Zero both highlight essential criteria for Net Zero pledges and plans.[129, 130] Since then, recommendations and standards from the likes of the Transition Plan Taskforce and the International Sustainability Standards Board has helped to operationalise this high-level guidance. The Net Zero Sector Assessment draws on these frameworks but focuses on seven key metrics for assessing Net Zero commitments.

2. How it works

The Carbon Trust's Net Zero Sector Assessment uses seven key metrics to assess the extent to which an organisation's commitments and plans align with current best practice on Net Zero. Each metric comprises several indicators which align to international best practice.[131] The outcome is not a pass or fail judgement, but a snapshot reflecting progress at a particular point in time, which is an essential starting point for developing tailored and practical recommendations.

The assessment is based on an analysis of publicly available documents of ten of the largest companies within a global sector. A company's most recent sustainability report, annual report and published emissions data are taken into account, as well as the Science Based Targets initiative's registry.

The yardstick for credible climate action is changing as time runs out to limit warming to 1.5C. The sustainability reporting landscape has also evolved rapidly in recent years, and despite limiting the scope of our analysis to companies' most recent publications, those from 2024 often show a markedly higher level of ambition compared to those published in 2022. As such, we acknowledge that a company's plans may have progressed, and our recommendations for improvement may leverage best practice that has emerged since these documents were written.

126 Global Warming of 1.5 °C — (ipcc.ch)
127 Net Zero Tracker | Welcome
128 Breaking business barriers to Net Zero | The Carbon Trust
129 high-levelexpertgroupupdate7.pdf (un.org)
130 ISO - Net Zero Guidelines
131 Defining Net Zero for organizations: How do climate criteria align across standards and voluntary initiatives? - Net Zero Climate; Readiness Check (EN) - The Climate Drive; Integrity Matters: Net-Zero Emissions Commitments of Non-State Entities | United Nations; SBTi Corporate Net-Zero Standard V1.2 (sciencebasedtargets.org)

3. The Net Zero Sector Assessment's metrics

Within each metric is a list of indicators to guide users of the tool; these indicators are sector-agnostic and do not constitute a checklist of essential criteria. To illustrate the sort of information we look for in public reports, the indicators for each metric are summarised below.

Recognition and ownership

Acknowledgement of the climate crisis and an assessment of how the business will be impacted, both by climate change and the Net Zero transition. Recognition of the organisation's own contribution to the climate crisis, including specific emissions hotspots. A commitment to use these insights to make urgent and transformational change, if necessary, to make business models compatible with a Net Zero economy and more resilient to climate change.

Targets and accountability mechanisms

Long-term Net Zero targets and interim targets, covering Scope 1, 2 and 3 emissions, aligned with the rate of emissions reductions needed to limit global warming to 1.5C. Plans to allocate funds and internal resources to finance the transition to Net Zero. Adequate governance structures to enable, incentivise and hold employees accountable to deliver on climate targets.

Robust implementation plan

A plan, embedded within corporate strategy, outlining actions the organisation will take to mitigate key climate risks, address emissions hotspots, and capture opportunities presented by the Net Zero transition. An indication of how these measures will add up to meet climate targets. Detail on how the company is exploring business model transformation, new low carbon products and services, supplier engagement, contribution to a just transition, and the effectiveness of different low carbon solutions.

Use of natural resources

Recognition of the need to operate within planetary boundaries, source responsibly and build resilient supply chains that minimise depletion of finite natural resources. Specific targets and plans relating to deforestation, biodiversity, water and key raw materials, and plans to improve circularity of materials.

Approach to offsetting and carbon dioxide removal

Evidence that the organisation is prioritising real emissions reductions over offsetting and understands that offsets cannot contribute to emissions reduction targets. If companies are engaging with voluntary carbon markets, transparency around the type, volume, and quality of offsets, including any due diligence carried out to ensure additionality, permanence and positive environmental/social impact. Evidence that the organisation is exploring a limited role for, and scaling the availability of, high-quality carbon dioxide removal methods to neutralise any residual emissions (up to 10% of total emissions).

Disclosure and verification

Transparent, consistent and regular disclosure of emissions data across Scope 1, 2 and 3, material emissions categories and greenhouse gases, and an explanation of any changes, gaps and steps being taken to improve disclosures. Use of trusted reporting methodologies and frameworks and independent external verification or assurance of key disclosures and claims.

External drivers for action on climate change

Engagement with customers, shareholders, and industry-wide initiatives to improve action and understanding of climate change, including attempts to drive Net Zero-aligned behaviour change. Evidence of aligning lobbying, advocacy and trade association membership with Net Zero and information on the regulations that would help the organisation meet its climate targets.

