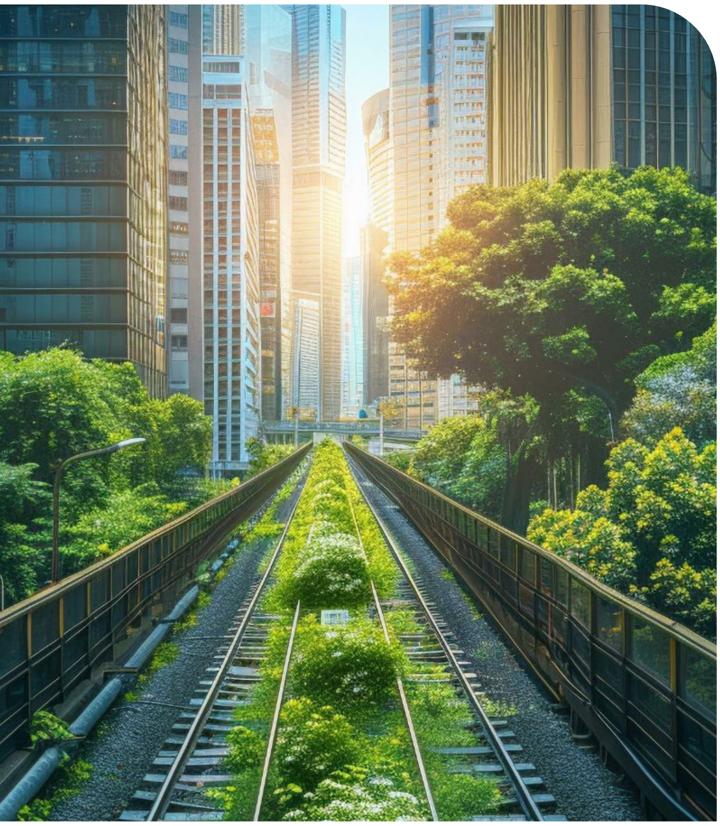
osapiens
for sustainable growth

OSAPIENS GUIDE

How to Master **Scope Emissions Reporting**

A five-step guide to measure emissions with confidence

Table of Contents



01.

Your Competitive Advantage:
Scope 1, 2 and 3 Reporting as a Strategic Business Driver

Managing a Corporate Carbon Footprint is not just about meeting regulatory requirements. It can turn into a strategic lever for building trust, standing out in the market, improving efficiency, and reducing risk.

Building Trust for Market Growth

Sustainability is playing a growing role in consumer decisions. One of the most common ways to assess a company's environmental commitment is through carbon footprint data. According to 2025 research by the Capgemini Research Institute, 64% of consumers consider sustainability a key factor in their purchases, and 69% seek information on the carbon impact of products. In addition, 38% are willing to pay 1–5% more for sustainably produced goods. This shift suggests clear carbon reporting has strong potential to build customer trust and drive market growth.

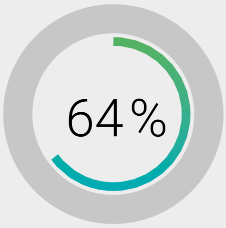
Reducing Inefficiencies for Efficiency and Savings

The Corporate Carbon Footprint (CCF) measures the total greenhouse gas emissions generated by a company's activities within a specified period, typically one year. This includes both **direct emissions (Scope 1 and 2)** from company operations and **indirect emissions (Scope 3)** across the entire value chain.

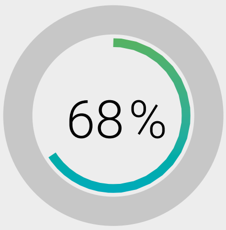
> **Scope Emissions measurement** used to be a "**nice-to-have**". However, it's far **more than this** today.

From the EU's Corporate Sustainability Reporting Directive (CSRD) to emerging frameworks in the US, UK, Singapore, Australia, Brazil, and beyond, regulations are increasingly establishing scope emissions reporting as a core compliance requirement worldwide. At the same time, measuring Corporate Carbon Footprint (CCF) has become a strategic tool, helping companies optimise efficiency, manage risks, and build stakeholder trust through transparent sustainability practices.

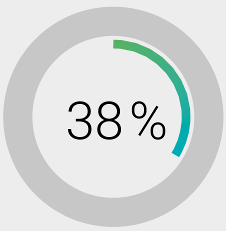
This guide provides step-by-step instructions and practical recommendations for measuring and managing a Corporate Carbon Footprint (CCF) with greater efficiency and accuracy. It details the leading standard for both direct and indirect emissions calculation and positions it within the broader context of today's business requirements.



of consumers consider **sustainability a key factor in their purchases**



seek **information on the carbon impact of products**



are willing to **pay 1–5% more for sustainably produced goods**

2025 research by the Capgemini Research Institute

Accurate scope emissions reporting reveals inefficiencies in energy, resource usage, and waste, providing valuable insights for cost optimisation. Acting on these insights such as through energy-efficient technologies, better logistics, or waste reduction, can lower costs and improve efficiency. While some measures require upfront investment, they often deliver long-term savings and stronger operational performance. Furthermore, [research by Siddique et al.]() shows that transparent carbon disclosure also builds alignment between management and shareholders, improving financial performance by enhancing investor confidence and reducing information gaps.

