



# Navigating Net Zero

Making sense of sustainability jargon

July 2024



**The Scotland Food & Drink Net Zero Commitment Programme is helping businesses to understand Net Zero, how they are affected and how we can work together to ensure a resilient food system for our future.**

The race to Net Zero is on, and Scotland's food and drink industry is lacing up for the long run. As the voice driving this vital pledge to reach Net Zero emissions by 2045, the Scotland Food & Drink Partnership's Net Zero Commitment Programme is supporting food and drink businesses of all sizes every step of the way.

To help navigate the path ahead, we want to demystify the jargon and acronyms around Net Zero. From cutting through the jargon to practical advice, we'll equip you with what you need to join us and your industry peers in hitting our climate change targets.



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## A common language to combat climate change

As members of the food and drink industry, it is crucial that we take proactive steps to reduce our carbon footprint and contribute to the global effort against climate change.

By embracing sustainable practices, investing in renewable energy sources, and supporting initiatives that promote environmental stewardship, we can play a vital role in mitigating the impacts of climate change and ensuring a sustainable future for generations to come.

Understanding the language around emissions and Net Zero is vital for driving real change in Scotland's food and drink industry. By knowing and understanding these key terms, you can better engage in conversations, interpret data, and make informed sustainability decisions for your business.



Embracing this terminology empowers us to communicate effectively, using a shared vocabulary and to measure progress more accurately. Ultimately, by adopting a common language, we can confidently navigate the path to reducing our environmental impact while celebrating milestones along our Net Zero journey.

Let's move forward together, armed with the knowledge to make a meaningful difference and create a sustainable future for generations to come.

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# What is Net Zero?

Net Zero refers to achieving a balance between the greenhouse gas emissions produced by human (anthropogenic) activity and the emissions removed from the atmosphere. For an organisation or sector to reach Net Zero, it must reduce its emissions as much as possible through measures like improving energy efficiency, transitioning to renewable energy sources, and adopting sustainable practices. Any remaining hard-to-eliminate emissions can then be counterbalanced by removing an equivalent amount of carbon dioxide from the atmosphere, through the likes of carbon capture technologies or land-use change.

The key aspects of Net Zero are:

## 1. Reducing Emissions

This involves implementing strategies to significantly cut emissions across all activities and the entire value chain. For the food and drink industry, this includes emissions from agriculture, manufacturing processes, packaging, transportation, and other operations.

## 2. Residual Emissions

Even with ambitious reduction efforts, some emissions are extremely difficult to eliminate entirely with current technologies. These residual emissions need to be counterbalanced.

## 3. Removals

Any residual emissions must be offset through certified greenhouse gas removal methods like carbon capture and storage, reforestation projects, or other nature-based solutions that absorb carbon dioxide from the atmosphere.

## 4. Net Zero State

When emissions have been reduced as much as possible and any remaining emissions are fully counterbalanced by removals, the 'Net Zero state' is achieved where no additional emissions are added to the atmosphere.

Reaching Net Zero emissions is crucial for limiting global temperature rise and mitigating the worst impacts of climate change. The food and drink sector has an important role to play, which is why Scotland Food & Drink Partnership's Net Zero Commitment Programme is supporting businesses on this journey.

## Agreements, COPs and Protocols

While the buzz around COP26 in Glasgow was hard to miss for Scottish food and drink businesses, it might feel easier to summit Ben Nevis carrying a full cask of whisky than to navigate the road of climate negotiations that led up to it, which can feel like a maze of protocols and agreements.

It was at this pivotal conference, in November 2021, that the Scotland Food & Drink Partnership announced its Net Zero Commitment – our pledge to meeting the Scottish Government’s Net Zero targets by 2045.

However, before we dive further into that, it's worth brushing up on said protocols and agreements, starting with COP itself.

Standing for ‘Conference of Parties’, COP is the supreme decision-making body of the United Nations Framework Convention on Climate Change (UNFCCC). It meets annually to review the implementation of the Convention and negotiate new commitments or agreements, such as the Paris Agreement and the Glasgow Climate Pact.

### Glasgow, Kyoto, Montreal and Paris – A Common Climate Connection

Over the years, various international protocols and conventions have been established to address the challenge of anthropogenic climate change and mitigate its impacts. For those in the Scottish food and drink industry, the following are the most pertinent.

#### Montreal Protocol

Adopted in 1987, the Montreal Protocol is an international agreement designed to protect the ozone layer by phasing out the production and consumption of ozone-depleting substances, such as chlorofluorocarbons (CFCs) and halons. It is widely regarded as one of the most successful environmental agreements to date.

#### Kyoto Protocol

Adopted in 1997 and entered into force in 2005, the Kyoto Protocol was the first legally binding international treaty to reduce greenhouse gas emissions. It set binding emission reduction targets for developed countries, with the goal of reducing overall emissions by at least 5% below 1990 levels during the commitment period of 2008-2012.

