

Climate Action Workshop – How water efficiency can support your carbon reduction delivery plan

Public Sector Scotland
February 2025

business stream

A SCOTTISH WATER COMPANY



The Prince's
Responsible
Business Network



Key Notes: Measuring your Carbon Footprint

This session helped participants to understand the formal processes for measuring their company carbon footprints, using the internationally recognised Greenhouse Gas Protocol.

What is the problem?

The impacts of the climate crisis are continuing to escalate as the impact of unchecked greenhouse gas emissions from the turn of the Industrial Revolution play havoc with the Earth's ability to regulate its temperature and provide safe and liveable conditions.

Why is this a problem?

The climate crisis is a complex problem that affects all aspects of life on Earth. It will continue to affect lives and livelihoods across the globe due to:

- Increased incidence of extreme weather events
- Food and water insecurity
- Conflict and instability
- Impact on human health

One of the first steps all businesses must take to address the crisis, it to accurately measure their emissions. This is the first step required to understand what actions are needed to reduce these emissions.

What are greenhouse gases?

Despite often referring to carbon emissions, most are referring (somewhat) erroneously to all greenhouse gases (GHGs). Greenhouse gases trap heat within Earth's atmosphere, hence the name.

- **Carbon Dioxide** is the most abundant GHG, accounting for around 75% of all human-caused emissions. This is mostly through fossil fuel combustion but also land use change.

- **Methane** accounts for 17% but is much more potent than carbon dioxide. Sources include agriculture, leaks from oil and gas industry, and landfills.
- **Nitrous oxide** accounts for 6% and comes from chemical reactions from certain industries as well as fertilisers from agriculture.
- **F-Gases** are synthetic gases that occur from various industrial processes such as refrigeration and aluminum production. They account for less than 1% of global emissions but are extremely potent at trapping heat.

Even though non-CO2 gases are emitted in smaller proportions, they are still a problem due to their Global Warming Potential (GWP) which is their ability to trap heat in the atmosphere.

For example, Methane has GWP of 28; this means that 1kg of methane will trap 28 times more heat than CO2. F-Gases are even more severe with SF6 having a GWP of 23,500!

Why do we talk about carbon when we mean GHGs?

Carbon is often used as shorthand for all GHGs (which itself is shorthand for carbon dioxide!) This is done somewhat erroneously but occurs for a few reasons. Firstly, CO2 is the most abundant GHG and is the easiest to measure. This means it has become a benchmark for the other gases.

Because of this, when governments and organisations calculate their emissions, they convert all GHG emissions into a Carbon Dioxide Equivalent (CO2e).





How do we distinguish business emissions?

Scope 1: Direct emissions

- Emissions from sources directly owned or controlled by the business
- Examples include burning fuel in company cars or using gas boilers in offices.

Scope 2: Indirect emissions from purchased energy

- Emissions that arise from the generation of purchased energy, heat, or cooling.
- Examples include electricity or cooling used in an office building.

A useful way to distinguish between Scope 1 and 2 is to think about the Ignition Principle rather than purchased power as both are likely to involve purchasing from a third party. However, in the instance of the petrol or gas in a boiler, the company in question is responsible for the emissions directly by turning on the heat or starting the car. In the instance of electricity supply, the emissions related to the generation of that power have occurred throughout the electricity supply chain before the power socket is turned on so it falls into Scope 2.

Another nuance related to Scope 2 emissions is the difference between Location-based and Market-based reporting. You need to report both figures but should set targets using one method.

Location-based reporting reflects the emissions intensity of the UK power grid. This shows the true value of the emissions used when connecting to the grid.

Market-based reporting reflects the emissions associated with your specific electricity purchase. For example, if you purchase from a 100% renewable tariff your market-based emissions will be 0 but your location-based won't be as the UK grid is not fueled entirely by renewable energy.

Scope 3 – all other indirect emissions

- This is a broad category that covers 15 subcategories.
- They are divided into Upstream (all the activities that occurs before a product or service is sold) and Downstream (all the activities that occur after)
- These cover all the products and services that businesses purchase, employee commuting and business travel, transportation and lifecycle of sold products, as well as emissions from investments and pensions.
- It is not uncommon for a business's Scope 3 to account for up to 90% of their footprint so it is vital for businesses to measure them!

What is the process for measuring your footprint?

The GHG Protocol outlines the following process to measuring your footprint:

Set your boundaries

- Decide which facilities, operations, and activities are included in your emissions inventory. These are your organisational boundaries – think about ownership structure and subsidiaries.
- There are 3 different control approaches to take. Equity share is where an organisation accounts for GHG emissions according to their economic share in a company. Control approaches relate to financial and operational control. A company is deemed to have operational control over buildings it does not own if it is responsible for the activities onsite.

Identify emissions sources and collect data

Gather data on your activities that generate emissions. This might involve collecting utility bills (Scope 2), fuel purchase records (Scope 1), and





data on travel, waste, and purchased goods or services (Scope 3).

