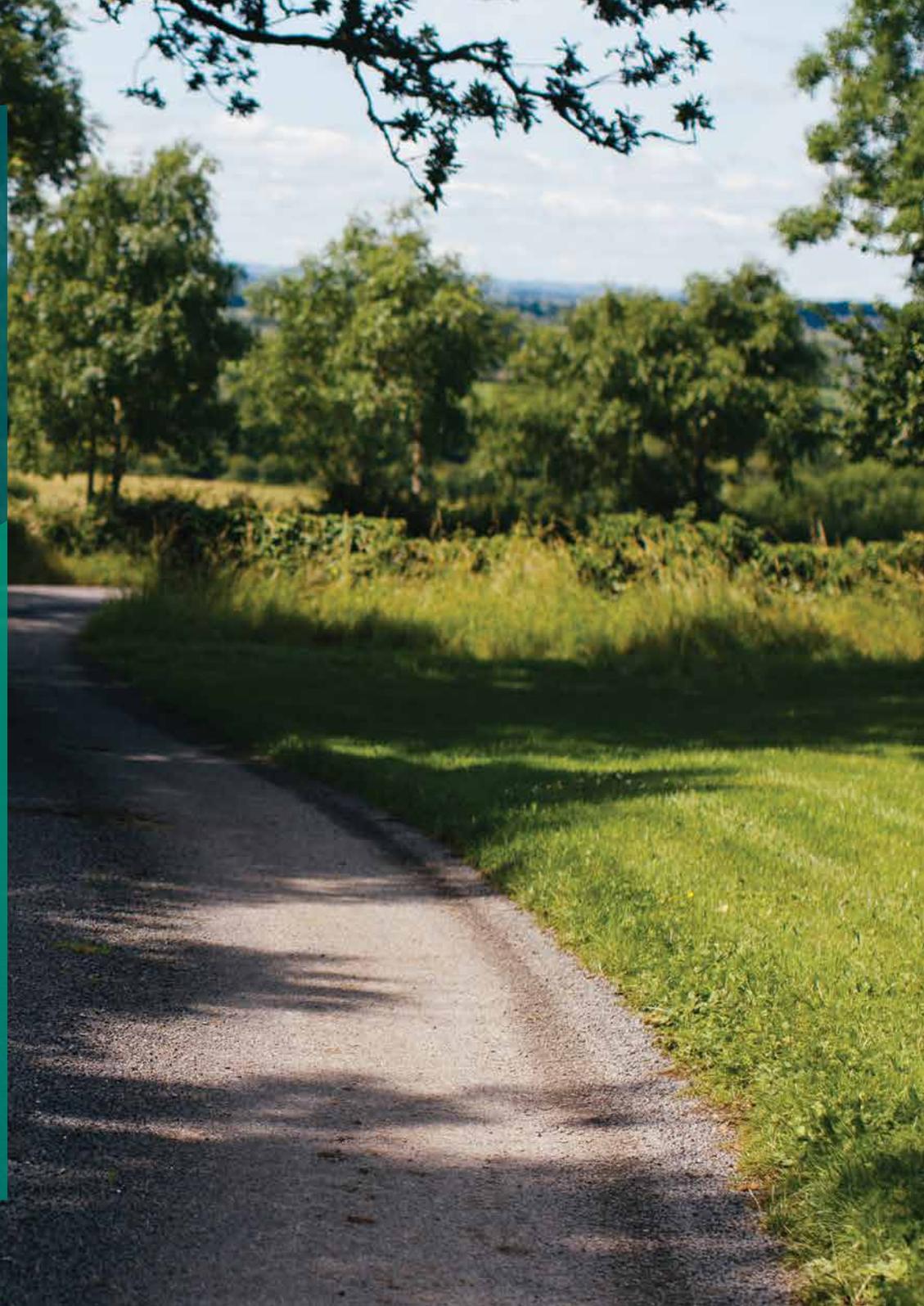


Origin Green Guidance

Pathways to Net Zero

March 2021

BORD BIA
IRISH FOOD BOARD



Contents

Executive Summary	3	4 Set your Emissions Targets & KPIs	19
1 Introduction	4	4.1 Types of Targets	19
1.1 Urgency of the Challenge	5	4.2 Senior Management Buy-in: Presenting the Business Case	19
1.2 Policy	6	5 Plan your Initiatives	21
1.3 Benefits of Decarbonisation	6	5.1 Scopes 1&2	22
1.4 Navigating the Journey	7	5.2 Scope 3	23
2 Get to Grips with Carbon Footprinting	8	6 Origin Green Emissions Target	25
2.1 Unit of Measurement	9	6.1 Emission Target Setting Process	26
2.2 Standards and Scopes	9	6.2.1 Target & Initiatives Table	27
3 Emissions Management Hierarchy	11	6.2.2 Target Data Table	28
3.1 Measure: Know your Carbon Footprint Number	12	6.2.3 Target Progress Summary Table	29
3.1.1 Principles of Reporting	13	Glossary of Terms	30
3.1.2 Organisational Boundaries	13	References	33
3.1.3 Origin Green Carbon Calculator	14	External Emissions Programmes & Pledges	34
3.1.4 Estimating Scope 3 Emissions	14		
3.1.5 Data Quality	14		
3.2 Reduce: Eliminate, Optimise & Influence	15		
3.2.1 Scopes 1&2: Under Your Control	15		
3.2.2 Scope 3: Influence Your Value Chain	15		
3.3 Compensate: Carbon Insetting & Offsetting	16		
3.4 Communicating Benefits: Avoided Emissions	17		



Click on listing/page number to go to the relevant page.

You can return to this page by clicking the link at the bottom of each page.

Executive Summary

Climate change presents multifaceted challenges for the global food and drink sector. In turn global food and drink supply chains will face disruption resulting in increased food commodity volatility and greater food insecurity. This has led to many global food and drink buyers requesting their suppliers to develop robust emissions reduction targets.

Therefore, it is increasingly important for Origin Green members to establish ambitious emissions targets to demonstrate to customers that they are committed to reducing emissions.

From 2022, Origin Green Tier 1 and Tier 2 companies are required to establish their carbon emission targets in line with the guidance provided in this document. The expectation will be to go beyond reducing energy-related emissions and include a more comprehensive assessment of their entire carbon footprint including value chain emissions.

This document provides guidance for Origin Green members to begin their decarbonisation journey towards net zero emissions. It provides clarity on target setting and a completed example for an Origin Green Plan or Annual Review submission.

1 Introduction

Origin Green member companies are required to set ambitious emissions targets to slow climate change, align with governmental policy and meet customer requirements.

1 Introduction

Origin Green is the world's only national food and drink sustainability programme driving sustainability across the entire supply chain. At the company level over 300 food and drink companies across Ireland are verified members of Origin Green, representing over 90% of food and drink exports.

Member companies commit to setting ambitious and measurable sustainability targets within their 5 year sustainability plan. These plans are monitored annually and independently verified by international specialists Mabbett. To date, companies have set over 2,400 sustainability targets, reaffirming the industry commitment to continuous improvement.

This document provides guidance for Origin Green members to reduce emissions and ultimately decarbonise their own operations and supply chains.

It aims to assist food and beverage businesses navigate the jargon and integrate credible and ambitious emissions targets within their Origin Green sustainability plans and annual reviews.

Until recently, emissions reduction was optional for Origin Green members. However, with the introduction of the Origin Green credit system, Tier 1 and Tier 2 companies are required to establish emissions targets from the 2021 reporting year onwards, i.e. by the May 31st 2022 submission deadline. Tier 1 and 2 companies are expected to go beyond reducing their energy-related emissions and include a more comprehensive assessment of their entire carbon footprint including value chain emissions. Tier 3-5 companies, are required to set energy reduction targets, which has the added benefit of reducing the GHG emissions as a result of reduced electricity generation.

1.1 Urgency of the Challenge

The Paris Agreement in 2015 set targets to limit global warming to well-below 2°C above pre-industrial levels and pursue efforts to limit warming to 1.5°C. The UN environment programme's (UNEP) Emissions Gap Report 2020 says that, despite a dip in greenhouse gas (GHG) emissions from the COVID-19 economic slowdown, the world is still heading for a catastrophic temperature rise above 3°C this century – far beyond the goals of the Paris Agreement. Collective ambition must increase more than fivefold over current levels to deliver the cuts needed over the next decade for the 1.5°C goal.¹

Broadly speaking, halving emissions by 2030 and accelerating the transition to a zero-carbon economy by 2050 at the latest, is required to avoid the catastrophic impacts of climate change. Business leaders are now shifting their focus from what is achievable to what needs to be done, and there has been increasing interest among companies wishing to reduce emissions, within their own operations and also along the length of their value chain.

Climate Change will create unprecedented supply chain volatility for the global food and drink supply chain as a result of:

- **changing rainfall patterns;**
- **rising temperatures;**
- **variability in seasonality;**
- **extreme weather events, such as heatwaves, droughts, storms, and floods.**²

¹ <https://www.unenvironment.org/emissions-gap-report-2020> (accessed 13 January 2021)

² https://ec.europa.eu/info/food-farming-fisheries/sustainability/environmental-sustainability/climate-change_en (accessed 4 March 2021)

1 Introduction

Climate change presents multifaceted challenges for the global food and drink sector. In turn global food and drink supply chains will face disruption resulting in increased food commodity volatility and greater food insecurity. This has led to many global food and drink buyers requesting their suppliers to develop robust emissions reduction targets.