#### Paris Agreement

Adopted in 2015, the Paris Agreement aims to limit global temperature rises to well below 2°C above pre-industrial levels, with efforts to further limit the increase to 1.5°C. It requires countries to set nationally determined contributions (NDCs) to reduce greenhouse gas emissions and strengthen their efforts over time.

## Glasgow Agreement (COP26)

At the 2021 United Nations Climate Change Conference (COP26) in Glasgow, countries agreed to revisit and strengthen their NDCs by the end of 2022 to align with the Paris Agreement's temperature goals. The Glasgow Climate Pact also called for accelerated action on climate adaptation, finance, and loss and damage.



COP26 Climate Change Conference, Glasgow 2021

## Emissions Explained

From carbon footprints to greenhouse gas emissions, the language surrounding sustainability can sometimes feel like a maze of unfamiliar jargon.

With the emission of greenhouse gases - particularly carbon dioxide (CO<sub>2</sub>) and methane – the main driver of climate change, we felt it was important to start with some key terms relating to emissions:

### **Base year**

Historic data (a specific year or an average over multiple years) against which a company's emissions are tracked over time.

### **Base year emissions**

Greenhouse gas (GHG) emissions in the base year.

### **Baseline**

A hypothetical scenario for what GHG emissions, removals or storage would have been in the absence of the GHG project or project activity.

### **Carbon Dioxide Equivalent (CO<sub>2</sub>E)**

A measure used to compare the emissions from various greenhouse gases based upon their global warming potential (GWP). Carbon dioxide (CO<sub>2</sub>) equivalents are commonly expressed as 'million metric tonnes of carbon dioxide equivalents (MMTCDE)'. For example, the GWP for methane is 21 and for nitrous oxide 310. This means that emissions of 1million metric tonnes of methane and nitrous oxide respectively is equivalent to emissions of 21 and 310 million metric tonnes of carbon dioxide.

### **Carbon neutrality**

Net Zero CO<sub>2</sub> emissions are also referred to as carbon neutrality.

### **Cradle-to-gate**

A life cycle assessment that considers the environmental impacts and emissions from raw material extraction (cradle) up to the factory gate. This excludes the use and disposal phases of the product and emissions from sources that are owned or controlled by the reporting company).

### **Emissions intensity**

The rate of GHG emissions relative to a specific activity or industrial output, typically expressed as the amount of emissions per unit of energy produced or economic output (e.g. grams of CO<sub>2</sub> per megajoule or per £ of GDP).





### **Fugitive emissions**

Emissions of GHGs that are not produced intentionally by a stack or vent. Fugitive emissions may include leaks from industrial plants and pipelines.

### **Life Cycle Analysis (LCA)**

Assessment of the sum of a product's effects (e.g. GHG emissions) at each step in its life cycle, including resource extraction, production, use and waste disposal.

### **Methane (CH<sub>4</sub>)**

One of the seven greenhouse gases (GHGs) to be mitigated under the Kyoto Protocol (see above) and a major component of natural gas and associated with all hydrocarbon fuels. Significant emissions occur from animal husbandry and agriculture, and their management represents a major mitigation option.

## Scope 1, 2 and 3 emissions

While understanding key terms and concepts related to greenhouse gas (GHG) emissions is crucial, it is the three types of scoping emissions that are the most important to Scottish food and drink businesses on their Net Zero journey.

Think of them as different layers of an onion (but without the tears!). Below, we peel back each layer, one by one, and reveal what they really mean.

### Scope 1 emissions

Scope 1 emissions are direct GHG emissions from operations owned or controlled by a company. For example, in the food and drink industry, scope 1 emissions may arise from the combustion of fossil fuels in manufacturing facilities, on-site power generation, or the operation of company-owned vehicles and equipment.

A brewery that uses natural gas to power its boilers or a dairy company that operates a fleet of refrigerated trucks for example, would need to account for these emissions as part of their scope 1 inventory.

### Scope 2 emissions

Scope 2 emissions are indirect GHG emissions associated with the generation of purchased or acquired electricity, steam, heating, or cooling consumed by a company. In the food and drink industry, scope 2 emissions are often significant due to the energy-intensive nature of many processes, such as refrigeration, cooking, and packaging.

For instance, a bakery that purchases gas and electricity to power its ovens and lighting would need to account for the associated scope 2 emissions based on information from the supplier.

