

PLEDGE TO NET ZERO

Guidance for GHG Accounting and Reporting (ROI)

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Overview

The following guidance has been issued to support signatories to the Pledge to Net Zero account, set targets and publicly report on greenhouse gas emissions. This is integral to set and commit to deliver a greenhouse gas target in line with a 1.5°C climate change scenario and publicly report greenhouse gas emissions and progress against targets each year.

The guidance will address:

- Scope 1: Direct GHG emissions that occur from sources that are owned and/or controlled by the signatory e.g. gas burnt on site, pool vehicles, HFC and CFCs in company real estate.
- Scope 2: Indirect GHG emissions from the generation of purchased electricity consumed by the company.
- Scope 3: All other significant indirect GHG emissions that occur as a consequence of the signatory's activities, but that are from sources not owned or controlled by the company (e.g. business travel and commuting).

Accounting

There are generally two pieces of information required in order to calculate each aspect of organisation's scopes 1, 2 and 3 GHG emissions. These include:

1. Activity Data

- This could include the amount of electricity consumed (kWh) by office locations; or the distance flown (in km) for business travel.
- How this data is sourced depends upon the activity. For example, the amount of gas used in heating buildings (kWh) can often be sourced from the monthly bill provided by the utility company.

2. Emissions Factors

- In Ireland, emissions factors should be sourced from the SEAI. <https://www.seai.ie/data-and-insights/seai-statistics/conversion-factors/>
- In UK, emissions factors should be sourced from the UK Government Department for Business, Energy & Industrial Strategy (BEIS) 'Greenhouse Gas reporting: conversion factors 2021' Report or the most recent guidance.
- These can be selected for the units of the activity data identified in step 1 (e.g. kg of CO₂e per kWh of electricity or kg of CO₂e per litre of diesel)

Both activity data and emissions factors can then be used to calculate the carbon footprint. The activity data will need to be multiplied by the relevant emission factor to give the carbon footprint of that activity in kg of CO₂e. This may be converted in tonnes of CO₂e if required.

$$\text{Activity data (e.g. kWh)} \times \text{Emissions Factor (kg of CO}_2\text{e per kWh)} = \text{kg of CO}_2\text{e}$$

Because office buildings are often significant sources of scope 1 emissions within the environmental services sector, a worked example of this is shown below.

Worked Example: Boiler Emission

- Required Activity data:
 - 1) Type of fuel used: **natural gas**
 - 2) Quantity of fuel used at each facility: 145,000 kWh
- Required Emissions factor: 204.7 g CO₂/kWh (SEAI conversion factors).
 $145,000 \times 204.7 = 29,681,500 \text{ g CO}_2\text{e} = 29,681 \text{ kg CO}_2\text{e}$

Scope 2 Guidance

There are two distinct methods for calculating scope 2 emissions, a location based or a market based approach and these are described below. **Only one of these approaches should be used for calculating baseline emissions, reporting and tracking performance.** For more information on the differences between location based approach and market based approach, please refer to the [GHG Protocol website](#)

1. Location based approach

- Reflects the average emissions intensity of grids on which energy consumption occurs
- This uses grid-average emission factors. In Ireland, this would be the national grid emission factor, which is available from SEAI. <https://www.seai.ie/data-and-insights/seai-statistics/conversion-factors/>
- (In the UK, this would be the national grid emissions factor, which is available from BEIS)
- When using the location based approach emissions can generally only be reduced through reducing activity data

2. Market based approach

- Reflects the emissions from the specific electricity sources and/or products that the signatory may have purchased
- For example, a contractual agreement with the energy provider, who would be able to provide the emissions factor specific for that product (normally as part of your annual 'fuel mix' statement).
- The market based approach on the other hand can be reduced through sourcing lower emissions energy, and reducing activity data.
- In cases where more specific emission factors cannot be collected, then a residual mix emission factor should be used. The latest figures are provided below in table 1, but full and revised reports are available on the AIB website linked below.

Table 1: Residual mix emissions factors

Year	Residual Mix emission factor (GB)	Residual Mix emission factor (ROI)
2020	316 gCO ₂ / kWh (p13 Figure 4)	446 gCO ₂ / kWh
2019	348 gCO ₂ / kWh (p13 Figure 4)	495 gCO ₂ / kWh
2018	381 gCO ₂ / kWh (p13 Figure 5)	634 gCO ₂ / kWh
2017	367 gCO ₂ / kWh (p13 Figure 5)	641 gCO ₂ / kWh
2016	391 gCO ₂ / kWh (p13 Figure 5)	761 gCO ₂ / kWh

Notes on Scope 2:

- If exact data is not available for the entire year, average energy or fuel consumption per month can be used to estimate consumption.
- Emissions should be summed across different sources of emissions and different facilities in order to obtain a total scope 1 and 2 footprint.

