NET ZERO COMMITMENT

# NAVIGATING NET ZERO

MAKING SENSE OF SUSTAINABILITY JARGON

NET ZERO COMMITMENT

**Navigating Net Zero** | Scotland Food & Drink Partnership

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# WHY NET ZERO MATTERS

**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, 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.

From carbon footprints to greenhouse gas emissions, the language surrounding Net Zero can sometimes feel like a maze of unfamiliar jargon, preventing meaningful engagement and slowing progress.

However, 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 Net Zero decisions for your business.

Embracing this terminology empowers us to communicate effectively, using a shared vocabulary and to measure progress more accurately.

This guide has been created to make sense of the science and help businesses make informed decisions about reducing emissions, adapting to future risks, and ultimately to mitigate mitigating global warming. By going greener, businesses can cut costs, win new eco-conscious customers, increase supply chain resilience, and become employers of choice for those seeking to work for environmentally responsible companies. More information can be found in our Customer Expectation Guide.

We call upon all stakeholders in the Scottish food and drink industry to engage with the Net Zero 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 navigate the challenges and opportunities of addressing climate change.



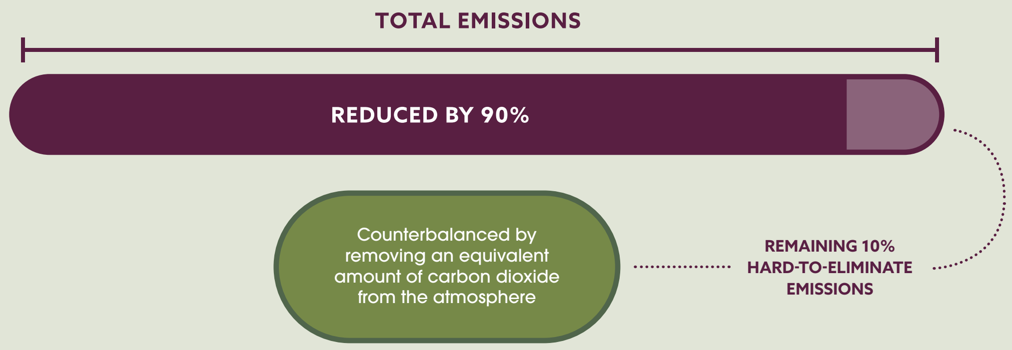
# WHAT IS NET ZERO

Net Zero - 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.

In line with the Science Based Targets Initiative (SBTi), once emissions are reduced by 90%, 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.

Aligning net-zero targets with climate science gives confidence that your targets are credible, consistent with limiting global temperature rise to 1.5°C, and avoids **green washing** (making false or misleading statements about the environmental benefits of a product or practice – see Green Claims Code). This means committing to achieving net zero by 2045. Targets and progress must be transparent, independently verified, reviewed and updated regularly.



# AGREEMENTS, COPS, PROTOCOLS, AND POLICIES

Over the past few decades, a series of major international agreements have shaped how the world addresses climate change, each building on lessons from the last.

### MONTREAL PROTOCOL (1987)

Though not part of the UN climate change process as it pre-dates UNFCCC and COPs, the Montreal Protocol is one of the most successful environmental treaties in history. It was designed to phase out ozone-depleting substances (ODS) like chlorofluorocarbons (CFCs), which were widely used in refrigeration, aerosols and insulation.

### UN FRAMEWORK CONVENTION ON CLIMATE CHANGE ADOPTED (1992)

Countries adopted the UN Framework Convention on Climate Change (UNFCCC) to coordinate global action on climate change. The Conference of the Parties (COP) is its decision-making body, bringing together all signatory countries each year since 1995 to review progress and negotiate agreements.

### KYOTO PROTOCOL (1997)

The Kyoto Protocol was the first treaty adopted under the UNFCCC at COP3 to legally bind developed countries to reduce greenhouse gas emissions. It set reduction targets for 37 industrialised nations, aiming to cut emissions to 5% below 1990 levels during 2008–2012.

### PARIS AGREEMENT (2015)

Adopted at COP21 in Paris, the Paris Agreement marked a major shift. It brought all countries into a common framework to limit global temperature rise to well below 2 °C, ideally 1.5 °C. It required countries to set nationally determined contributions (NDCs) to reduce greenhouse gas emissions and strengthen their efforts over time.