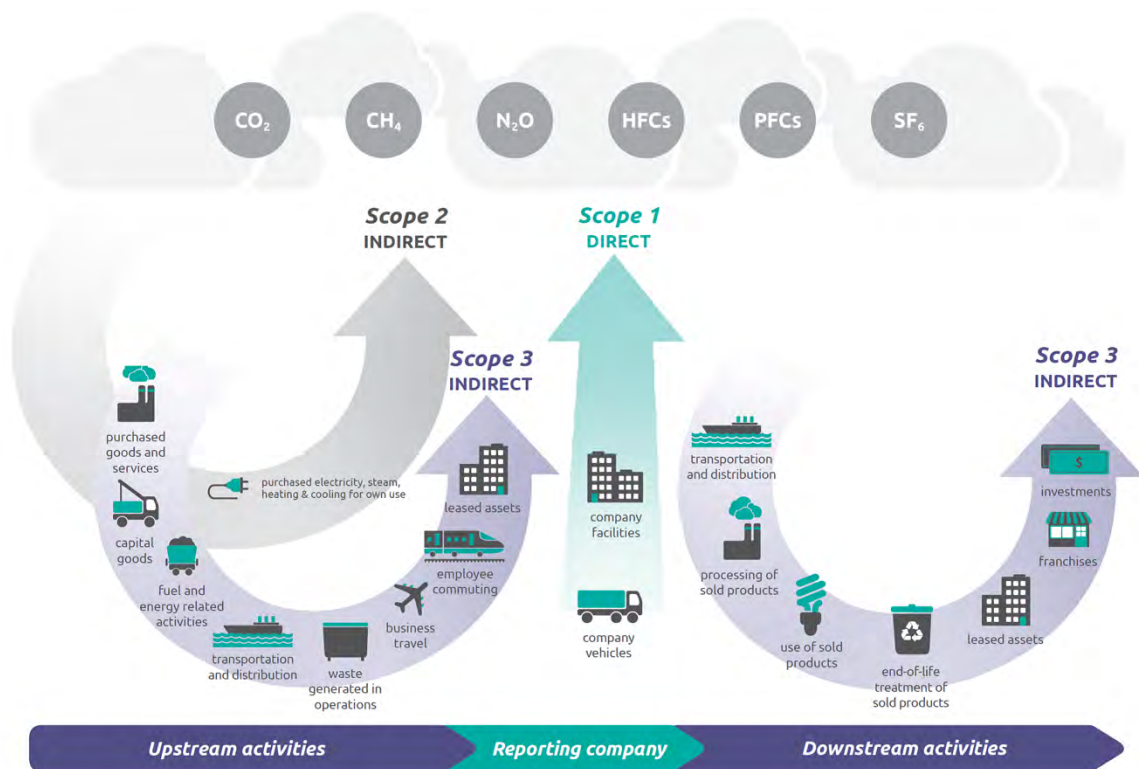
Likewise, while distilleries may produce some direct (scope 1) emissions, a significant portion comes from scope 2 emissions related to purchased energy sources like steam or electricity used to operate the stills and other distillery equipment.

### Scope 3 emissions

Scope 3 emissions are indirect GHG emissions that occur in a company's value chain, both upstream (from suppliers and logistics) and downstream (from product use and disposal), over which the company has limited direct control.

In the food and drink industry, scope 3 emissions can be substantial and may include emissions from agricultural activities (e.g., fertiliser use and livestock rearing), transportation of raw materials and finished products, and the disposal or recycling of packaging materials.

A soft drink manufacturer, for example, would need to consider emissions from the production and transportation of ingredients like sugar and flavourings, as well as the distribution and disposal of their products and packaging by consumers.



Source: [WRI/WBCSD Corporate Value Chain \(Scope 3\) Accounting and Reporting Standard](#)

### Value chain emissions

Finally, value chain emissions encompass a company's scope 1, 2, and 3 emissions, as defined by the [GHG Protocol Corporate Accounting and Reporting Standard](#). Addressing value chain emissions is crucial for the food and drink industry, as many emissions occur upstream and downstream of a company's direct operations.

### Why scoping emissions matters

Achieving Net Zero emissions in the food and drink industry requires a collaborative effort across the entire value chain, involving suppliers, manufacturers, retailers, and consumers.

As a Scottish food and drink company, by understanding and quantifying your value chain emissions, you can identify hotspots and implement targeted strategies to reduce your overall environmental impact, such as sourcing from sustainable suppliers, optimising transportation routes, and promoting circular economy practices.

# The Human Side

It goes without saying that the climate crisis is a human-caused phenomenon, driven by our collective actions that have led to an unprecedented increase in greenhouse gas emissions.

Climate change is an issue that demands collective action and a fundamental shift in our behaviours and systems. Individuals, communities, and businesses must embrace sustainable practices, reduce their carbon footprints, and prioritise the well-being of both present and future generations.

## Climate Change: The 'Human Side'

There are three key terms at the heart of the human side on the path to Net Zero: *adaptation*, *anthropogenic* and *just transition*.