Therefore, it is increasingly important for Origin Green members to establish ambitious emissions targets to demonstrate to customers that they are committed to reducing emissions.

1.2 Policy

- **International:** Ireland is a signatory to United Nations Framework Convention on Climate Change (UNFCCC) and the Kyoto Protocol.
- **Europe:** The EU has set a binding target of at least 40% reduction by 2030 compared to 1990 levels defined through Nationally Determined Contributions (NDCs). In 2020, the president of the European Commission, Ursula von der Leyen, raised the aspiration to a 55% reduction by 2030.
- **Ireland:** Ireland's Climate Policy aims to reduce emissions by 80% compared to 1990 in the power generation, built environment and transport sectors, and aim for carbon neutrality in the agriculture and land use sector. The Climate Action Plan (May 2019) presented a 30% emissions reduction target by 2030, with an emissions reduction target for 2030 of between 10-15% for the agriculture sector. The subsequent Climate Action and Low Carbon Development (Amendment) Bill 2020 and the programme for government has increased the economy wide aspiration to
 - 51% reduction in emissions by 2030; and,
 - achieve net zero emissions by 2050.
 In 2021, the government will propose economy wide carbon budgets for three five-year periods up to 2035. Each carbon budget will also propose sectoral decarbonisation targets.

1.3 Benefits of Decarbonisation

A path to net zero emissions commits us to what is required, and not just what is achievable. Net zero means the balance between the amount of GHGs produced and the amount taken out of the atmosphere. Net zero is achieved when the amount added is no more than the amount taken away. Governments and industry are moving towards absolute carbon reduction targets rather than incremental emissions reductions, with the following benefits to companies:

- ✓ Build business resilience and increase competitiveness
 - ✓ Drive innovation and transform business practices
 - ✓ Build credibility and reputation (investor confidence, buyer specifications, brand enhancement)
 - ✓ Influence and prepare for shifts in public policy
- With regard to the food and drink industry in Ireland, this means companies can develop a decarbonisation roadmap to:
- ✓ Achieve emissions reductions and cost savings in their operations
 - ✓ Engage with suppliers and producers to improve value chain sustainability
 - ✓ Enhance their brand and build customer loyalty both at home and overseas
 - ✓ Be ready for future legislative requirements that may require more intensive action on reducing emissions

1 Introduction

1.4 Navigating the Journey

The UN Climate Change mantra “Measure, Reduce, Compensate” encourages everyone in society to take action to help achieve a climate neutral world by mid-century, as enshrined in the Paris Agreement.³

To help frame the decarbonisation journey of Origin Green members’ pathways to net zero, the Emissions Management Hierarchy in figure 1 expands on the Measure, Reduce, Compensate concept, summarising the approach to navigating this journey.

This document guides companies through the journey framed around the four steps in the Origin Green Emissions Management Hierarchy.

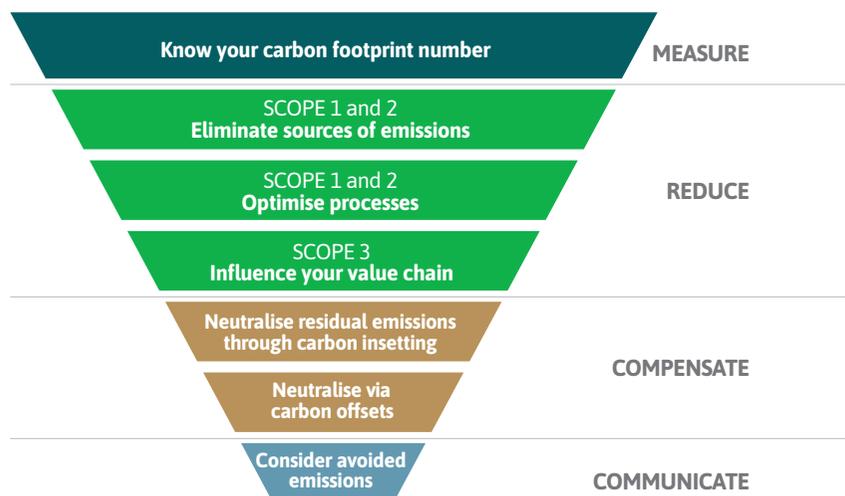


Figure 1 Emissions Management Hierarchy

³ <https://unfccc.int/climate-action/climate-neutral-now> (accessed 27 January 2021)

STEP	DESCRIPTION	SECTION
	Define the business need.	1 & 4.2
Measure	Understand the key terms.	2, 3.1 and Glossary of Terms
	Scope 1 & 2 – direct and purchased energy emissions under company control.	3.2
	Scope 3 – value chain emissions that companies can influence upstream and downstream in its supply chain.	3.2
	Set targets and KPIs for scopes 1 and 2 and perhaps scope 3 emissions too.	4
Reduce	Plan initiatives (a Carbon Reduction Plan) that keeps the company on track with the targets it has set.	5
Compensate	Reduction takes precedence. When companies are doing all they can to reduce emissions within their operations and across their value chains, consider carbon insetting and/or carbon offsetting projects.	3.3
Communicate	Integrate emissions targets, KPIs and initiatives into the Origin Green Plan or annual review.	6
	Consider the avoided emissions of any low carbon options related to company products or services.	3.4
	Consider participating in other related emissions programmes or pledges.	External Emissions Programmes & Pledges



2 Get to Grips with Carbon Footprinting

Define the the total greenhouse gas emissions created by your company.

2 Get to Grips with Carbon Footprinting

2.1 Unit of Measurement

GHGs are gases in the Earth's atmosphere that trap heat. They let sunlight pass through the atmosphere, but they prevent the heat that the sunlight brings from leaving the atmosphere.

The seven GHGs of importance as covered by the Kyoto Protocol are,

- carbon dioxide (CO₂),
- methane (CH₄),
- nitrous oxide (N₂O),
- hydrofluorocarbons (HFCs),
- perfluorocarbons (PCFs),
- sulphur hexafluoride (SF₆), and
- nitrogen trifluoride (NF₃).

A GHG inventory reviews these gases for a country, organisation, item or activity.

A carbon footprint can be calculated by multiplying these gases by their 100-year global warming potential (GWP) factors to express the total climate change impact in a single common unit: tonnes of carbon dioxide equivalent (tCO₂e).

A carbon footprint is the best estimate that we can get of the full climate change impact of something.⁴

- Carbon** = shorthand for all the different global warming GHGs.
- Footprint** = metaphor for the total impact that something has, be it an activity, an item, a lifestyle, a company, a country or even the whole world.

2.2 Standards and Scopes

The Greenhouse Gas Protocol Corporate Accounting and Reporting Standard provides requirements and guidance for companies and other organisations preparing a corporate-level GHG emissions inventory. Initially published in 2001 by the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD), this standard is widely accepted by businesses as the international norm.⁵

The Greenhouse Gas Protocol carefully defines emissions according to three scopes to ensure that two or more companies will not account for emissions in the same scope. This makes the scopes amenable for use in GHG programs so that double counting is avoided.

Scope 1 accounts for the **Direct GHG** emissions that occur from sources that are owned or controlled by the company, e.g., burning of fossil fuels (e.g., natural gas, kerosene, heavy fuel oil, etc.) in company owned or controlled vehicles and boilers, leakage of refrigerants, etc.

Scope 2 accounts for the **Indirect GHG emissions** from the generation of purchased energy consumed by the company, e.g. grid electricity, acquired steam, heat and cooling.

Scope 3 is an “catchall” reporting category that allows for the treatment of **all other indirect emissions e.g., business travel and freighting goods**.

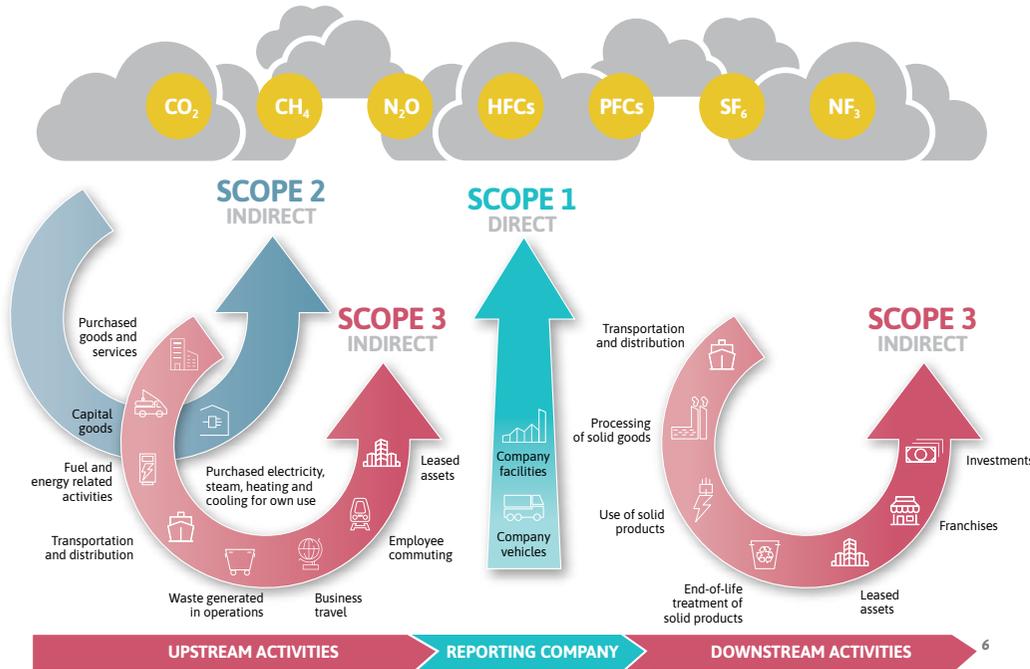
⁴ From How Bad Are Bananas? The Carbon Footprint of Everything, Mike Berners-Lee (Revised 2020 edition)

⁵ The Greenhouse Gas Protocol / A Corporate Accounting and Reporting Standard was revised March 2004. See <https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf> (accessed 2 December 2020)

2 Get to Grips with Carbon Footprinting

Outside of Scope emissions: CO₂ from burning **biomass/biofuels**, while generally considered carbon neutral, should be reported separately from scopes 1 to 3.