### CLIMATE CHANGE (SCOTLAND) ACT 2019

Amendment to the Climate Change (Scotland) Act 2009 to make provision setting targets for the reduction of greenhouse gases emissions and to make provision about advice, plans and reports in relation to those targets, with the objective of Scotland contributing appropriately to the world's efforts to deliver on the Paris Agreement.

### GLASGOW CLIMATE PACT (2021)

At COP26 in Glasgow, through the Glasgow Climate Pact countries agreed to revisit and strengthen their NDCs by the end of 2022 to align with the Paris Agreement's temperature goals as well as taking accelerated action on climate adaptation finance.



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.

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

The climate crisis is a human-caused phenomenon, driven by our collective actions that have led to an unprecedented increase in greenhouse gas emissions. Society will suffer from the impacts of climate change.

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.

Reaching net-zero emissions is crucial for limiting global temperature rise and mitigating the worst impacts of climate change. For the food and drink sector, extreme weather events such as flooding, heat, and drought contribute to livestock losses, lower crop yields, and supply chain disruption that results in economic loss. This is why Scotland Food & Drink Partnership's Net Zero Commitment Programme is supporting businesses on this journey.

# SCIENCE-BASED TARGETS INITIATIVE (SBTI)

**One key aspect of the Scotland Food and Drink Partnership's Net Zero Commitment is helping companies set science-based targets (SBTs) to reduce their greenhouse gas emissions.**

Founded in 2015, the Science Based Targets initiative helps organisations set emission reduction pathways grounded in climate science and aligned with the Paris Agreement and is widely recognised as the global benchmark for corporate climate ambition.

As of 2025, over 12,000 companies have committed to setting SBTs and around 9,500 have had them validated by SBTi.

The initiative offers general cross-sector tools and sector-specific guidance, including the Forest, Land and Agriculture (FLAG) standard, which applies mandatory for companies in food production or associated sectors or where land-related emissions account for more than 20% of total emissions.

By setting science-based targets, these companies clearly signal commitment to credible climate action aligned to the Paris Agreement's 1.5 °C pathway and embed emissions reductions into their core business planning.



# EMISSIONS EXPLAINED

**Here we outline some key terms:**

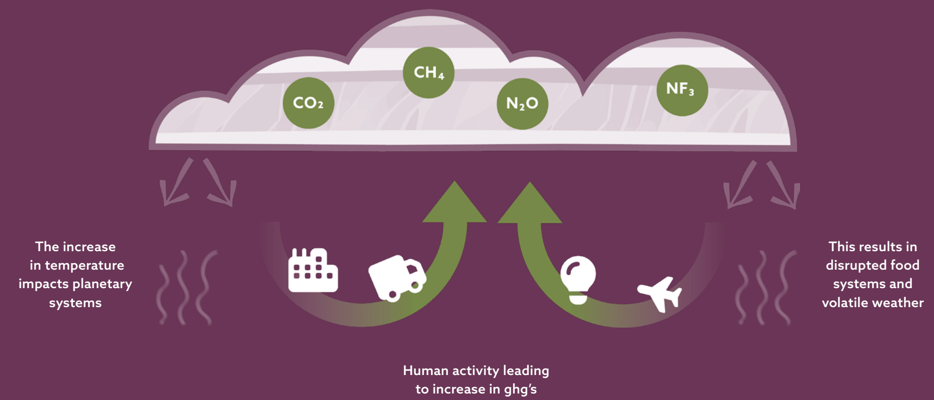
## THE GREENHOUSE EFFECT

The greenhouse effect refers to the warming of the Earth's atmosphere caused by the increasing concentration of Greenhouse Gases (GHGs).

These gases trap heat in the atmosphere by absorbing radiation emitted by the Earth, which slows down the loss of heat back to space and maintaining a warmer temperature, acting as insulation that warms the planet.

Human activities which release GHGs have accelerated significantly since the industrial revolution. These extra GHGs are warming the climate to levels that are unprecedented in human history having an impact on planetary systems.

This contributes to more volatile weather, affecting food production and supply chains.