4. This report

This is the second report from the Carbon Trust's Net Zero Intelligence Unit offering sector-specific recommendations to improve commitments and plans for Net Zero.

This report assesses a sample of ten of the largest supermarkets, hypermarkets and grocery discount stores by global revenue (2021) to generate an overview of the sector's current Net Zero commitments and plans.[132] It also draws on the Carbon Trust's experience of working with supermarkets and food producers to make recommendations as to how supermarkets can progress faster towards Net Zero.

132 Global Powers of Retailing 2023 | Deloitte Global. Carrefour requested to be excluded from Deloitte's report, but has been included in our sample based on reported global revenue for 2021. We recognise that Aldi North and Aldi South are distinct entities; for the purposes of our analysis, only Aldi South has been assessed, as the larger of the two.

Appendix 2: Primary sources

Walmart

Most recent sustainability report: ESG Reporting (walmart.com)

Most recent emissions/environmental results report: https://corporate.walmart.com/content/dam/corporate/documents/esgreport/reporting-data/fy2023-walmart-esg-data.xlsx

Most recent annual report: 2024-annual-report-pdf-final-final.pdf (q4cdn.com)

Schwarz Group

Most recent sustainability report: SchwarzGroup_SusRep_FY22-23.pdf (onstackit.cloud), ProgressReport_FY22.pdf (gruppe.schwarz)

Most recent emissions/environmental results report: integrated into sustainability report

Most recent annual report: not publicly available

Kroger

Most recent sustainability report: Kroger-Co-2024-ESG-Report.pdf and Microsoft Word - Kroger Carbon Roadmap Document_V6.docx (thekrogerco.com)

Most recent emissions/environmental results report: integrated into sustainability report

Most recent annual report: annual-report-to-security-holders.pdf (q4cdn.com)

Aldi South

Most recent sustainability report: climate-factsheet (aldisouthgroup.com), packaging-factsheet (aldisouthgroup.com) and food-waste-factsheet (aldisouthgroup.com), forest-protection-factsheet (aldisouthgroup.com), global-sustainability-strategy-progress-report-2023

Most recent emissions/environmental results report: climate-protection-progress-report-2022.pdf (aldisouthgroup.com) and cr-report-2022 (aldisouthgroup.com)

Most recent annual report: not publicly available

Tesco

Most recent sustainability report: integrated into sustainability report, as well as Climate Change Factsheet 2024 (tescoplc.com), Nature, and Protecting Forests Factsheet 2024 (tescoplc.com), Packaging Factsheet 2024 (tescoplc.com), Food waste and redistribution Factsheet 2024 (tescoplc.com), Healthy, sustainable diets factsheet 2024 (tescoplc.com)

Most recent emissions/environmental results report: Databook

Most recent annual report: Tesco Annual Report 2024 (tescoplc.com)

Carrefour

Most recent sustainability report: Plan Climat 2023_Groupe Carrefour_Publication mai 2024 (2)_fren-GB (1), 2023_Protéger la biodiversité (2) en (carrefour.com), , 004_2024_Lutter contre le gaspillage alimentaire_fren-GB.pdf, and Promoting responsible use of water.pdf (carrefour.com), Fighting deforestation_censored.pdf

Most recent emissions/environmental results report: integrated into sustainability report

Most recent annual report: Universal Registration Document 2023

Edeka

Most recent sustainability report: progress-report-edeka-wwf-2022.pdf (verbund.edeka), broschüre_verantwortungsvolles-handeln-im-edeka-verbund.pdf

Most recent emissions/environmental results report: integrated into sustainability report

Most recent annual report: edeka_group_company_report_2023__english_version-2.pdf (geschaeftsbericht.edeka)

Albertsons

Most recent sustainability report: https://s29.q4cdn.com/239956855/files/doc_downloads/2024/Dec/CorpComm_RFCReport2024.pdf

Most recent emissions/environmental results report: integrated into sustainability report

Most recent annual report: not publicly available (since 2020)

Aeon

Most recent sustainability report: integrated into annual report

Most recent emissions/environmental results report: Sustainability Data Book 2024, AEON2024_HP_0529light

Most recent annual report: Aeon Report 2024

Ahold Delhaize

Most recent sustainability report: aholddelhaize.com/media/rxqkoynt/ahold-delhaize-climate-plan-december-2023.pdf

Most recent emissions/environmental results report: integrated into sustainability report

Most recent annual report: Annual Report - 2023 Q4 DOC (aholddelhaize.com)

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