Scope 3 emissions occur beyond the factory gate and should be considered in both upstream activities (purchased or acquired goods and services) and downstream activities (sold goods and services). The GHG Protocol's **Corporate Value Chain (Scope 3) Accounting and Reporting Standard** further divides scope 3 emissions into 15 categories and provides **The Scope 3 Evaluator Tool** to help companies get a sense of what scope 3 emissions are significant. This exercise is called scope 3 screening.



6 Adopted from The GHG Protocol's **Corporate Value Chain (Scope 3) Accounting and Reporting Standard** (accessed 2 December 2020)

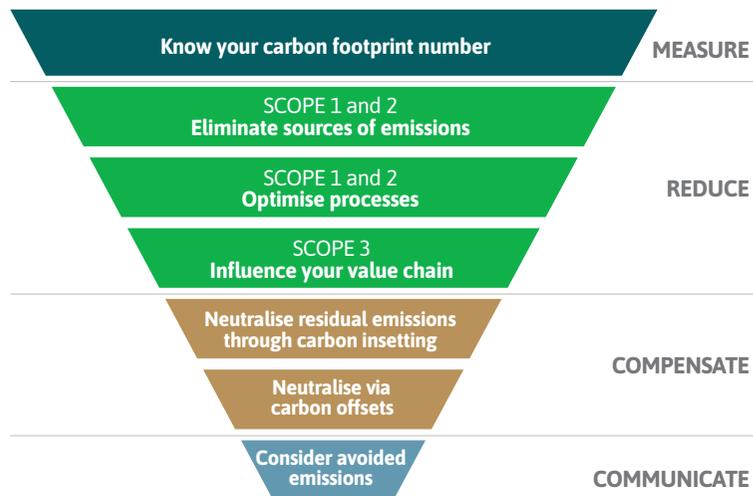
SCOPE 3 CATEGORIES (GHG PROTOCOL)	
Upstream emissions	Purchased goods and services Capital goods Fuel- and energy-related activities <i>(not included in scope 1 or scope 2)</i> Upstream transportation and distribution Waste generated in operations Business travel Employee commuting Upstream leased assets
Downstream emissions	Downstream transportation and distribution Processing of sold products Use of sold products End-of-life treatment of sold products Downstream leased assets Franchises Investments

3 Emissions Management Hierarchy

An emissions management hierarchy prioritizes the emission reduction options selected by a company to reduce their CO₂ emissions.

3 Emissions Management Hierarchy

The table in [Section 1.4](#) suggests that companies should first define the business need for a pathway to net zero, before embarking on the steps in the Origin Green emissions management hierarchy below (refer to [Section 4.2](#) in presenting the business case to senior management). Companies should articulate why they wish to pursue ambitious targets and consider what resources might be required before embarking on the following four steps.



3.1 Measure: Know your Carbon Footprint Number

What gets measured, gets managed.

Companies must get a handle on their scope 1, 2 and 3 emissions before they can understand where to effectively reduce emissions. The good news is that the maths is easy. Emissions can be quantified by direct measurement or by calculation.:

Direct measurement: $GHG = \text{Emissions Data} \times GWP$

Calculation: $GHG = \text{Activity Data} \times \text{Emission Factor} \times GWP$, or
 $= \text{Activity Data} \times GHG \text{ Conversion Factor}$

An example of measuring emissions is using combustion analysers to measure the exhaust concentrations from a combustion engine in parts per million (ppm) or grams per second (g/sec); whereas another example of calculating emissions from the same engine is by using such data as the tailpipe emissions, fuel combusted or km driven. Carbon footprints are normally done by calculation, but there may be some instances where emissions data measurements are available, and these may also be used.

Worked example to illustrate both methods to work out emissions:



Direct measurement example:

an onboard tailpipe emissions analyser measured the average CO₂ emissions for a particular vehicle to be 4.1 g/sec over a 20 min journey. The emissions measurement results in the following carbon footprint:

- Emissions data: $4.1 \text{ g/sec} \times (20 \times 60 \text{ secs}) = 4,920 \text{ gCO}_2$
- $GHG = \text{Emissions Data} \times GWP = 4.92 \text{ kgCO}_2 \times 1$

= 4.92 kgCO₂e



Calculation example:

the same vehicle covered 30km over the 20 minutes it travelled. The GHG conversion factor for a vehicle of this type is 0.14208 kgCO₂e/km

- $GHG = \text{Activity Data} \times \text{Emission Factor} \times GWP$
 $= 30 \text{ km} \times 0.14208 \text{ kgCO}_2 \text{e/km}$

= 4.26 kgCO₂e

(note that the presence of 'e' for equivalent in CO₂e means that the Global Warming Potential is already included within the Emission Factor)

3 Emissions Management Hierarchy

Life cycle emission factors may be available for particular food ingredients which include upstream and downstream emissions. Companies should ask their suppliers if any Life Cycle Assessments (LCAs) (also known as cradle-to-grave or cradle-to-factory-gate assessments) have been completed. If such assessments have been published, they may be available as Environmental Product Declarations (EPDs).

Teagasc and Bord Bia complete separate cradle-to-farm-gate assessments for milk and beef in Ireland, and national averages are available for both of these ingredients (see [References](#) for more detail).

3.1.1 Principles of Reporting

The TRACC mnemonic⁷ is useful to remember the principles of good GHG gas reporting:

T RANSPARENCY - Address all relevant issues in a factual and coherent manner, based on a clear audit trail. Disclose any relevant assumptions and make appropriate references to the accounting and calculation methodologies and data sources used.

R ELEVANCE - Ensure the GHG inventory appropriately reflects the GHG emissions of the company and serves the decision-making needs of users, both internal and external to the company.

A CCURACY - Ensure that the quantification of GHG emissions is systematically neither over nor under actual emissions, as far as can be judged, and that uncertainties are reduced as far as practicable. Achieve sufficient accuracy to enable users to make decisions with reasonable assurance as to the integrity of the reported information.

C OMPLETENESS - Account for and report on all GHG emission sources and activities within the chosen inventory boundary. Disclose and justify any specific exclusions.

C ONSISTENCY - Use consistent methodologies to allow for meaningful comparisons of emissions over time. Transparently document any changes to the data, inventory boundary, methods, or any other relevant factors in the time series.

C ONSERVATIVE - if in doubt, use the more onerous result.

Some large companies may choose to obtain assurance to provide a level of confidence that the inventory conforms to these principles. Assurance can be 1st or 3rd party, and while optional, can prove valuable for reporting companies and other stakeholders when making decisions using the inventory results.

3.1.2 Organisational Boundaries

There are two approaches to defining the boundaries of a company, known as consolidation approaches. These approaches may be of use to larger companies wishing to account for subsidiaries or entities under joint ownership:

- 1 Control approach: the company accounts for all GHG emissions from facilities over which it has financial or operational control.
- 2 Equity share approach: the company accounts for its portion of GHG emissions from respective facilities.

In some cases, a company may account for land use activity, which may create emissions or remove GHGs from the atmosphere. The latter is known as GHG removals.

⁷ Paraphrased from [GHG Protocol](#), A Corporate Accounting and Reporting Standard (Revised Edition), p7

3 Emissions Management Hierarchy

3.1.3 Origin Green Carbon Calculator

To help Origin Green members with their carbon footprint, Bord Bia has developed a simple to use carbon calculator that should cover most of the activities relevant to food and beverage companies in Ireland. The Origin Green carbon calculator includes most scope 1 and 2 activities and some scope 3 activities.

If companies have activities which are not included in the Origin Green carbon calculator, they should discuss their requirements with their Origin Green mentor in the first instance.

3.1.4 Estimating Scope 3 Emissions

Estimating scope 3 emissions is more complex. An initial estimate, called scope 3 screening, may help narrow the focus on significant activities. When considering what activities to include in a scope 3 emissions assessment, it is recommended that companies consider the following criteria:

- **Size of emissions resulting from particular activities**
- **Influence over which the company may have to realise emissions reductions**
- **Risk exposure to the company, e.g., financial, regulatory, supply chain, reputational, etc**
- **Stakeholder concerns**
- **Outsourced activities previously performed in-house or by the company's competitors**
- **Expenditure or ability of an activity to generate revenue**
- **Other criteria as determined significant by a particular sector or relevant guidance document**

The GHG Protocol's Corporate Value Chain (Scope 3) Accounting and Reporting Standard suggests performing a Pareto analysis on supplier

expenditure to determine a company's significant scope 3 emissions, e.g., estimate emissions based on 80% of the company's supplier expenditure, and include any individual suppliers that individually are more than 1% of spend within the remaining 20%.

The GHG Protocol has an easy to use scope 3 Evaluator, which simplifies the data collection process by selecting the topmost categories by expenditure. This may be of use to Tier 1 and 2 companies involved with international emissions reporting programmes.