# GREENHOUSE GASES

**The most significant GHGs are:**

| GREENHOUSE GAS | FOOD SYSTEM SOURCES | ATMOSPHERIC LIFETIME (YEARS) | GLOBAL WARMING POTENTIAL (GWP-100) |
|---|---|---|---|
| **Carbon Dioxide** (CO2) | Fossil fuel combustion, biomass burning, land-use change, industrial processes e.g. cement production. | ~100 (variable) | 1 |
| **Methane** (CH4) | Livestock digestion, manure management, rice cultivation, landfill (food waste) decomposition. | ~12 | 28 |
| **Nitrous Oxide** (N2O) | Fertiliser use, manure management, sewage treatment, fossil fuel combustion, industrial processes. | ~109 | 273 |
| **F-gases -** Hydro fluorocarbons (HFCs) Nitrogen trifluoride ($NF_3$) Sulphur hexafluoride ($SF_6$) Perfluorocarbons (PFCs) | Industrial uses and cold chain logistics. (e.g., refrigeration, air conditioning, foam blowing, semiconductor manufacturing). | 15–1,000+ (varies by compound) | 124–24,300 (varies by compound) |



# THE 'BIG THREE'

Of the greenhouse gases, carbon dioxide (CO2), methane (CH4), and nitrous oxide (N2O) have the biggest impact on climate change, each playing a major role in warming our planet.

## CARBON DIOXIDE (CO2)

A naturally occurring gas, CO2 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).

In less than 200 years, human activities have almost doubled the atmosphere's CO2 content from 280 ppm to 420 ppm and rising.

## METHANE ($CH_4$)

A potent greenhouse gas with a global warming potential more than 80 times that of $CO_2$ over 20 years. Methane is a major component of natural gas and is released through fossil fuel extraction, livestock digestion in ruminants (enteric fermentation), manure management, rice cultivation, and landfill decomposition.

Due to its potency, cutting methane is a powerful lever for near-term climate change mitigation. Strategies such as improved grazing management, feed additives, breeding, and manure handling can significantly reduce methane emissions while maintaining productivity.

## NITROUS OXIDE ($N_2O$)

Nitrous oxide ($N_2O$) is a powerful, long-lived greenhouse gas primarily released from fertiliser use and manure management in agriculture.

Scottish food producers can reduce $N_2O$ emissions through precision nutrient management, cover cropping, and adopting regenerative soil practices. Important emission contributions also come from sewage treatment, fossil fuel combustion, and chemical industrial processes.

# CARBON DIOXIDE EQUIVALENT ($CO_2E$)

CO2eis the reference gas against which other GHGs are measured. This standardised metric provides a way of comparing the warming impact of different GHGs, enabling us to track and manage emissions and set reduction targets using a single reference number.

# GLOBAL WARMING POTENTIAL (GWP)

**GWP100** is a scientific metric used to compare how much heat a specific GHG traps in the atmosphere over 100 years, relative to carbon dioxide ($CO_2$), which has a GWP of 1.

**For example, over 100 years:**

- Methane has a GWP of 27–30, meaning 1 tonne of $CH_4$ has the equivalent GWP of 27–30 tonnes of $CO_2$.
- Nitrous Oxide (N2O) has a GWP 273 times that of CO2 for a 100-year timescale.

GWP values help businesses calculate emissions in $CO_2e$ terms, making it easier to compare gases and prioritise action.

In agriculture, focusing on high-GWP gases like $N_2O$ and $CH_4$ can yield significant climate benefits.

**GWP*** is an alternative metric designed to better reflect methane's short atmospheric lifetime.

While not used in official reporting bodies like SBTi or Intergovernmental Panel on Climate Change (IPCC), it offers a useful perspective for understanding methane's impact in the near term.



# CARBON SINK

A carbon sink is any process, activity, or system that removes (sequesters) carbon from the atmosphere and stores it for a long period. Natural sinks include forests, soils, oceans, and peat lands. In Scotland, peat lands are especially significant, storing an estimated 1.7 billion tonnes of carbon - around 140 times Scotland's annual emissions. However, when drained or used, they become GHG sources. While not all businesses can influence sinks directly, food and drink businesses contributing to carbon sinks can include:

### SUSTAINABLE AGRICULTURE

Regenerative agriculture to improve soil carbon sequestration.