Find relevant emissions factors

Emissions factors are figures which can be used to convert native units into a weight of Carbon Dioxide equivalent. For example, converting the kWh on your electricity bill into a weight of CO₂e. Emissions factors for Scope 1 and Scope 2 can be found here: [Government conversion factors for company reporting of greenhouse gas emissions - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/conversion-factors-for-company-reporting-of-greenhouse-gas-emissions).

Collecting emissions factors for Scope 3 is slightly harder as not all of them are periodically released by official bodies, they require slightly more workings behind the scenes, and are sometimes contingent on suppliers providing data as well. However, here are some useful resources that can be used for some of the main Scope 3 categories:

- **Purchased goods and services:** whilst we would encourage businesses to engage with suppliers to get actual emissions data, businesses can also convert their annual spend into a rough approximation of their supplier emissions. [Emissions factors for different sectors](#) can be used if suppliers are categorised accordingly.
- **Waste generated in operations:** emissions factors for waste volumes can be found in the [UK Government emissions factor database](#) and are sorted according to waste type. Factors for waste water can be found here as well.
- **Commuting and business travel:** these are two separate categories but calculated in similar ways, the main difference being that business travel is slightly easier to collect data as you will have a discrete set of trips with data available through expenses,

whereas commuting is more dynamic. We recommend this [template survey](#) to get information on employee commuting, and the [Gov.uk factors](#) and this [methodology](#) can then be used to calculate using the relevant factors.

- **Processing, use, and end-of-life of sold products:** this is three categories and relates to the lifecycle emissions of products from manufacture all the way to the end of their usable life and disposal. All businesses that sell products should be aware of these categories. There are not readily available emissions factors because they are so product-specific, however [Ecoinvent](#) does have a database of generic factors.

Product-specific information can be found out by carrying out a Lifecycle Assessment (LCA) to determine the emissions impact of specific products over their lifetime. This [free guidance](#) is a useful starting point.

This is not an exhaustive list of all Scope 3 categories, but will hopefully provide some tips for some categories that will be relevant for a lot of businesses.

For further detailed guidance on how to measure each Scope 3 category, please use the [GHG Protocol guidance here](#).



Calculating carbon emissions from water use and disposal



Water supply

Amount of water used (m³)
x
conversion factor e.g. 0.153111 (2024)
=
Carbon emissions (kgCO₂e)



Water treatment

Amount of water disposed of via drains (m³)
x
conversion factor e.g. 0.185741 (2024)
=
Carbon emissions (kgCO₂e)

Combine both totals to calculate your total carbon emissions

Go to [gov.uk](https://www.gov.uk) and search 'conversion factors' to find the latest factors to apply.

Opportunities to drive water efficiency



Free water efficiency
tools and resources



Water efficiency
technology



Expert water
consumption
reporting



Water stewardship
programme and
accreditation



Water efficiency
awareness
sessions



Water efficiency
funding



Carbon reporting
(water impact)



Customer
advocacy

Intelligent Water Management (IWM)



Desktop review



Quarterly reports



Benchmarking



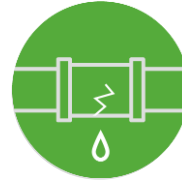
High consumption
alerts and
monitoring



Tailored action plan



Water efficiency
advice and
recommendations



Network resilience
planning



Support to achieve
environmental
accreditation

Water Efficiency Fund

Providing funding to deliver water efficiency projects

- £100,000 annual fund - public sector organisations in Scotland
- Independent judging panel
- Applications increasing year-on-year
- £1,000s of savings delivered



“We’re really pleased to have a solution in place that not only mitigates against future flooding issues but helps us to do our bit in saving water and reducing costs. Thank you, Business Stream.

Lindsey Jackson, Energy Technicia | Moray Council

“This innovative solution has helped us to deliver water efficiencies, support laboratory sustainability, and reduce costs. It was fantastic to receive the funding through Business Stream’s Water Efficiency Fund, as well as support from them to install our new refrigeration units.

Chris Larkins, Environment & Energy Manager | Heriot-Watt University

“Dundee and Angus College were delighted to have secured funding from Business Stream’s Water Efficiency Fund to install waterless urinals in our Kingsway and Gardyne campuses. Reducing water consumption is a key objective within our Climate Emergency Action Plan and so the installation of the waterless urinals enabled us to reduce our water consumption by an impressive 8,100m³/year.

Billy Grace, Head of Estates | Dundee and Angus College

Water Stewardship Programme

Key outcomes:

- Learn best international practices in corporate water stewardship.
- Access to 1-to-1 mentoring support and advice from specialists.
- Technical skills in water mapping, conservation and planning.
- Learn from the experience of peers in other facilities.
- Develop a baseline action plan for continuous improvement.



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“We’re delighted to be participating in the Water Stewardship programme. In addition to this programme, we took part in the initial pilot for one of our sites and it’s been brilliant to see the impact it’s had in increasing our awareness and approach around water management, helping us to identify savings and support our wider environmental goals.

Liz Payne,
Head of Environment, Greencore