3.1.5 Data Quality

Companies should aim for accurate and consistent data, bearing in mind that it is better to be roughly right than exactly wrong, i.e., do not omit relevant sources of emissions simply because accurate activity data or emissions factors are not available.

There are two types of data:

- 1 **Primary Data:** Data from specific activities within a company's value chain. Some examples follow:
 - kWh of electricity consumed at a manufacturing facility
 - Kilometres flown by staff on business travel
 - Raw material suppliers may be able to provide Environmental Product Declarations (EPDs) which give GHG emission factors for their ingredients
- 2 **Secondary Data:** Data that is not from specific activities within a company's value chain, e.g., industry average, estimated distances. Sometimes other forms of proxy data are needed to fill in gaps.

3 Emissions Management Hierarchy

3.2 Reduce: Eliminate, Optimise & Influence

To reduce their carbon footprints to an absolute minimum, companies must:

- ✓ Become resource efficient first and eliminate wastage, and then
 - move to low carbon alternatives where possible (utilities and ingredients);
- ✓ optimise all other areas of their operational emissions; and,
- ✓ influence their suppliers to do the same.

3.2.1 Scopes 1 & 2: Under Your Control

Scope 1 direct emissions under a company's control may include the burning of fossil fuels (thermal and transport requirements), the use of refrigerants, and possibly land use change emissions and removals. Although the company is not directly responsible for how energy is generated under scope 2 indirect emissions (purchased electricity, heat, compressed air or steam), the company can exercise a degree of control over the amount of energy that is consumed. The focus for Origin Green members should therefore be to reduce scope 1 & 2 emissions as far as possible, and broadly consider scope 3 emissions separately.

For electricity use (scope 2) in Ireland, there is generally a hierarchy of credibility to reduce emissions as follows:

- ✓ Energy efficiency first **avoids** emissions, e.g., LED lighting reduces electricity demand.
- ✓ **On-site renewables** reduce grid emissions, e.g., solar PV or wind turbines.
- ✓ **Power Purchase Agreements** (PPAs) are long-term electricity supply agreements between two parties, usually between a power producer and a customer. PPAs help to fund wind or solar power by providing a guaranteed market or income to the project but are **NOT** a carbon

offset. They provide a way for large electricity consumers to help reduce investment costs associated with planning or operating a renewable energy plant or where there is not sufficient physical space to provide on-site renewables.

- ✓ **Green tariff:** some suppliers claim 100% renewable electricity by purchasing Guarantees of Origin (GO) which guarantees that one MWh of electricity has been produced from renewable energy sources. Electricity suppliers buy GOs often from countries outside of Ireland.

It is important to note that the Sustainable Energy Authority of Ireland (SEAI) do not count the green tariff option as an emission saving, as including GOs would mean accounting for significant proportion of renewable energy not generated within the Republic of Ireland.

3.2.2 Scope 3: Influence Your Value Chain

Reducing scope 3 emissions means working with the company's suppliers to reduce emissions throughout their value chain. For the food and beverage industry, often these scope 3 emissions will be far greater than scope 1 and 2 emissions, perhaps in excess of 90% of the total carbon footprint.

The emissions embodied in the ingredients that companies buy (*Category 1 Purchased goods and services*) will often be the most significant. Upstream and downstream transportation and distribution may be significant too, especially if involving refrigeration (*Categories 4 and 9*). Every company is different, however, and to work out areas of significant scope 3 emissions, companies should consider all 15 categories outlined in [Section 2.2](#) above.

As the food and beverage industry has such a complex supply chain, sometimes with thousands of suppliers or farmers involved, this can be a challenging exercise. The first step is to engage with suppliers.

3 Emissions Management Hierarchy

Origin Green members should review their supplier table within section 1 of their Origin Green Plan or their Origin Green Supplier Sustainability Questionnaire and liaise with their suppliers to learn about their emission reduction strategies and/or targets.

The origin of raw materials procured (Section 1.8 of the Origin Green sustainability plan) will give some insight into scope 3 transport and distribution emissions. It should be possible to make a good estimate of upstream transportation emissions (Category 4) by understanding the country of origin and the mode of transport (e.g., air, shipping and/or road freight with or without refrigeration); and also downstream transportation emissions by considering the quantity and destination of a company's outbound goods (Category 9). The Origin Green carbon calculator provides guidance on calculating tonne kilometres used in upstream and downstream transportation.

Land use change (e.g., deforestation), if present in a company's supply chain, will have a multiplier effect on emissions in that additional emissions may arise from soil disturbance (e.g., oxidation of peat soils results in emissions of CO₂) and some more obvious practices such as slash and burn of the overlying vegetation. See references at the end of this document for further information.

3.3 Compensate: Carbon Insetting & Offsetting

There will most likely be residual emissions which companies struggle to eliminate or further reduce, especially regarding scope 3 value chain emissions. To achieve net zero emissions in the long term, these companies may balance or compensate for these residual emissions. To balance these residual emissions, companies voluntarily undertake either carbon insetting or offsetting projects.

- Carbon insetting:** is the practice of investing in offsetting projects within a company's supply chain or sector, e.g., a dairy processor might choose to invest in carbon reduction of the Irish farms supplying raw milk such as by improving the energy efficiency of milking parlours, or by changing the management practices to optimise the methane emissions of a particular herd (the output of the Origin Green Carbon Navigator could assist farmers in this respect).
- Carbon offsetting:** is investing in a project elsewhere and likely in an unrelated sector, e.g., a dairy processor might choose to invest in carbon offsets from a project promoting energy efficient cookstoves in Uganda that reduce the requirement for firewood in that area. These carbon offsets would be verified to a particular standard.

Origin Green places higher precedence on carbon insetting in the emissions management hierarchy as a means of prompting Origin Green member companies to help their suppliers decarbonise the food and beverage value chain. This is in line with Government's aim to achieve carbon neutrality in the agriculture and land use sector.

If investing in carbon offsets, it is advised that member companies check offset projects against the following principles:⁸

- ✓ **Additional** – If the project would have happened anyway in the absence of a market for offset credits, then this is not additional.
- ✓ **Conservative** – Independently verified to avoid over-estimation of emissions reduction or removal.
- ✓ **Permanent** – Can be problematic particularly with forestry, e.g., forest fires, pests, windthrow, etc.



Important Note:

Carbon offsetting related initiatives alone are not satisfactory as an emissions target. These initiatives are acceptable for inclusion as part of a broad emissions reduction strategy but energy efficiency and carbon reduction is the priority.

Carbon insetting would, however, count towards scope 3 emissions reduction.

⁸ Integrating salient principles from the carbon offset guide (<https://www.offsetguide.org/>) & ICROA (<https://www.icroa.org/The-ICROA-Code-of-Best-Practice>) (accessed 13 January 2021)

3 Emissions Management Hierarchy

- ✓ **Unique** – Exclusive claim to credits by means of a registry which clearly records projects and issuance of offsets.
- ✓ **Avoid social & environmental harm** – We always need to be mindful of burden shifting, that is, creating a knock-on social or environmental impact as a result of chasing net zero emissions, e.g., converting the habitat of an endangered species of plant or animal for the sake of planting trees.

As there is currently no domestic voluntary carbon market in Ireland, it may not be possible to invest in carbon offsets or insets that meet the above criteria and are based in Ireland. The principles remain a good acid test for companies wishing to invest in initiatives within their value chain.

3.4 Communicating Benefits: Avoided Emissions

It is good practice to understand and communicate the benefits of any company initiatives that have been implemented or the emission savings that would result from the use of a company product or service versus the industry norm.

Like carbon offsets, avoided emissions do not count towards the emissions reduction target of Origin Green members, but may be reported separately.



Example: A beef processor sources its beef for a particular product line from farmers involved in the Life Beef Carbon project. As part of this project, the farmers aim to reduce GHG emissions as far as possible using measures such as:

- Longer grazing season
- Lower age at first calving
- Increased calving rate
- Improved growth rate
- Improved nitrogen use efficiency
- Improved slurry management

Using the Carbon Navigator tool developed by Teagasc and Bord Bia, the life cycle emissions of the beef used has been determined as **5.45 kgCO₂e/kg** live weight (LW).

This compares against average emissions for Irish beef using the same methodology of 10.50 kgCO₂e/kg LW.



4 Set your Emissions Targets and KPIs

Companies must establish measurable and time bound emissions targets, and specify the capital investment and operational initiatives which will achieve those targets.

4 Set your Emissions Targets & KPIs

4.1 Types of Targets

There are four types of emissions targets, and separate targets can be expressed for each scope, a single target can be defined for all scopes, or a combined approach may be used. Targets should always be set to the SMART criteria, i.e., Specific, Measurable, Achievable, Relevant, Timebound.

Companies with high growth rates should select the method cautiously, and determine the best approach for both the company's business objectives and environmental integrity:

- 1 **Absolute** % reduction in GHG emissions (tCO₂e)
 - **Example:** Reduce absolute **scope 1 & 2** GHG emissions by **55% by 2030** from a **2018** base year
- 2 **Intensity**
 - a Physical intensity (tCO₂e/tonne output)
 - **Example:** Reduce **scope 1** GHG emissions per tonne output by **50% by 2030** from a **2018** base year
 - b Economic intensity (tCO₂e/€)
 - **Example:** Reduce **scope 1, 2 & 3** GHG emissions per € turnover by **30% by 2030** from a **2018** base year
- 3 **Engagement** (%)
 - **Example:** 95% suppliers by spend or weight will commit to science-based emissions targets by 2024
- 4 **Procurement** (%)
 - **Example:** Source 100% renewable energy by 2025

4.2 Senior Management Buy-in: Presenting the Business Case

Within budget constraints, companies should consider the greatest improvements that can realistically be achieved. By understanding internal barriers and opportunities as well as considering the expectations of internal stakeholders (e.g., staff, senior management, board, shareholders) and external stakeholders (e.g., customers, government, sector, NGOs), the sustainability team or lead should be able to present a convincing case for adopting an ambitious emissions reduction target.