### REFORESTATION

Agroforestry or tree planting as part of land stewardship.

### PEATLAND RESTORATION

Supporting or funding peatland restoration projects that align with national climate goals and biodiversity protection.

## GHG SOURCE

A GHG source is any activity or process that emits greenhouse gases into the atmosphere. For Scottish food and drink businesses, GHG sources can include:

- Direct emissions from burning fuel on-site (e.g. boilers, company vehicles).
- Indirect emissions from purchased electricity, steam, or refrigeration.
- Upstream and downstream emissions from farming, processing, packaging, transport, and disposal.

Identifying GHG sources is the first step toward prioritising actions like switching to renewables, improving energy efficiency, or working with suppliers to cut value chain emissions.



# TARGET SETTING TERMS

## BASE YEAR

A specific historic year against which a company's emissions are tracked over time for target-setting and performance comparison. Base year emissions must be recalculated to reflect structural or methodological changes (e.g. acquisitions, divestments, methodology updates).

## BASE YEAR EMISSIONS

The total GHG emissions associated with the selected base year, serve as the benchmark for measuring future emissions reductions.

## BASELINE

A hypothetical scenario used to estimate what GHG emissions or removals would have occurred in the absence of a specific reduction project or plan. Not to be confused with a company's base year.

## 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/revenue (e.g. grams of CO2 per £ of revenue).

## FUGITIVE EMISSIONS

Unintended or uncontrolled releases of greenhouse gases from equipment, pipelines, storage tanks, or other systems. This typically occurs through leaks, evaporation, or seepage. Fugitive emissions are common in the energy, industrial, and agricultural sectors.

## LIFE CYCLE ANALYSIS (LCA)

A systematic method for assessing the environmental impacts of a product or service throughout its entire life cycle. The life cycle begins with raw material extraction (cradle), through production and use, and ends with disposal (grave). Life Cycle Assessment (LCA) follows ISO 14040/44 standards and includes multiple impact categories such as water, land use, and toxicity, as well as GHG emissions.



## CRADLE-TO-GATE

Apartial life cycle assessment boundary that includes all emissions and environmental impacts from raw material extraction (cradle) through to the point the product leaves the manufacturer (factory gate), excluding distribution, use, and end-of-life stages.

## TERRITORIAL EMISSIONS

Refer to emissions produced within a country's borders and are used to track nationwide progress towards international and domestic targets.

## FOOTPRINT

Or consumption, emissions refer to emissions arising from all goods and services used and consumed by a country, including imported goods.

# LOCAL-BASED VS MARKET-BASED EMISSIONS

**There are two recognised approaches for reporting greenhouse gas emissions from purchased electricity under the Greenhouse Gas Protocol: location-based and market-based methods.**

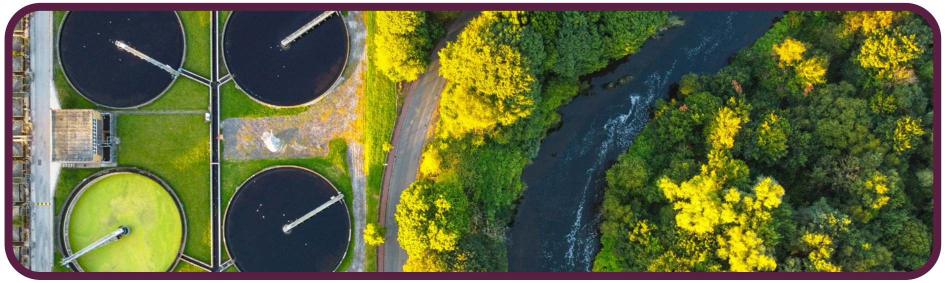
## LOCATION-BASED

Reporting estimates emissions using the average carbon intensity of the electricity grid that supplies your operations, independent of any energy contracts you hold.

## MARKET-BASED

Reporting, on the other hand, reflects the emissions associated with the specific electricity products you buy, incorporating instruments like RECs, REGOs, or other contractual agreements.