**Adaptation** refers to the ways we adjust and prepare for the impacts of climate change that are happening now or expected to occur in the future. The goal is to reduce the potential harm and take advantage of any potential benefits.

For natural systems like our forests, oceans, and wildlife, adaptation is about finding ways to help them adjust to the changing climate conditions.

For human systems like communities, cities, and businesses, adaptation means making changes to our infrastructure, policies, and behaviours to better cope with climate impacts. Examples in the food and drink industry include developing drought-resistant crops or adapting operations to the likes of temperature variations and new pests and diseases.

**Anthropogenic** is a key word used by in conversations around climate change and refers to environmental change caused or influenced by people, either directly or indirectly.



Friends of the Earth Scotland Just Transition march

Finally, a **just transition** is one that ensures that the costs and benefits of transitioning to a low-carbon economy are shared fairly, leaving no one behind. This transition requires a holistic approach, encompassing technological innovations, policy reforms, and a cultural shift towards environmental stewardship.

## Renewable Energy

Even if all use of fossil fuels stopped today, emissions from the global food system alone would make it impossible to limit warming to 1.5°C and difficult even to achieve the 2°C target set by the Paris Agreement in 2015. To have any hope of meeting the goals set out in that agreement, we need major changes in the food system.

Globally, and here in Scotland, all participants in this sector, including manufacturers, have a role in realising this change. This requires action and collaboration across the full supply chain.

One way for Scottish food and drink businesses to reduce their emissions is through the widespread adoption of renewable energy. By embracing renewable energy sources and implementing sustainable practices, our industry can play a crucial role in achieving Scotland's Net Zero emissions target while contributing to a more sustainable, resilient future.



On-shore wind farm

## What is renewable energy?

Renewable energy refers to sources that are naturally replenished, such as solar, wind, hydro, geothermal, and biomass. These sources are considered clean and sustainable alternatives to fossil fuels, which contribute significantly to greenhouse gas emissions and climate change.

### Wind power

Scotland has excellent wind resources, both onshore and offshore. The country has already made significant investments in wind farms, with wind energy accounting for a substantial portion of its electricity generation.

### Hydropower

Scotland's mountainous terrain and heavy rainfall provides opportunities for hydroelectric power generation. Both large-scale and small-scale hydro projects have been developed across the country – [some even playing prominent roles in film and TV](#) - helping power the nation.

### Tidal and wave power

Scotland's coastline and strong tidal currents offer potential for tidal and wave energy technologies, which are still in the development and testing phases.

### Biomass and biofuels

Scotland has a thriving forestry industry, [which can provide biomass feedstocks for energy production](#). Additionally, agricultural and food waste can be converted into biofuels or used for biogas generation.

### Solar power

While Scotland's solar resource is not as abundant as in some other regions, solar photovoltaic (PV) systems can still contribute to the country's renewable energy mix, particularly for smaller-scale, localised applications.



8,000 panel solar array at Diageo in Leven, Fife

## How Scottish food and drink businesses can utilise renewable energy

Scottish food and drink businesses can take several steps to incorporate renewable energy sources and reduce their carbon footprint, contributing to our Net Zero goals:

### On-site renewable energy generation

Businesses can explore installing on-site renewable energy systems, such as solar PV panels, small-scale wind turbines, or biomass boilers, depending on their location and resource availability.

The Scottish Government [offers grant funding and financing options](#) to help offset the upfront costs of renewable energy installations. The SME Loan Scheme provides interest-free loans up to £100,000 for small and medium-sized enterprises (SMEs) to finance renewable technologies. Additionally, SMEs installing eligible renewable heat measures could receive a 75% cashback grant up to £10,000 through this scheme

### Renewable energy procurement

Companies can purchase renewable energy from utility providers or participate in power purchase agreements (PPAs) with renewable energy developers. Many energy providers now offer a renewable only tariff, so get in touch with your provider to find out about switching.



### **Energy efficiency measures**

Implementing energy efficiency measures, such as upgrading equipment, improving insulation, and optimising processes, can reduce overall energy consumption and make it easier to meet remaining energy needs with renewable sources.

### **Collaboration and knowledge sharing**

Participating in industry initiatives, such as The Scotland Food & Drink Partnership's Net Zero Commitment programme, can provide access to resources, best practices, and opportunities for collaboration for businesses to accelerate their transition to renewable energy, no matter where they are in the development of their climate strategy.

Ultimately, to reduce emissions, our food and drink manufacturers must improve energy efficiency, switch to sustainable refrigerants, decarbonise heat processes and, importantly, source 100% renewable electricity.

As well as embracing renewables we all collectively need to be fully committed to promoting efficient water use, building a more circular economy for packaging, embedding environmental standards in transport practices, and reducing food waste.

We also want to increase understanding of sustainable supply chains and natural capital as we look to cut our CO2 emissions.