The following checklist may help:

- ✓ **Get the right people involved from the outset,**
 - Liaise with the assigned Origin Green mentor to assist in establishing a carbon emission baseline and identifying carbon emission reduction initiatives.
 - Staff responsible for setting emission targets should partner closely with all levels of the company during the target-setting process to get buy-in, assess feasibility, and draft the carbon management plans.
 - Find internal champions within influential departments/business units or at country level, e.g., procurement, HR, operations.
 - For scope 3 targets, companies should work closely with, and support suppliers during the target-setting process to increase buy-in and enable implementation.
- ✓ **Detail the business case for investing in emission targets, see rationale outlined in [Section 1.3](#).**
- ✓ **Start small and identify emission reductions approaches that have a clear cost benefit, which senior management will support and allocate funding to.**
 - Cost benefit is different for every company. It is beneficial to know what criteria senior management use to make their decisions. See below for some examples.

4 Set your Emissions Targets & KPIs

(continued from previous page)

- Quantify and communicate environmental and financial benefits from initiatives completed to date.
- Allow the business units to ring-fence financial savings from the emissions reduction projects for investment in further emission reduction projects.
- ✓ **Communicate throughout the process – use transparency to build credibility.**
 - Anticipate the issues that commonly create push-back and formulate ready-made responses.
 - Be patient – this is a long-term process.
- ✓ **Communicate with customers to highlight emission reduction targets and achievements.**



Examples:

- A company **installed LED lighting** across its factory floor. The project cost was €10,000 and the annual energy cost **savings were measured to be €4,872** giving a verified simple payback period of 2.05 years. The senior management team has a policy where it invests in projects with a simple payback of 3 years or less, and this project met that criterion. Co-benefits included improved light quality meaning less errors in food processing and therefore less food wastage, as well as improved staff well-being from a brighter work environment.
- A beef processor got involved with the **Life Beef Carbon** project investing in technologies that the farmer on his own could not afford. One such technology was a trailing shoe for improved slurry management which cost €15,000 to install and led to a **0.9% on farm GHG reduction**. The co-benefits included an insight into how carbon insetting could potentially work, developing a more tangible relationship with the farmers, and learning more about what can be done to reduce the life cycle emissions of the beef.
- A producer of potted herbs entered into a Local Energy Supply Contract (LESC) with a company to supply its glasshouses with **100% sustainably sourced local woodchip heating**. The producer simply pays for the units of heat in kWhs used, and the project capital cost covered by the LESG company as well as monthly maintenance costs. Senior management invested in this project because it **halved the carbon footprint of the operation** with the move from heating oil to woodchip (considered carbon neutral), it also took a burden away of managing the boiler such that the producer could better focus on its area of horticultural expertise.



5 Plan your Initiatives

Detail the series of company initiatives for scopes 1 to 3 that will deliver the desired emissions reduction target.

5 Plan your initiatives

A carbon management plan is a list of initiatives that will help a company to achieve its emissions reduction target. Each initiative should have costings and estimated emissions savings against it so the senior management team can clearly see the cost of emissions abatement in €/tCO₂e. Some companies even set an internal price of carbon to help drive investment decisions.

5.1 Scopes 1 & 2

Large companies with an energy spend over €1m should consider implementing the international energy management systems ISO 50001 standard which may provide a useful framework for emissions reduction planning. If the energy spend is over €5m, the business case for ISO 50001 should be self-financing (refer to SEAI's LIEN programme in the [External Emissions Programmes & Pledges Section](#)).

ILLUSTRATIVE EXAMPLES OF SCOPE 1 & 2 EMISSIONS REDUCTION INITIATIVES	
Scope 1	<ul style="list-style-type: none"> • Replace inefficient boilers with high efficiency models • Energy awareness: reduce running hours and areas heated needlessly • Consider biofuels and biomass (moves emissions to Outside of Scope) • Local Energy Supply Contract (LESC) for bioenergy, e.g. wood chip heating for greenhouses (moves scope 1 emissions to Outside of Scope) • Heat recovery system • Electrify heat and transport (moves emissions from scope 1 to scope 2) • Change refrigerants to ones with a low global warming potential • Implement a refrigerant leakage management programme • If a company boundary includes any farm operations, follow Teagasc best practice to minimise on-farm emissions such as methane and nitrous oxide
Scope 2 <i>(Purchased energy)</i>	<ul style="list-style-type: none"> • Install LED lighting • Replace motors with Variable Speed Drives (VSDs) • Install on-site solar PV or wind turbines • Power Purchase Agreement (PPA) (Note: Carbon offsetting and 'green' renewable energy tariff are acceptable for inclusion as part of a broad emissions reduction strategy but energy efficiency and consumption reduction are the priority). • Carbon offsetting and 'green' renewable energy tariff related initiatives alone are not satisfactory as an emissions target. These initiatives are acceptable for inclusion as part of a broad emissions reduction strategy but energy efficiency and consumption reduction are the priority.

5 Plan your initiatives

5.2 Scope 3

There are various ways companies can engage with their suppliers. For example, they can pick a large swathe of its supply chain (e.g. Top 100 suppliers), and engage with them in a programme to reduce their own emissions. Another approach is for companies to identify specific actions that most of their suppliers can take and then ask those suppliers to do so, and report regularly on progress. Illustrative examples of actions to reduce scope 3 emissions follow (taken from Table 9.7 of the GHG Protocol Scope 3 standard).

UPSTREAM SCOPE 3 EMISSIONS	
1 Purchased goods and services	<ul style="list-style-type: none"> • Replace high-GHG-emitting raw materials with low-GHG-emitting raw materials • Implement low-GHG-procurement / purchasing policies • Encourage tier 1 suppliers to engage their tier 1 suppliers (i.e. the reporting company's tier 2 suppliers) and disclose these scope 3 emissions to the customer in order to propagate GHG reporting throughout the supply chain
2 Capital Goods	<ul style="list-style-type: none"> • Replace high-GHG-emitting capital goods with low-GHG-emitting capital goods
3 Fuel- and energy related activities (not included in scope 1 or scope 2)	<ul style="list-style-type: none"> • Reduce energy consumption • Change energy source (e.g., shift toward lower-emitting fuel / energy sources) • Generate energy on site using renewable sources
4 Upstream transportation and distribution	<ul style="list-style-type: none"> • Reduce distance between supplier and customer • Source materials locally if it leads to net GHG reductions • Optimise efficiency of transportation and distribution • Replace higher-emitting transportation modes (e.g., air transport) with lower-emitting transportation modes (e.g., marine transport) • Shift toward lower-emitting fuel sources

UPSTREAM SCOPE 3 EMISSIONS	
5 Waste generated in Operations	<ul style="list-style-type: none"> • Reduce quantity of waste generated in operations • Implement recycling measures that lead to net GHG reductions • Implement lower-emitting waste treatment methods
6 Business Travel	<ul style="list-style-type: none"> • Reduce the amount of business travel (e.g., encourage video conferencing and web-based meetings as an alternative to in-person meetings) • Encourage more efficient travel • Encourage lower-emitting modes of travel (e.g., rail instead of plane)
7 Employee Commuting	<ul style="list-style-type: none"> • Reduce commuting distance (e.g., locate offices/facilities near urban centres and public transit facilities) • Create disincentives for commuting by car (e.g., parking policies) • Provide incentives for use of public transit, bicycling, carpooling, etc. • Implement teleworking/telecommuting programs • Reduce number of days worked per week (e.g., 4 days x 10 hour schedule instead of 5 days x 8 hour schedule)
8 Upstream leased assets	<ul style="list-style-type: none"> • Increase energy efficiency of operations • Shift toward lower-emitting fuel sources

5 Plan your initiatives

UPSTREAM SCOPE 3 EMISSIONS

- | | |
|---|--|
| 9 Transportation and distribution of sold products | <ul style="list-style-type: none"> • Reduce distance between supplier and customer • Optimize efficiency of transportation and distribution • Replace higher emitting transportation modes (e.g., air transport) with lower emitting transportation modes (e.g., marine transport) • Shift toward lower-emitting fuel sources |
| 10 Processing of sold products | <ul style="list-style-type: none"> • Improve efficiency of processing • Redesign products to reduce processing required • Use lower-GHG energy sources |
| 11 Use of sold products | <ul style="list-style-type: none"> • Develop new low- or zero-emitting products • Increase the energy efficiency of energy-consuming goods or eliminate the need for energy use • Shift away from products that contain or emit GHGs • Reduce the quantity of GHGs contained/released by products • Decrease the use-phase GHG intensity of the reporting company's entire product portfolio • Change the user instructions to promote efficient use of products |