The GHG Protocol requires, or strongly recommends, that companies report both figures (dual-reporting) to provide a transparent picture of both the physical reality (location-based) and the company's purchasing impact (market-based).





## VALUE CHAIN EMISSIONS

Value chain emissions refer to indirect GHG emissions (Scope 3) that occur across a company's upstream and downstream activities, from suppliers and transport providers to customers and product end-of-life. This is defined by the GHG Protocol Corporate Accounting and Reporting Standard. These emissions are critical for a full understanding of climate impact.

## ENGAGEMENT ACROSS THE VALUE CHAIN

Achieving Net Zero in the food and drink sector requires collaboration across the entire value chain – from farm to fork and beyond. This includes suppliers, manufacturers, retailers, and consumers.

While challenging to measure, value chain emissions are essential to any credible Net Zero commitment and tackling them can also unlock cost savings, supply chain resilience, and brand value.

# SCOPE 1, 2 AND 3 EMISSIONS

**Emissions are categorised into three Scopes (1, 2 and 3). These categories help organisations identify where emissions occur across their operations and value chain. Recognising and addressing all three is essential for an effective and credible Net Zero pathway.**

## SCOPE 1 EMISSIONS

Scope 1 emissions are direct GHG emissions from sources and operations owned or controlled by the company. In the food and drink sector, this includes combustion of fuels in manufacturing facilities, boilers, equipment, or vehicles. It also includes on-site power or heat generation, and refrigerant leaks from chillers and freezers. Biological emissions from process gases, company-owned land, and wastewater treatment may also fall into Scope 1.

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 from the generation of purchased electricity, steam, heating, or cooling consumed by the company. These emissions occur off-site but are attributable to the company. In the food and drink industry, energy-intensive processes like refrigeration, heating, lighting, and production lines can result in significant Scope 2 emissions.

Companies calculate Scope 2 emissions using location-based grid factors or market-based data (e.g. supplier-specific emissions or green tariffs).

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 calculated via the appropriate method (location- or market-based).



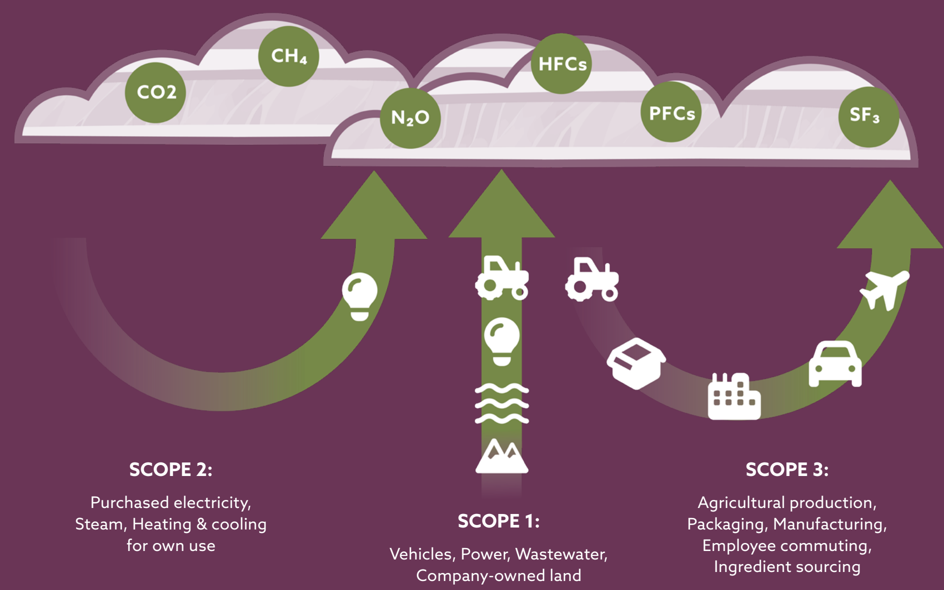
## SCOPE 3 EMISSIONS

Scope 3 emissions are all other indirect GHG emissions that occur across a company's entire value chain, both upstream (suppliers) and downstream (customers and end of life), over which the company has influence but limited direct control.

In the food and drink industry, these emissions can account for the majority of a company's footprint, including those from agricultural production, ingredient sourcing, packaging, manufacturing, logistics, employee commuting, waste disposal, and end-of-life product impacts.