# Greenhouse Gases

Consumers are increasingly feeling the squeeze of inflation and rising prices in essential goods such as groceries. However, despite this, [they are prioritising products that are sustainably produced](#) and sourced as they are increasingly experiencing the disruptive impacts of climate change in their lives.

One key aspect of our Net Zero Commitment is helping companies understand and reduce their greenhouse gas (GHG) emissions.

## Greenhouse gases (GHGs)

Greenhouse gases are gases that trap heat in the atmosphere, contributing to global warming. The main greenhouse gases are:

- Water vapour (H<sub>2</sub>O)
- Carbon dioxide (CO<sub>2</sub>)
- Nitrous oxide (N<sub>2</sub>O)
- Methane (CH<sub>4</sub>)
- Ozone (O<sub>3</sub>)

These gases absorb and emit radiation at specific wavelengths, causing the greenhouse effect that warms the planet.

## Human-made GHGs

In addition to the naturally occurring greenhouse gases, there are several human-made GHGs:

- Halocarbons and other chlorine/bromine substances (regulated under the Montreal Protocol)
- Sulphur hexafluoride (SF<sub>6</sub>)
- Hydrofluorocarbons (HFCs)
- Perfluorocarbons (PFCs) (regulated under the Kyoto Protocol along with CO<sub>2</sub>, N<sub>2</sub>O, CH<sub>4</sub>)

## The 'Big Three'

Of the greenhouse gases, carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), and nitrous oxide (N<sub>2</sub>O) have the biggest impact on climate change, each playing a major role in warming our planet.

## Carbon Dioxide (CO<sub>2</sub>)

A naturally occurring gas, CO<sub>2</sub> is also a by-product of burning fossil fuels (such as oil, gas and coal), of burning biomass, of land-use changes and of industrial processes (e.g., cement production).

CO<sub>2</sub> is the principal anthropogenic greenhouse gas that affects the Earth's radiative balance and therefore acts as the reference gas against which other GHGs are measured.

In less than 200 years, human activities have increased the atmosphere's CO2 content by 50%, resulting in the increased warming of our planet.



Cattle are a contributor to methane emissions within food systems.

### **Methane (CH<sub>4</sub>)**

Methane is the major component of natural gas and is associated with all hydrocarbon fuels. Significant emissions occur as a result of animal husbandry (particularly in cattle) and agriculture, and a shifting approach to their management represents a major mitigation option for those on the path to Net Zero.

Quality Meat Scotland (QMS), a key member of our Net Zero delivery group, takes a balanced approach to methane emissions from livestock farming. While recognising that some methane is unavoidable, QMS emphasises the need for the industry to reduce its environmental impact. To this end, QMS supports farmers in adopting sustainable practices and investing in new technologies to lower emissions. Research is also underway in Scotland to develop solutions that could help reduce methane production from livestock.

Furthermore, QMS highlights that well-managed, sustainable livestock systems can have a positive influence on biodiversity, soil health, and the appearance of landscapes. This demonstrates that reducing methane emissions need not come at the expense of other important environmental and agricultural considerations.

### **Nitrous Oxide (N<sub>2</sub>O)**

Nitrous Oxide is produced naturally from a wide variety of biological sources in soil and water, particularly microbial action in wet tropical forests.

However, the main anthropogenic source of N<sub>2</sub>O is agriculture (soil and animal manure management), but important contributions also come from sewage treatment, fossil fuel combustion, and chemical industrial processes.

### **Embracing opportunities**

While there are challenges, the Net Zero transition also presents opportunities for Scottish food and drink producers to sharpen their competitive edge by reinforcing Scotland as a leader in low-carbon production.

A quick way to reduce emissions is by transitioning to renewable energy sources like solar, wind and hydroelectric power. This not only benefits businesses by lowering their carbon footprint but can also lead to long-term cost savings compared to fossil fuels.

### **The greenhouse effect**

The greenhouse effect refers to the warming of the Earth's atmosphere caused by the increasing concentration of atmospheric gases, such as water vapour and carbon dioxide (CO<sub>2</sub>). These gases absorb radiation emitted by the Earth, slowing down the loss of radiant energy from the Earth back to space and maintaining a warmer temperature than it would otherwise have.

Understanding this effect is crucial as it underpins the science of climate change and our need to manage GHG emissions effectively to mitigate global warming.



Scotland is home to some of the world's most important peatlands that act as a GHG sink.

### **GHG Sink**

This refers to any physical unit or process that stores GHGs, such as forests, underground/deep sea reservoirs of CO<sub>2</sub> and, closer to home, Scotland's peatlands, which store an estimated 1.7 billion tonnes of carbon – the equivalent of 140 years' worth of our total annual greenhouse gas emissions – making them one of the world's most important carbon sinks.