UPSTREAM SCOPE 3 EMISSIONS

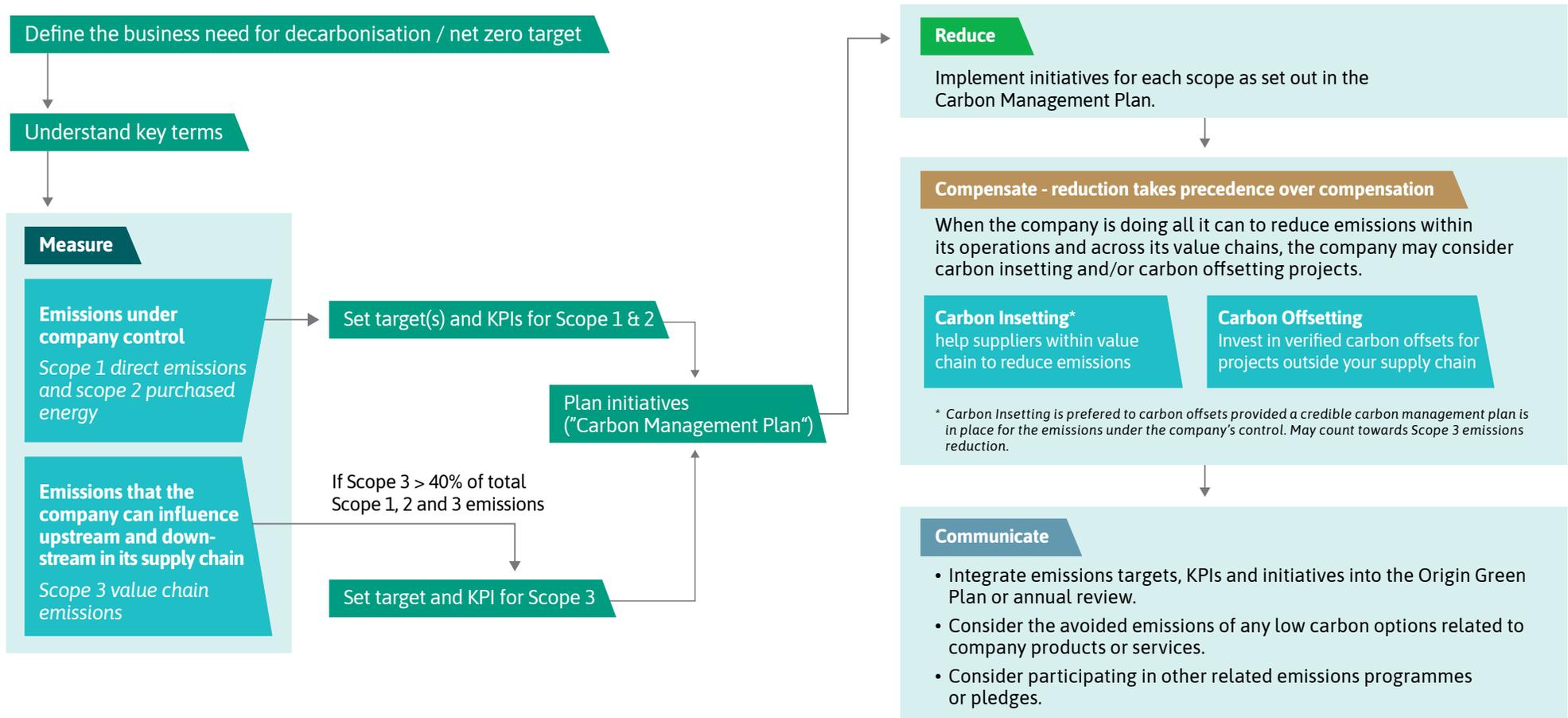
- | | |
|--|--|
| 12 End-of-life treatment of sold products | <ul style="list-style-type: none"> • Make products recyclable if it leads to net GHG reductions • Implement product packaging measures that lead to net GHG reductions (e.g., decrease amount of packaging in sold products, develop new GHG-saving packaging materials, etc.) • Implement recycling measures that lead to net GHG reductions |
| 13 Downstream based assets | <ul style="list-style-type: none"> • Increase energy efficiency of operations • Shift toward lower-emitting fuel sources |
| 14 Franchises | <ul style="list-style-type: none"> • Increase energy efficiency of operations (e.g., set efficiency standards) • Shift toward lower-emitting fuel sources |
| 15 Investments | <ul style="list-style-type: none"> • Invest in lower-emitting investments, technologies, and projects |

6 Origin Green Emissions Target

Process to establishing an Origin Green emissions target within an Origin Green Plan.

6 Origin Green Emissions Target

6.1 Emission Target Setting Process



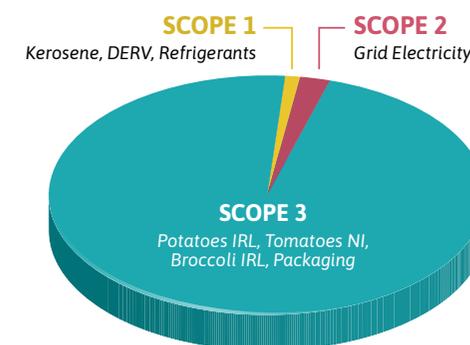
6 Origin Green Emissions Target

6.2 Completed Example of Emissions Section in an Origin Green Sustainability Plan

The following is an example of how an emissions section might look like in an Origin Green sustainability plan.

6.2.1 Target & Initiatives Table

Targets	<p>a Reduce absolute scope 1 & 2 GHG emissions by 50% by 2030 from a 2018 base year (<i>interim target of 21% reduction by 2023, i.e. at least 4.2% reduction per annum</i>)</p> <p>b Reduce scope 3 GHG emissions intensity in tCO₂e/tonne output by 14% by 2023, with no growth in absolute scope 3 emissions (i.e. at least 2.8% improvement per annum)</p>
Target Background	<p>Garcullen Fresh Foods provides fresh vegetables some of which are grown on the family farm in Garcullen, and some are imported. They also provide convenience foods such as packets of stir-fry vegetables. The company has calculated its scope 1 & 2 emissions and estimated its scope 3 emissions. Wanting to align emissions reduction targets with the Science-Based Targets initiative, separate targets for scopes 1+2 and for scope 3 were set. We are considering how to achieve carbon removals on the farm with better land use management and use of fertilisers, and we aspire to achieve a long term target of net zero emissions by 2045. We have assumed a growth rate of product output of 3% compounded per year.</p>



SCOPE	INITIATIVE	RESPONSIBILITY	MILESTONE DATE	VERIFICATION		STATUS UPDATE
				METRIC	METHOD	
1	Refrigerant leak management programme and move to lowest GWP refrigerants possible	John Smith	June 2019	tCO ₂ e	M&V	<input checked="" type="checkbox"/> Complete <input type="checkbox"/> Incomplete <input type="checkbox"/> In progress Changed to CO ₂ refrigerant
1	Switch 3 vans to EV	Fleet Manager	Dec 2019	tCO ₂ e	M&V	<input type="checkbox"/> Complete <input type="checkbox"/> Incomplete <input checked="" type="checkbox"/> In progress Two vans procured, awaiting third
2	Install 300kW solar PV roof on factory roof	Joe Delaney	June 2010	tCO ₂ e	M&V	<input type="checkbox"/> Complete <input type="checkbox"/> Incomplete <input checked="" type="checkbox"/> In progress Two vans procured, awaiting third
3	Assist 40 dairy farmers in upgrading milking parlours with Variable Speed Drive Technology to vacuum pumps & milk pumps	Kevin O'Hara	Dec 2020	tCO ₂ e	M&V	<input type="checkbox"/> Complete <input type="checkbox"/> Incomplete <input checked="" type="checkbox"/> In progress 23 farmers have upgraded milking parlours

Initiatives table (emissions)