For example, a soft drink manufacturer must consider emissions from sugar cultivation,bottle production, supply transport, retail refrigeration, and consumer packaging disposal.

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



# RENEWABLE ENERGY

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.

Renewable energy refers to sources that are naturally replenished, such as solar, wind, hydro, geothermal, and biomass. These sources are generally considered lower-emission alternatives to fossil fuels. However, the sustainability and environmental impact of each renewable source, particularly biomass and large-scale hydro, can vary depending on how they are produced and managed.

## WIND POWER

Scotland has some of the best wind power resources in Europe, both onshore and offshore. It is a cornerstone of Scotland's renewable energy strategy and a major contributor to the progress towards net-zero emissions. 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 provide opportunities for hydroelectric power generation. Both large-scale and small-scale hydro projects have been developed across the country –helping power the nation.
There are concerns about its environmental impacts, such as disruption to freshwater habitats and fish migration. For example, small-scale hydropower developments on the River Tay have raised issues regarding effects on Atlantic salmon populations. Scotland's Water Framework Directive and Scottish Environment Protection Agency (SEPA) guidelines aim to balance renewable energy growth with protecting aquatic ecosystems and biodiversity.

## TIDAL AND WAVE POWER

Tidal energy in Scotland has moved beyond purely experimental stages but remains in early commercial stages. Scotland's coastline and strong tidal currents offer strong potential for tidal and wave energy technologies, which are seeing increasing investment. With ongoing expansion and policy support, targeted power purchasing or community-level tidal-sourced arrangements may offer more direct access.

## SOLAR POWER

While Scotland might not seem the obvious choice for solar power compared with other regions, it is modest but growing steadily and plays a small but important role in the renewable energy mix. Solar photovoltaic (PV) is well-suited for rooftops, small commercial systems, and complementing wind in a balanced renewable mix.

While natural conditions limit large-scale expansion, solar remains an important tool for decarbonisation, resilience, and community energy, especially when paired with storage and smart demand.

### SOLAR THERMAL

Solar thermal systems turn the sun's energy into heat using roof mounted collectors that warm a circulating fluid. This heated fluid passes through a heat exchanger to transfer its heat to the water stored in a tank, reducing the need for boiler use and helping lower energy costs. Unlike solar PV panels, which generate electricity, solar thermal systems convert sunlight straight into usable heat for heating applications.

### HEAT PUMPS

Heat pumps draw low temperature heat from the air, ground, or water. This heat is transferred through a heat exchanger then absorbed by refrigerant gas. The gas is then pressurised to increase the temperature significantly before passing through another heat exchanger, where it releases water ready for use in heating systems.

### WASTE HEAT RECOVERY

Waste heat recovery systems capture heat that would normally be lost from industrial processes, exhaust gases, hot air, or wastewater, and use heat exchangers to transfer that energy into a usable form. By converting this otherwise wasted heat into an additional energy source, these systems improve efficiency, lower energy costs, and reduce carbon emissions.



# BIOMASS AND BIOFUELS

## WHAT IS BIOMASS?

Biomass refers to renewable organic materials derived from plants, animals, and waste, including wood, agricultural residues, food waste, and algae.

Biomass can be burned directly for heat, converted into biogas via **Anaerobic Digestion (AD)**, or processed into biofuels like biodiesel or bioethanol. It can also be used in **Combined Heat and Power (CHP)** systems, making it a flexible energy source for food and drink businesses.

For the food and drink sector in Scotland, using biomass can support the circular economy, for example, reducing both waste and fossil fuel use.

## WHAT ARE BIOFUELS?

Biofuels are renewable fuels made from organic materials such as crops, food waste, and used cooking oil. Common types include **biodiesel** and **bioethanol**, which can be used to power vehicles or machinery.

In Scotland's food and drink sector, biofuels offer a low-carbon alternative to fossil fuels, especially for transport and logistics. They also support circular economy goals by turning waste into energy.

## 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.

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 utilisation of biomass as part of 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.

In the context of Net Zero, biomass is sometimes described as carbon-neutral, but this depends on the source of the feedstock, the scale of use, and land management practices. Biomass, such as food processing residues or agricultural by-products, can contribute to emissions reductions when used in closed-loop systems or alongside carbon capture technologies.