To calculate scope 1 and 2 emissions for UK locations signatories may instead of the 2 approaches detailed above, make use of existing [GHG Accounting Tools developed by the Carbon Trust](#).

There is currently no calculator tool similar to the UK's Carbon Trust available in Ireland.

GHG Accounting Tools

- In the UK, The Carbon Trust has developed a carbon footprint calculator for SMEs in accordance with GHG protocol. The tool is publically available for use. To make use of the tool organisations need only collect activity data while emissions factors will be applied automatically.
- To utilize this resource organisations will require data regarding fuel consumption of an organisations sites and vehicles, as well as energy consumption data such as electricity used at sites.

Resources on scope 2:

- In Ireland, use [SEAI Conversion Factors](#)
- In UK, use BEIS Conversion Factors [Greenhouse gas reporting: conversion factors 2021 - GOV.UK \(www.gov.uk\)](#)
- Residual mix emission factors [European Residual Mix | AIB \(aib-net.org\)](#)
- GHG Protocol Scope 2 Guidance [Guidance | Greenhouse Gas Protocol \(ghgprotocol.org\)](#)
- GHG Accounting Tools [Energy benchmark tool | The Carbon Trust](#)

Scope 3 Guidance

Defining scope 3 emissions is the most challenging scope due to the vast number of sources that it covered. This section should provide some further guidance as to how to define scope 3 for an organisation.

Which Scope 3 Categories to include within a target?

To determine which scope 3 categories are most important to quantify and include a high level screening should be undertaken to provide a rough estimate of emissions. As a guide, this screening should consider the 4 criteria shown below, the scope 3 evaluator tool described under Scope 3 accounting may be a good tool for this screening.

1. Size

- The emissions resultant from the category contribute significantly to total anticipated scope 3 emissions.

2. Influence

- The organisation has the ability to take actions to reduce the given category's emissions.

3. Risk

- Contributes to risk exposure. This could include risks related to finance, regulation, supply chain, product and customer, litigation and reputation.

4. Stakeholders

- The category is seen to be important by stakeholders. These could include customers, suppliers, employees or investors.

Pledge to Net Zero advises that the following scope 3 emissions sources shown in table 1, from organisations within the environmental services sector are the most likely to be significant.

Table 2 suggested significant scope 3 emission sources

GHG Category	Emission type	Examples
1	Purchased Goods and Services	Office supplies and subconsultant services
3	Transmission and Distribution Loss	Fuel and energy related activities not in scope 1 and 2
5	Waste generation in operation	Office general waste
6	Business travel	
7	Employee commuting	Including homeworking is optional
15	Investments	

MD: For the consultancy it is likely that employee commuting and business travel will be the major contributor but perhaps office supplies and general waste needs looking into.

Scope 3 Accounting

Signatories can calculate scope 3 emissions either by using the [GHG calculation tool](#) or independently. The accounting tool, developed by the GHG protocol, allows a rough estimate of the full scope 3 emissions to be calculated by applying emissions factors to activity data. While the scope 3 evaluator is particularly useful when carrying out a high-level screening inventory, and for calculating base year emissions, organisations are encouraged to develop more accurate approaches for high impact categories.

Guidance on both the GHG accounting tool and independent calculation methods are shown below. For more guidance regarding activity data, emissions factors and data collection please refer to the [GHG Protocol's Scope 3 Calculation Guidance](#).

Scope 3 Evaluator (GHG calculation Tool)

The [GHG Emission Calculation tool](#) developed by the greenhouse gas protocol requires the following activity data:

Business Travel:

1. Modes of transport used
2. Total spend or distance travelled for each mode of transport.

Purchased Goods and Services:

1. Products and services bought
2. Amount spent for each good or service.

Investments:

1. The type of investment made e.g. joint venture, equity investment
2. The industry sector that most closely matches the sector in which you made the investment
3. Amount spent on each investment.

Waste Generated in Operations:

1. Amount spent on waste management

Note: Employee Commuting, Homeworking and Transmission and Distribution Losses are not yet covered by the tool.

Calculating Scope 3 Emissions Independently

Below are a number of accounting methodologies which will provide a more accurate representation of your scope 3 emissions:

Business Travel and employee commuting - Fuel Based Method

Activity data: quantities of fuel (e.g. diesel, gasoline, jet fuel, biofuels).