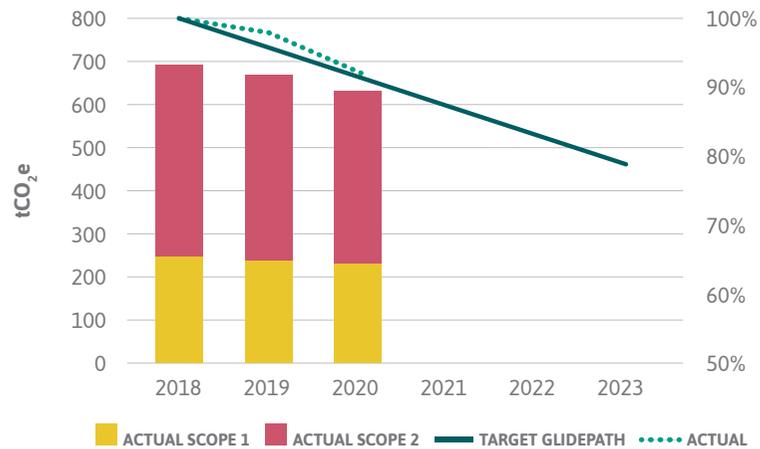
6 Origin Green Emissions Target

6.2.2 Target Data Table

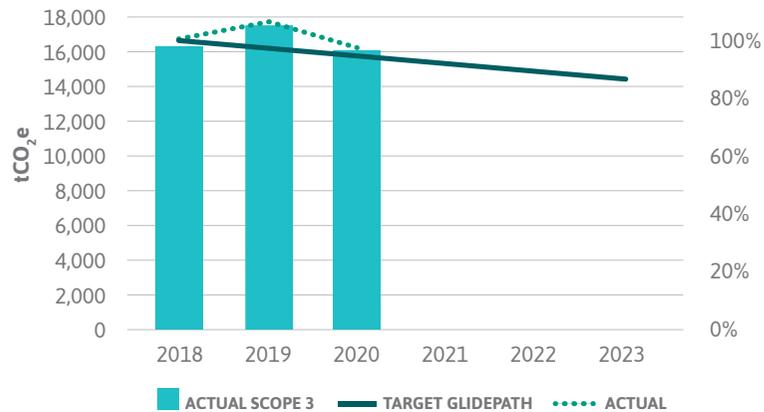
	UNITS	BASE YEAR 2018	YEAR 1 2019	YEAR 2 2020	YEAR 3 2021	YEAR 4 2022	YEAR 5 2023
Projected Values							
Scope 1 emissions	tCO ₂ e	253.4	242.7	232.1	221.4	210.8	200.2
Scope 2 emissions	tCO ₂ e	436.6	418.3	399.9	381.6	363.3	344.9
Scope 1 + 2 emissions	tCO₂e	690.0	661.0	632.0	603.0	574.1	545.1
% reduction	%	0.0%	4.2%	8.4%	12.6%	16.8%	21.0%
Product output	tonnes	42,000	43,260	44,558	45,895	47,271	48,690
Scope 3 emissions	tCO ₂ e	16,152.2	16,171.0	16,176.3	16,167.4	16,143.4	16,103.4
Scope 3 emissions intensity	kgCO₂e/tonne	384.6	373.8	363.0	352.3	341.5	330.7
% improvement	%	0.0%	2.8%	5.6%	8.4%	11.2%	14.0%
Actual Values							
Scope 1 emissions	tCO ₂ e	253	250	233			
Scope 2 emissions	tCO ₂ e	437	420	400			
Scope 1 + 2 emissions	tCO₂e	690	670	633			
% reduction scope 1 + 2	%	0.0%	2.9%	8.3%			
% unit deviation from projected target per year	%	0.0%	-1.3%	-0.1%			
Product output	tonnes	42,000	43,000	43,500			
Scope 3 emissions	tCO ₂ e	16,152	17,564	15,897			
% reduction scope 3	%	0.0%	-8.7%	1.6%			
Scope 3 emissions intensity	tCO₂e/tonne	384.6	408.5	365.4			
% change per unit from baseline	%	0.0%	-6.2%	5.0%			
% unit deviation from projected target per year	%	0.0%	-9.0%	-0.6%			
Additional Data							
Outside of scope emissions (biogenic)	tCO ₂ e	2,564	2,756	2,346			
Avoided emissions (verified)	tCO ₂ e	-	26	30			
Carbon offsets purchased	tCO ₂ e	-	-	-			

6 Origin Green Emissions Target

Scope 1 and 2 Absolute Reduction



Scope 3 Emissions Intensity Indicator



6.2.3 Target Progress Summary Table

2019 Progress	Some progress on reducing scope 1 & 2 emissions (2.9% reduction from baseline) with move to low GWP refrigerants and an LED lighting project, but behind target. Scope 3 emissions rose 8.7% or disimproved by 6.2% on an emissions intensity per tonne output basis against the 2018 baseline as we had to import more tomatoes from overseas glasshouses.
2020 Progress	Despite the impacts of Covid-19 we made good progress on scope 1 & 2 emissions (8.3% reduction from baseline) by limiting the application of fertilisers and further LED installations, meaning we are nearly on track with our scope 1 & 2 emissions reduction target. We managed to source more fruit & veg locally and used less air freight for overseas imports, such that our scope 3 emissions reduced by 1.6% or 5.0% on an emissions intensity per tonne output basis. Slightly behind target but we hope to improve in 2021.
2021 Progress	Click / Tap here to provide an overall summary of progress against this target when reporting on Year 3.
2022 Progress	Click / Tap here to provide an overall summary of progress against this target when reporting on Year 4.
2023 Progress	Click / Tap here to provide an overall summary of progress against this target when reporting on Year 5.

Glossary of Terms

Activity data

Data on the magnitude of a human activity resulting in emissions or removals taking place during a given period of time. Data on energy use, metal production, land areas, management systems, lime and fertiliser use and waste arisings are examples of activity data.

Anthropogenic emissions

Man-made emissions.

Carbon

A chemical element with the symbol C. In a colloquial context, carbon emissions, carbon dioxide emissions and greenhouse gas emissions are often used interchangeably.

Carbon budget

The amount of carbon dioxide emissions permitted over a period of time to keep within a certain temperature threshold.⁹

Carbon footprint

A carbon footprint is the best estimate that we can get of the full climate change impact of something.¹⁰

- **Carbon** - shorthand for all the different global warming greenhouse gases.
- **Footprint** - metaphor for the total impact that something has, be it an activity, an item, a lifestyle, a company, a country or even the whole world.

Carbon insetting

Carbon offsetting within a company's value chain.

Carbon offsetting

The process of investing in carbon offsets to neutralise a portion or all of a company's emissions. A carbon offset is a reduction in emissions of CO₂ or GHGs made by a project in order to compensate for or to offset an emission made by the reporting company. There are broadly two types of carbon offsets:

- **Compensation measures** - **avoid or reduce** emissions outside a company's value chain.
- **Neutralisation measures** - **remove** carbon from the atmosphere within or beyond a company's value chain, e.g. Afforestation/reforestation (AR).

Carbon Neutral

See Net Zero terms

Climate Neutral

See Net Zero terms

Decarbonisation

The term used for the process of removing or reducing the carbon dioxide (CO₂) output of a country's economy or sector.

Emission factor

Also known as carbon conversion factor or GHG conversion factor. A coefficient that quantifies the emissions or removals of a gas per unit activity.

Emissions abatement

Also known as carbon abatement. Reduction of GHG emissions within a company's own operations.

Greenhouse gas (GHG)

Any gas that has the property of absorbing infrared radiation (net heat energy) emitted from Earth's surface and reradiating it back to Earth's surface, thus contributing to the greenhouse effect.

⁹ <https://carbontracker.org/carbon-budgets-where-are-we-now/> (accessed 6 January 2021)

¹⁰ From How Bad Are Bananas? The Carbon Footprint of Everything, Mike Berners-Lee (Revised 2020 edition)

Glossary of Terms

GHG Protocol

The GHG Protocol establishes comprehensive global standardised frameworks to measure and manage greenhouse gas (GHG) emissions from private and public sector operations, value chains and mitigation actions. It is a partnership between World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD).

Global Warming Potential (GWP)

Global Warming Potentials (GWP) are calculated as the ratio of the radiative forcing of one kilogramme greenhouse gas emitted to the atmosphere to that from one kilogramme CO₂ over a period of time (e.g. 100 years).

Location-Based Method (LBM)

Method to calculate scope 2 electricity emissions using the average emissions intensity of the grid; published by SEAI annually. Decarbonisation is the term used for the process of removing or reducing the CO₂ output of a country's economy.

Market-Based Method (MBM)

Method to calculate scope 2 electricity emissions reflecting the emissions intensity provided on the electricity supplier's bill, e.g. power purchasing agreements, supplier-specific emissions rates, green tariffs; typically published by the Commission for the Regulation of Utilities (CRU) in its Fuel Mix Disclosure Information Paper annually. Decarbonisation is the term used for the process of removing or reducing the CO₂ output of a country's economy.

Net Zero terms

The following terms may sound the same to the lay person, but have slightly different meanings as defined in the IPCC SR15:¹¹

- **Carbon Neutrality** - Net zero CO₂ emissions are achieved when anthropogenic CO₂ emissions are balanced globally by anthropogenic CO₂ removals over a specified period. Decarbonisation is the term used for the process of removing or reducing the CO₂ output of a country's economy.
- **Net Zero Emissions:** the point at which "anthropogenic emissions of greenhouse gases to the atmosphere are balanced by anthropogenic removals over a specified period".¹² Decarbonisation is the term used for the process of removing or reducing the CO₂ output of a country's economy.
- **Climate Neutrality:** Concept of a state in which human activities result in **no net effect on the climate system**. Achieving such a state would require balancing of residual emissions with emission (carbon dioxide) removal as well as accounting for regional or local biogeophysical effects of human activities that, for example, affect surface albedo or local climate. Decarbonisation is the term used for the process of removing or reducing the CO₂ output of a country's economy.

Science-Based Targets

Science-based targets provide companies with a clearly defined pathway to future-proof growth by specifying how much and how quickly they need to reduce their greenhouse gas emissions. Such targets are aligned with targets to limit global warming to well-below 2°C above pre-industrial levels and pursue efforts to limit warming to 1.5°C, as articulated in the Paris Agreement in 2015.

¹¹ https://www.ipcc.ch/site/assets/uploads/sites/2/2019/06/SR15_AnnexI_Glossary.pdf (accessed 4 January 2021)

¹² Where multiple greenhouse gases are involved, the quantification of net zero emissions depends on the climate metric chosen to compare emissions of different gases (such as global warming potential, global temperature change potential, and others, as well as the chosen time horizon)

Glossary of Terms

Scope 1

Direct emissions from sources that are owned or controlled by the reporting company.

Scope 2

Indirect **emissions from purchased electricity, heat or steam** that has been purchased by the reporting company.

Scope 3

All other indirect emissions from sources that are located along the reporting company's **value chain**. Decarbonisation is the term used for the process of removing or reducing the CO₂ output of a country's economy.

tCO₂e

Tonnes of carbon dioxide equivalent. A measure that allows comparison of the emissions of other greenhouse gases relative to one unit of CO₂. It is calculated by multiplying the greenhouse gas's emissions by its 100-year global warming potential.