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# CARBON NEUTRALITY, CAPTURE, AND CREDITS

## CARBON NEUTRALITY VS NET ZERO

**Carbon neutrality refers to balancing $CO_2$ emissions with equivalent carbon dioxide removals or offsets. It is distinct from Net Zero, which requires absolute emissions cuts across all greenhouse gases.**

## CAPTURING AND STORING CARBON

Carbon capture refers to the process of capturing $CO_2$ either from point sources like fermentation or direct air capture and using or storing it to prevent its release into the atmosphere. $CO_2$ can be converted into usable products (e.g., food-grade $CO_2$, building materials) referred to as CCU (carbon capture and use). When it is stored in geological formations or underground for the long term, it becomes CCUS (carbon capture, utilisation, and storage).

Carbon sequestration refers to the broader process of **long-term** $CO_2$ storage –either through natural ecosystems (e.g. forests, peatlands) or engineered capture systems. The goal is to **permanently** remove $CO_2$ from the atmosphere.

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

# CARBON CREDITS

## WHAT ARE CARBON CREDITS?

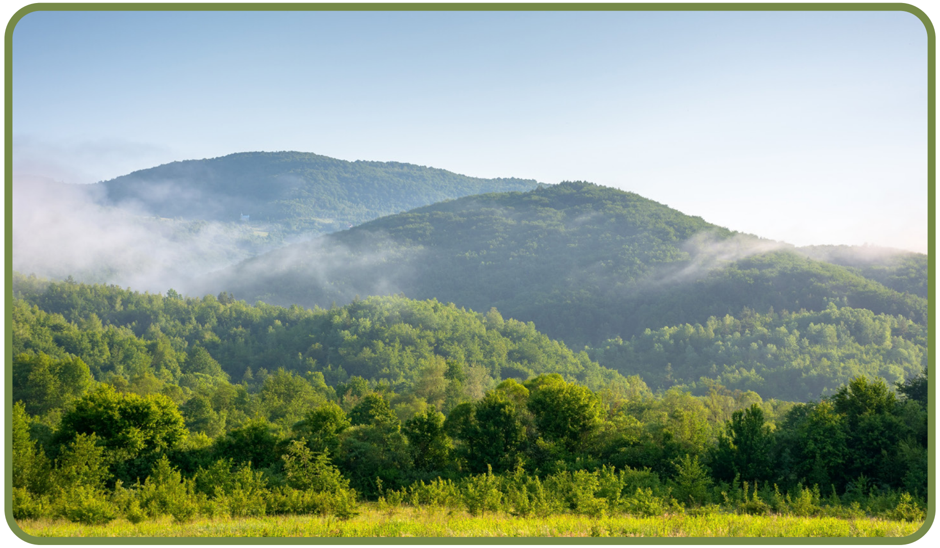
Carbon credits are a market-based mechanism representing the reduction, removal, or avoidance of $CO_2e$ emissions, which can be bought or sold.

Used carefully, credits can offset hard-to-reduce emissions and support nature-based solutions. However, they must be **high-quality, transparent**, and as a **last resort after meaningful action** to reduce emissions has been taken. SBTi guidelines suggest a 90% reduction in emissions.

**There are two main types:**

1 **Avoidance/Reduction credits:** Prevent emissions that would have occurred (e.g. forest conservation, methane capture).

2 **Removal credits:** Actively remove carbon from the atmosphere (e.g. afforestation, direct air capture).





# CARBON CREDITS AND THE FOOD AND DRINK INDUSTRY

Food and drink businesses may face hard-to-abate emissions, particularly methane from livestock, nitrous oxide from fertiliser use, and carbon dioxide from ingredient footprints. In these cases, you could consider:

## 1. PRIORITISE EMISSIONS REDUCTIONS BEFORE TURNING TO CREDITS

- **Reduce methane at source:** through feed additives, breeding for lower-emission livestock, improved slurry management, and rotational grazing.
- **Optimise fertiliser use:** precision application and integrating legumes to cut nitrous oxide.
- **Lower ingredient footprints:** sourcing closer to home, switching to lower-carbon alternatives, and working with suppliers on regenerative practices.