For Scottish food and drink businesses, GHG sinks could include practices and projects that enhance carbon sequestration, such as:

- **Sustainable agriculture:** Implementing regenerative agricultural practices that improve soil health and increase its capacity to store carbon.
- **Reforestation:** Planting trees and managing forests responsibly to absorb CO<sub>2</sub> from the atmosphere.
- **Peatland restoration:** Undertaking management measures that aim to restore the original form and function of peatland habitats as carbon sinks.

### **GHG source**

This refers to any process which releases GHG into the atmosphere.

To reach Net Zero, businesses need to identify activities that release GHGs, including production processes, energy use, transportation, and waste management, and implement strategies like energy efficiency upgrades, renewable energy adoption, and sustainable transportation to reduce emissions.

### **Global Warming Potential (GWP)**

Understanding the Global Warming Potential (GWP) of different GHGs can help Scottish food and drink businesses prioritise their GHG reduction efforts.

GWP is a measure of how much heat a greenhouse gas traps in the atmosphere compared to carbon dioxide (CO<sub>2</sub>) over a specific time period, usually 100 years.

In simpler terms, GWP is a way to quantify the relative environmental impact of different greenhouse gases. It allows us to compare the warming effects of various gases to that of CO<sub>2</sub>, which is assigned a GWP value of 1.

For instance, nitrous oxide, which has a GWP nearly 300 times that of CO<sub>2</sub> and is often released through fertiliser use, can be minimised by optimising fertiliser application and exploring alternative options.

# Biomass

## What is biomass?

Biomass is renewable organic material that comes from living, or recently living, plants and animals. Biomass contains stored chemical energy from the sun that is produced by plants through photosynthesis. Importantly, biomass can be burned directly for heat or converted to liquid and gaseous fuels.

You may wonder what Biomass has to do with the food and drink sector and its path to achieving Net Zero emissions, however, biomass has recently been considered a 'carbon-neutral' bioenergy solution.

## The role of biomass in the food and drink sector

Biomass plays an important role in the food and drink sector through various applications, contributing to sustainability, energy production & efficiency, and waste management and its importance as a resource for energy production or as a chemical feedstock is set to increase significantly in the coming decades.

One major role biomass has is its use in the production of bioenergy, which can power food and drink manufacturing facilities. This can include the use of biogas, bioethanol, and biodiesel derived from organic materials such as crop residues, food waste, and other biomass feedstocks. A famous example in Scotland is the Craigellachie Biomass Plant which supplies heat to the iconic Macallan whisky distillery.

Biomass also contributes to the circular economy through its impact on waste management and recycling. With the food and drink industry naturally producing a significant amount of organic waste, biomass technologies enable this to be reused or recycled through conversion into useful products like bioenergy, compost, and animal feed.

What's more, in practice, breweries regularly use spent grain to produce biogas or animal feed while food and drink processing plants have implemented anaerobic digestion (AD) systems to manage organic waste. Impressively, Scottish Water's AD recycling centre in Cumbernauld has converted over 145,000 tonnes of food waste into green energy since the plant was commissioned in 2010.

## Biomass on the journey to Net Zero

Utilising biomass in the food and drink sector can help us to reduce the carbon footprint of our production processes. Bioenergy and bio-based materials – such as packaging for our products – often have a lower environmental impact compared to fossil fuels and synthetic chemicals.

In the long run, switching to more sustainable practices can be good for the purse strings too. Using biomass for energy and materials can lead to cost savings by reducing waste disposal costs and lowering energy expenses. However, it's important to note that large-scale biomass production for energy or materials can potentially compete with food production for land and resources.

For food and drink businesses looking to accelerate their sustainability efforts, the Industrial Biotechnology Innovation Centre (IBioIC) [offers support and funding opportunities](#).

As such, careful management is needed to balance food security with other biomass uses. Integrated policies and sustainable practices are crucial to maximise the benefits of biomass while minimising negative impacts on food systems and the environment.



# Science Based Targets Initiative

One key aspect of our Net Zero Commitment is helping companies set science-based targets (SBTs) to reduce their greenhouse gas emissions. However, before we get into how you can do this and what it entails, we are keen to ensure all our producers understand exactly what this means.

## Science Based Targets initiative

The Science Based Targets initiative (SBTi) was established in 2015 to help companies and their specific sectors set emission reduction targets in line with climate science and Paris Agreement goals.

A collaboration between the Carbon Disclosure Project (CDP), the United Nations Global Compact, the World Resources Institute (WRI), and the World Wide Fund for Nature (WWF), the SBTi is comprised of a global team from these organisations.