Emissions factors: fuel emissions factor expressed in units of emissions per unit of energy consumed.

For Ireland, use [SEAI Conversion Factors](#)

For UK, relevant databases can be found in the [BEIS GHG reporting document](#).

Sum across fuel types:

$$\sum \text{Quantity of fuel consumed (Litre)} * \text{Emission factor for the fuel} \left(\frac{\text{kgCO}_2}{\text{Litre}} \right)$$

If fuel use is not readily available, the below formula helps translate fuel spend into total fuel consumed:
Fuel spend total fuel consumed:

$$\sum \frac{\text{Total fuel spend (£)}}{\text{Average fuel price} \left(\frac{\text{£}}{\text{litre}} \right)}$$

Homeworking Emissions:

Homeworking emissions consist of two parts: office equipment energy and heating energy.

General homeworking assumptions:

- Working hours per annum (WHpa) = 1920
- Working hours per month (WHpcm) = 160
- Workstation energy = 140W per desk
- Lighting = 10W per desk
- Incremental heating consumption per HWFTE per heating month = 800kWh
- Percentage of colleagues moving to homeworking which would result in incremental heating energy = 66.7%

a) Office equipment energy:

$$\text{Workstation kWh} = 140W \times \text{HWFTE} * \frac{\text{WHpa}}{1000}$$

$$\text{Lighting kWh} = 10W \times \text{HWFTE} * 0.667$$

$$\text{Workstaton kWh} + \text{Lighting kWh} = \text{Total Office Energy}$$

b) Heating energy:

Total incremental gas consumption per heating month (UK)

$$800\text{kWh} \times \text{HWFTE} \times 0.667$$

Please click [here](#) to access the white paper which contains the detailed version of this accounting methodology.

Waste Generated in Operations: Waste-Type Specific Method

Activity data:

- 1) Waste produced (tonne) and type of waste generated in operations
- 2) Waste treatment method applied for each waste type.

Emissions factors: waste type specific and waste treatment specific emissions factors. A data base can be found on the IPCC website – [IPCC Guidelines for Greenhouse Gas Inventories Volume 5](#) – Waste with relevant emissions factors.

$$\sum \text{Waste (tonnes)} \times \text{Emission factor for waste type and treatment} \left(\text{kg} \frac{\text{CO}_2\text{e}}{\text{tonne}} \right)$$

Transmission and Distribution Losses: Average-Data Method

- Activity data: electricity per unit of consumption (e.g. MWh) broken down by region or country.
- Emissions factor: Country average T&D loss rate (percent). T&D loss rates have been published by the World Bank and can be found in the data bank. [Electric power transmission and distribution losses \(% of output\) | Data \(worldbank.org\)](#)
- In Ireland, SEAI Electricity emissions data includes for T&D losses (when using location based approach)

$$\sum \text{Electricity consumed (kWh)} \times \text{Electricity life cycle emission factor} \left(\text{kg} \frac{\text{CO}_2\text{e}}{\text{kWh}} \right) \times \text{TD loss rate (\%)}$$

Reporting

Signatories should report GHG for the baseline year, reporting year and all interim years. The following information should be included in a GHG emission report submitted to Pledge to Net Zero annually:

- Purpose/objective of the report
- General information about the signatory (E.g. background to the business, location(s), number of employees)
- Details of the organizational and operational boundaries (including a brief explanation of emission sources included under each scope)
- Methodology for completing the carbon footprint calculation (e.g. data collection, sources, emissions factors, adjustments for new assets etc.)
- Carbon footprints reported for each scope 1, 2 and 3 (see table below)
- Details of previous years of emissions to provide comparison
- Some detail about the steps taken and future plans to achieve targets, in order to encourage the sector as a whole to take a more proactive and collaborative approach.

Scope 3 Reporting Example Template

The below table provides an example of how a carbon footprint might be reported, this table can be used by signatories:

	Source	Baseline year (tCO ₂ e)	Reporting year (tCO ₂ e)
Scope 1	Gas, oil and biomass		
	HFC & CFC		
	Company-owned fleet		
Scope 2	Electricity (location-based)		
	Electricity (market-based)		

	Heating (if any)		
	Cooling (if any)		
Scope 3	Business travel		
	Commuting		
	Homeworking		
	Purchased Goods & Services		
	Transmission & Distribution Losses		
	Waste Generated in Operations		
	Investments		
Total	(using either market-based electricity emissions or location-based emissions)		