**Why:** Credibility in net zero depends on showing real reductions first. Carbon credits should *never* be a substitute for tackling core emissions.

## 2. DEVELOP AN INSETTING STRATEGY WITHIN YOUR OWN SUPPLY CHAIN

- **Support farmers to adopt regenerative practices:** cover cropping, reduced tillage, agroforestry, and peatland protection.
- **Co-invest in nature-based projects:** hedgerow planting, soil carbon improvements, peatland and wetland restoration.
- **Create long-term supplier partnerships:** multiyear contracts that incentivise emissions reductions and resilience.

**Why:** Insetting keeps investment within Scotland's food system, strengthens supply chain resilience, and generates measurable (and local) Scope 3 reductions.

## 3. USE CARBON CREDITS ONLY FOR GENUINELY HARD-TO-ABATE EMISSIONS

- **Define your hard-to-abate boundary:** methane from livestock and unavoidable process emissions.
- **Choose high-quality, verified credits:** look for permanence, additionality, and robust monitoring.
- **Specify UK or Scotland-based projects:** woodland creation, peatland restoration, blue carbon.

**Why:** High-quality credits provide a transparent, defensible way to address residual emissions while supporting wider climate and biodiversity goals.



## WHAT ROLE CAN THEY PLAY IN A NET-ZERO STRATEGY?

It is important to note that under some standards, **carbon credits do not count** toward near-term Scope 1–3 targets.

Carbon credits should only be used for neutralising residual emissions once a company has already:

- Measured and verified emissions.
- Set science-aligned targets.
- Demonstrated progress on absolute reductions.

**Credits must be:**

- High-quality (additional, permanent, third-party verified, such as the Verified Carbon Standard (VCS), Gold Standard, or Climate Action Reserve).
- Transparent in use and retirement.
- Disclosed separately from progress toward internal emission targets.

Carbon credits should complement, not replace, efforts to reduce direct environmental impact on your path to Net Zero.

## WHERE CAN USING CARBON CREDITS GO WRONG?

Low-quality credits can undermine climate goals and may cause financial loss.

**Key risks include:**

- **Non-additionality:** Emissions would've been reduced anyway.
- **Reversal of nature-based solutions:** Carbon re-released due to fire, logging, or climate change.
- **Leakage:** Preventing deforestation in one place can shift emissions to another location.
- **Double counting:** Both the credit buyer and the host country or project claim the emissions reduction.
- **Social harm:** Land grabs or displacement of communities, especially in the Global South.
- **Greenwashing:** Erosion of public trust and reputational damage arising from over-reliance and poorly designed credits.

# 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

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. It's about building resilience to the climate impacts we can no longer avoid. For food and drink businesses, it's a critical part of a net-zero strategy, helping secure operations, supply chains, and long-term viability in a climate-disrupted world.

Net zero reduces the cause (emissions), but adaptation manages the consequences already locked in by past and present emissions. It reduces existing and future harm and provides environmental, economic, commercial, and social co-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

Anthropogenic refers to environmental change caused or influenced by humans, either directly or indirectly. In short, man-made.

## JUST TRANSITION

A just transition is one that ensures that the costs and benefits of transitioning to a low-carbon climate-resilient economy are shared fairly, are inclusive, and equitable. This transition requires a holistic approach, encompassing technological innovations, policy reforms, and a cultural shift towards greater environmental stewardship.

The concept of a just transition recognises that while climate action is urgent,the process of decarbonisation and adaptation can have social, economic, and cultural impacts, especially on:

- Workers in carbon-intensive industries (e.g. transport, agriculture, fossil fuels).
- Communities reliant on vulnerable sectors.
- Small businesses and farmers with limited resources.
- Regions where economic activity is tied to traditional production methods.

A just transition ensures that these groups are supported, empowered, and included in the move toward sustainability.



NET ZERO COMMITMENT

## Learn more about Our Commitment:

foodanddrink.scot/helping-business/services/net-zero-and-the-environment

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The Food and Drink Federation
4th floor, Gordon Lamb House Gordon,
3 Jackson's Entry, Edinburgh, EH8 8P
Tel: 020 7836 2460

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