Since 2015, more than 1,000 companies have joined the initiative to set a science-based climate target. The primary framework guiding these efforts is the [Corporate Net Zero Standard](#). As of April 2024, sector guidance is available for over 14 industries, including, most importantly, the [Forest, Land, and Agriculture](#) (FLAG) sector, which supports the Corporate Net Zero Standard.

## What are Science based targets?

SBTs are emissions reduction goals that align with the level of decarbonisation required to keep the global temperature increase below 2°C compared to pre-industrial temperatures.

To set an SBT, a company must follow specific methodologies and criteria set by the Science Based Targets initiative. For example, targets must cover a minimum of five years and a maximum of 15 years from the date of submission for validation. The baseline year must not be earlier than two years prior to the year of submission.



Marks & Spencer targets a 55% reduction in Scopes 1-3 emissions by 2030.

Most UK retailers have set ambitious net-zero targets, including significant interim reduction targets for Scope 3 emissions. For instance, Waitrose aims to achieve Net Zero emissions for their UK farm supply base by 2035. Marks & Spencer targets a 55% reduction in Scopes 1-3 emissions by 2030, with validation from the Science Based Targets initiative (SBTi). Lidl requires suppliers responsible for 75% of product-related emissions to set targets in accordance with SBTi criteria by 2026.

By setting science-based targets, companies can demonstrate their commitment to climate action and align their emissions reduction efforts with the Paris Agreement goals.

# Carbon capture, storage and sequestration

## What is carbon capture and sequestration?

Carbon capture is a process in which CO<sub>2</sub> is captured and then used to make new products ranging from fertilisers to building materials. When we store this captured CO<sub>2</sub> in products for a long time, this is referred to as carbon dioxide capture, utilisation, and storage (CCUS).

For CCUS to actually help reduce atmospheric CO<sub>2</sub>, it needs to capture CO<sub>2</sub> that was recently in the air. Only then can it contribute to removing carbon dioxide from the atmosphere.

Sometimes the term CCU (carbon dioxide capture and use) is adopted by those who aren't focussing on the long-term storage aspect.

While carbon sequestration and carbon capture are related, they are slightly different: carbon capture specifically refers to the initial step of removing CO<sub>2</sub> from emission sources or the air, while sequestration encompasses the entire process of capture, removal, and long-term storage of carbon dioxide.

However, irrespective of time periods, the main goal of all these processes is to reduce the amount of CO<sub>2</sub> in our atmosphere and help fight climate change.

## What does it have to do with the food and drink sector?

The Scottish food and drink industry, which includes various emission-producing processes from scope 1, 2, and 3, can benefit significantly from technologies and processes that capture and store these emissions, preventing them from entering the atmosphere.

This is evidenced by various initiatives across the industry, particularly in our whisky sector. In recent years we have witnessed major players like Suntory Global Spirits and Diageo take steps to reach Net Zero through carbon capture and sequestration. In the case of Suntory Global Spirits, they have invested over \$4 million USD to restore and conserve 1,300 hectares of peatlands by 2030. This large-scale peatland restoration project not only supports carbon sequestration but also enhances water retention, improves water quality, and promotes biodiversity.

Carbon capture and sequestration play a key role in supporting Scotland's environmental goals. With targets set to reach Net Zero carbon emissions by 2045, five years ahead of the UK's overall target, the food and drink sector must ensure that these technologies and practices play a key role in their journey to Net Zero. This adoption is essential for reducing emissions, supporting national environmental objectives, enhancing innovation, and providing economic benefits, ultimately ensuring the sector's long-term sustainability and competitiveness.

# Carbon Credits

## What are carbon credits?

A carbon credit is a tradeable unit that represents one metric tonne of greenhouse gas emission reductions or removals. When a carbon credit is purchased and retired for offsetting purposes, it is sometimes referred to as a carbon offset credit.

## What do they have to do with the food and drink sector?

In the food and drink sector, carbon credits play a significant role in supporting sustainability and reducing the industry's carbon footprint – particularly in relation to scoping emissions. They can be used in many ways:

**Offsetting emissions:** Companies in the food and drink sector can purchase carbon credits to offset their greenhouse gas emissions. For example, a bakery can't manage their scope 3 emissions, however, the business can purchase carbon credits to offset this.

**Supporting sustainable practices:** Carbon credits can incentivise more sustainable agricultural and manufacturing practices. For example, farmers might receive credits for adopting techniques that improve soil carbon sequestration or reduce methane emissions from livestock.

**Enhancing corporate responsibility:** By investing in carbon credits, food and drink companies can demonstrate their commitment to environmental sustainability. This can prove particularly popular with consumers who increasingly look to shop more sustainably.

Although they are a good tool to reduce emissions, some argue that carbon credits should be reserved for unavoidable emissions - residual emissions for which no feasible solution exists.