References

GHG Protocol

<https://ghgprotocol.org/about-us>

Standards, guides and tools

available from the GHG Protocol, include:

- **GHG Protocol Corporate Standard** (WRI & WBCSD, 2004)
 - **Scope 2 Guidance**
 - **Corporate Value Chain (Scope 3) Accounting and Reporting Standard** (WRI & WBCSD, 2011)
 - **Scope 3 Calculation Guidance**
 - **The Scope 3 Evaluator Tool** (Quantis & WRI, 2017)
 - **Product Life Cycle Accounting and Reporting Standard**
-

ISO Standards

- **ISO 14064-1:2018** Greenhouse gases - Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals ([link](#) to NSAI shop)
 - **ISO 50001:2018** Energy management systems - Requirements with guidance for use ([link](#) to NSAI shop)
-

Communication Aids

- **Greenhouse Gas Equivalencies Calculator** (US EPA, March 2020)
-

External Emissions Programmes & Pledges

There are a number of external emissions programmes and pledges, which a company may wish to engage with on its net zero journey.

External Emissions Programmes & Pledges

Emissions programmes and pledges

There are a number of external emissions programmes and pledges, which a company may wish to engage with on its net zero journey. Origin Green members can participate in all or none of these. If a company joins these programmes and pledges, member companies will still need to report their carbon emission targets, initiatives and progress within the Origin Green plan. A high-level summary of some of the main programmes available are presented here so that, if a company chooses to engage with any one of them, it may better align any corporate reporting requirements with the Origin Green sustainability plan template.

Science-Based Target initiative (SBTi)

The SBTi was set up in response to increasing interest amongst companies wishing to align themselves with targets to limit global warming to well-below 2°C above pre-industrial levels and pursue efforts to limit warming to 1.5°C, as articulated in the Paris Agreement in 2015.

“Science-based targets provide companies with a clearly defined pathway to future-proof growth by specifying how much and how quickly they need to reduce their greenhouse gas emissions.”¹³

Setting a science-based target with the SBTi is a five-step process:

- 1 **COMMIT:** submit a letter establishing an intent to set a science-based target.
- 2 **DEVELOP:** work on an emissions reduction target in line with the SBTi’s criteria.
- 3 **SUBMIT:** present the target to the SBTi for official validation.
- 4 **COMMUNICATE:** announce the target and inform stakeholders.
- 5 **DISCLOSE:** report company-wide emissions and track target progress annually.

See also *Science Based Targets for Food & Beverage Industry* on page 28.

The SBTi has also launched a process to develop the first science-based global standard for corporate net zero targets, to ensure that companies’ net zero targets translate into action that is consistent with achieving a net zero world by no later than 2050. The standard is expected by November 2021.

See more details at <https://sciencebasedtargets.org/>

¹³ <https://sciencebasedtargets.org/what-is-a-science-based-target/> (accessed 6 January 2021)

External Emissions Programmes & Pledges

Science Based Targets for the Food & Beverage Industry

The following table combines salient points from the SBTi website and the **Science-based Target-Setting Manual** (v4.1, April 2020), against the Origin Green Pathways to Net Zero Steps.

Objective: to limit global warming to 1.5°C above pre-industrial levels and avoid the most catastrophic impacts of climate change, the world must halve CO₂ emissions by around 2030 and reach net zero CO₂ emissions by mid-century.

SBTI STEPS	ORIGIN GREEN PATHWAYS TO NET ZERO STEPS	SBTI REQUIREMENTS	
		LARGE ENTERPRISE (≥ 500 FTEE)	SMEs (< 500 FTEE)
1 Commit	Staff & sustainability team buy-in, senior management commitment	Sign standard commitment letter or the Business Ambition for 1.5°C commitment letter	
2 Develop target	Measure GHG emissions in accordance with GHG Protocol		
	<ul style="list-style-type: none"> Scope 1 Direct emissions Scope 2 Purchased energy emissions 	Must include >95% of scope 1 & 2 emissions in target boundary “Absolute contraction” method: <ul style="list-style-type: none"> 1.5°C scenario: at least 4.2% annual linear reduction. Well-below 2°C scenario: at least 2.5% annual linear reduction. 	<ul style="list-style-type: none"> 1.5°C option: reduce absolute scope 1 and scope 2 GHG emissions 50% by 2030 from a 2018 base year. Well-below 2°C option: reduce absolute scope 1 and scope 2 GHG emissions 30% by 2030 from a 2018 base year.
	<ul style="list-style-type: none"> Scope 3 All other value chain emissions 	Complete scope 3 screening (see GHG Protocol Scope 3 Evaluator) and, if >40% total emissions, set a scope 3 target. Does not need to be SBT but aligned with 2°C scenario; Absolute or intensity reduction targets are both permissible.	Commit to measure and reduce scope 3 emissions.
	<ul style="list-style-type: none"> Outside of Scope Bioenergy emissions 	Must report to SBTi.	
	Set targets & initiatives to reduce emissions (carbon management plan)		
3 Submit	Submit in OG Plan or Annual Report under Emissions subheading	Within 24 months of signing commitment letter, submit to SBTi for validation. USD 4950 ex VAT.	Sign SBTi letter for SMEs committing to one of the above options. USD 1000 ex VAT.
4 Communicate	Bord Bia will not publish	SBTi will publish on its website.	
5 Disclose	Report data and progress against target to Bord Bia within Annual Report	Publicly report scope 1 & 2 emissions against targets annually, e.g., via CDP, annual reports, sustainability reports and the company’s website.	

External Emissions Programmes & Pledges

Business Ambition for 1.5°C & Race to Zero

Business Ambition for 1.5°C is an urgent call to action from a global coalition of UN agencies, business and industry leaders. As of 27 November 2020, 341 companies signed the Business Ambition for 1.5°C commitment in answer to the call to be recognized in the lead up to COP 26 in November 2021.¹⁴

Race To Zero is a global campaign to rally leadership and support from businesses, cities, regions, investors for a healthy, resilient, zero carbon recovery that prevents future threats, creates decent jobs, and unlocks inclusive, sustainable growth.

Business Ambition for 1.5°C:

<https://www.unglobalcompact.org/take-action/events/climate-action-summit-2019/business-ambition>

Race to Zero:

<https://unfccc.int/climate-action/race-to-zero-campaign#eq-1>

Carbon Disclosure Project

The Carbon Disclosure Project (CDP) scores companies from A to D-, measuring the comprehensiveness of disclosure of their carbon impacts, awareness and management of environmental risks and best practices associated with environmental leadership, such as setting ambitious and meaningful targets.

Investors and large purchasing organisations (“customers”) may request environmental information from companies via CDP. Participating companies must complete a questionnaire annually and the data disclosed may be used by these stakeholders to inform decisions and

drive environmental action. Companies may choose to make their response public or non-public.

For CDP Supply Chain members, there is also a supply chain section that allows the reporting company to allocate emissions to particular customers in its downstream supply chain.

<https://www.cdp.net/en/info/about-us>

SEAI’s Large Industry Energy Network (LIEN)

SEAI’s Large Industry Energy Network (LIEN) is aimed at companies with annual energy bills of €1 million or over. Members must develop an energy management programme and action plan, set and review energy targets and report annually on energy performance. Members are also encouraged to pursue ISO 50001 certification. While energy-related emissions are captured from company submissions, only normalised energy performance results are made public on the SEAI website.¹⁵

<https://www.seai.ie/business-and-public-sector/large-business/lien/>

¹⁴ <https://www.unglobalcompact.org/take-action/events/climate-action-summit-2019/business-ambition/business-leaders-taking-action> (accessed 2 December 2020)

¹⁵ <https://www.seai.ie/business-and-public-sector/large-business/lien/results/index.xml> (accessed 2 December 2020)

External Emissions Programmes & Pledges

The Bioeconomy

The EU pathways for the transition to net-zero greenhouse gas emissions economy identifies the circular bioeconomy as strategic priorities related to industry and agriculture, forestry and marine ecosystems.¹⁶

The Irish “National Policy Statement on the Bioeconomy” identifies that an important objective of the bioeconomy is to move Ireland beyond simply a target compliance and carbon mitigation focus to integrating sustainable economic development into our economic model as we transition to a net-zero and circular economy. The Circular Bioeconomy can play an innovative role in lowering greenhouse gas emissions and through the development of carbon neutral and resilient farms and modernising industry through sustainable, circular and innovative processes.

<https://www.gov.ie/en/policy-information/e551fa-the-bioeconomy/>
(accessed 2 March 2021)

BITCI Low Carbon Pledge

The Low Carbon Pledge aims to practically demonstrate meaningful business commitment to reducing carbon emissions and acts as a catalyst for wider and more far reaching complementary initiatives and actions. The Pledge calls on businesses to work towards setting science-based emission reduction targets (i.e. what science says is necessary to limit global warming to 1.5°C) by 2024 at the latest.

As of October 2020 there were 58 signatory companies to the Business in the Community Ireland (BITCI) low carbon pledge¹⁷. BITCI has so far issued two challenges under its Low Carbon Pledge:

First challenge: Reduce scope 1 and 2 greenhouse gas emission intensity by 50% by 2030.

Second challenge: progress towards committing to set Science-Based Targets by 2024, including scope 3 emissions.

The Low Carbon Pledge:

<https://www.bitc.ie/the-leaders-group-on-sustainability/low-carbon-pledge/>

¹⁶ A Clean Planet for all - A European strategic long-term vision for a prosperous, modern, competitive and climate neutral economy. See <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52018DC0773> (accessed 2 March 2021)

¹⁷ Food & beverage and retail companies include ALDI, ABP Food Group, Britvic Ireland, Dawn Meats, Diageo Ireland, Heineken, Lidl, Marks & Spencer, Musgrave, Ornu, Sodexo, Tesco. See <https://www.bitc.ie/the-leaders-group-on-sustainability/low-carbon-pledge/> (accessed 13 January 2021)