As a food and drink business, incorporating carbon credits into your Net Zero strategy can significantly enhance your environmental impact and sustainability goals. Carbon credits can offset emissions that are currently unavoidable, allowing your business to mitigate its carbon footprint while you work towards more sustainable practices.

However, to fully leverage the benefits of carbon credits and ensure your efforts are both effective and credible, it is essential to adhere to established principles and standards. Here are some key considerations:

**Quality over quantity:** Prioritise high-quality carbon offsets that are certified by reputable standards such as the Verified Carbon Standard (VCS), Gold Standard, or Climate Action Reserve. These certifications ensure that the offsets represent real, measurable, and permanent emission reductions.

**Transparency and accountability:** Maintain transparency in your carbon credit purchases and usage. Publicly disclose the types of projects you are supporting, the amount of credits purchased, and the impact these credits are having. This transparency can build trust with consumers, investors, and other stakeholders.

**Alignment with your sustainability goals:** Integrate carbon offsetting into a broader sustainability strategy that includes direct emission reductions, energy efficiency improvements, and sustainable sourcing practices. Carbon credits should complement, not replace, efforts to reduce your direct environmental impact on your path to Net Zero.

By adhering to these principles and focusing on high-quality offsets, your business can effectively utilise carbon credits as part of a robust Net Zero strategy. This approach will not only help you avoid common pitfalls and accusations of greenwashing but also contribute meaningfully to global efforts to combat climate change.

# Adaptation

## Adaptation? Wine not!

A standout example in recent years has been the expansion of wine production in southern England. With the regions temperatures now comparable to Champagne in the 70s and 80s, longer growing seasons have made it possible to cultivate grape varieties that were previously unsuitable for the UK climate. Plantings have increased by 74% over the past five years, with 3,928 hectares now under vine across Great Britain. This rapid growth has made viticulture the fastest-growing agricultural sector in the UK.



With rising global temperatures, vineyards could become more common in the UK.

For those not partial to a glass of English bubbly, diversification of crops that can thrive in warmer conditions extends beyond the humble grape. Farmers are now cultivating crops previously deemed unsuitable for the UK like sweetcorn and sunflowers. We can even buy [tea cultivated in Angus, Fife and Perthshire!](#)

The warmer temperatures are allowing for longer growing seasons, which means farmers can potentially increase yields or grow multiple crops in a single year and with warmer winters, there may be reduced costs associated with housing livestock during winter months. However, farmers are also having to adapt to protect animals from heat stress during hotter summers and respond to unpredictable rainfall patterns, with the installation of efficient irrigation systems and water storage solutions key to managing both drought and flood risks.

In response to our changing climate, the sector is increasingly using climate-smart technologies, such as precision agriculture tools and even AI to help access information about new pests spreading to warmer climates. This enables our producers to optimise resource use and adapt to changing conditions.

### **Adapting to an uncertain future**

While these adaptations present opportunities, it's important to note that our food and drink sector still faces significant challenges from climate change. The industry needs to continue developing resilience strategies to address potential negative impacts, such as increased flooding, water scarcity, and extreme weather events that could disrupt production and supply chain.

To significantly curb our nation's carbon emissions, we must lead by example, implementing sustainable practices across our supply chains and operations. This includes adopting renewable energy, reducing waste, and promoting regenerative agriculture practices that sequester carbon and enhance biodiversity. These efforts are crucial as we adapt to a changing climate.

By embracing greener practices and adapting where possible, Scottish food and drink businesses can not only cut costs but also attract new eco-conscious customers and establish themselves as employers of choice for those prioritising environmental responsibility amidst ongoing climate challenges.

## Why navigating Net Zero should matter to you

The food and drink industry in Scotland has a pivotal role to play in our country's transition to Net Zero and ultimately protecting our planet for future generations.

As a significant contributor to the nation's carbon emissions and we must lead by example in reducing them by implementing sustainable practices throughout our supply chains and operations. This includes adopting renewable energy sources, reducing waste, and promoting regenerative agriculture practices that sequester carbon and enhance biodiversity.

Ultimately, by going greener, businesses can cut costs, win new eco-conscious customers, and become employers of choice for those seeking to work for environmentally responsible companies.

We call upon all stakeholders in the Scottish food and drink industry to join the Net Zero Commitment programme – set up to provide leadership and guidance to food and drink businesses, wherever they are on their journey, to accelerate them towards Net Zero.

Together, we can pave the way for a just transition, ensuring that no one is left behind as we collectively address the existential threat of climate change.

Find out more about navigating the path to Net Zero in the Scottish food and drink sector: <https://tinyurl.com/FDFNetZero>

**For support or guidance on your business's journey to Net Zero, please get in touch on:**

[netzero@fdfscotland.org](mailto:netzero@fdfscotland.org)



# NET ZERO COMMITMENT

Delivered by  
**Scotland Food & Drink  
Partnership**