Managing Risks for Business Resilience

Accurate carbon accounting is essential for managing climate-related risks, from tightening regulations to supply chain disruptions. Scope emissions data pinpoints vulnerabilities such as resource shortages and exposure to severe climate impacts, allowing companies to adapt and strengthen resilience. By ensuring compliance with evolving emissions standards, it reduces the risk of penalties and other regulatory consequences. Meanwhile, it protects a company's reputation by lowering the risk of greenwashing claims and supports long-term business continuity.

02.

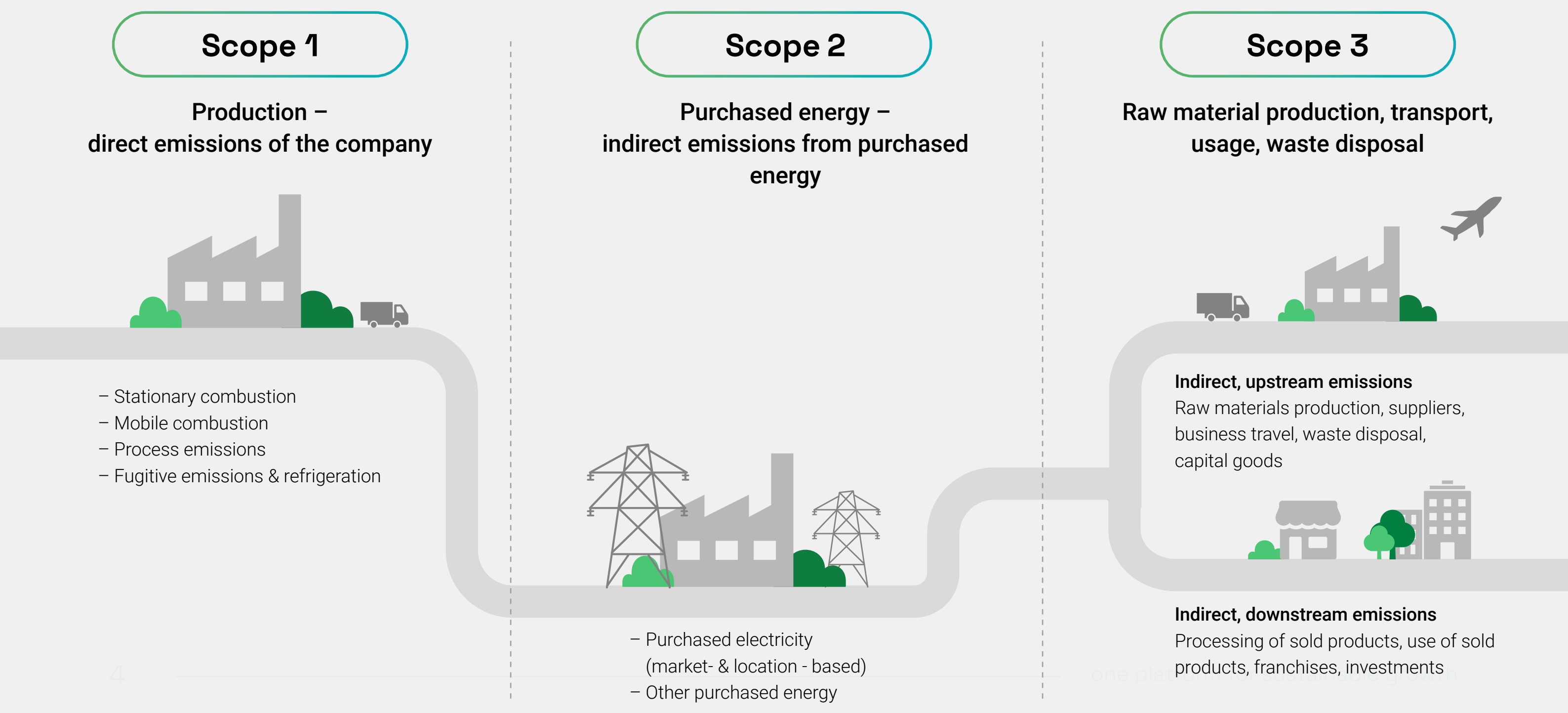
The GHG Protocol: A Global Standard for Reliable Carbon Reporting

The Greenhouse Gas (GHG) Protocol is the world's most widely used standard, with 97% of S&P 500 companies reporting to CDP using this method in 2023. Under the EU's **Corporate Sustainability Reporting Directive (CSRD),** companies are required to track and report **Scope 1, 2, and 3 emissions** across their value chain in line with the GHG Protocol. This makes it more than just a best practice – it has become a cornerstone of compliance. Its global recognition also means that reports prepared under the GHG Protocol are comparable not only across the EU, but also with international markets and investor expectations.

To ensure consistent and comprehensive measurement, the GHG Protocol categorizes emissions into three scopes:

- **Scope 1: Direct emissions** from sources a company owns or directly controls, such as fuel use in company vehicles, on-site energy generation, industrial processes, and refrigerant leaks.

The three scopes to categorize emissions:



- **Scope 2: Indirect emissions from purchased energy,** such as electricity, steam, heating, or cooling. These are produced elsewhere but result from the company's own energy consumption.
- **Scope 3: All other indirect emissions across the value chain,** including both upstream (e.g., from suppliers and raw material production) and downstream (e.g., from product use and disposal). This is often the largest and most complex category, covering impacts that the company influences but does not directly control.

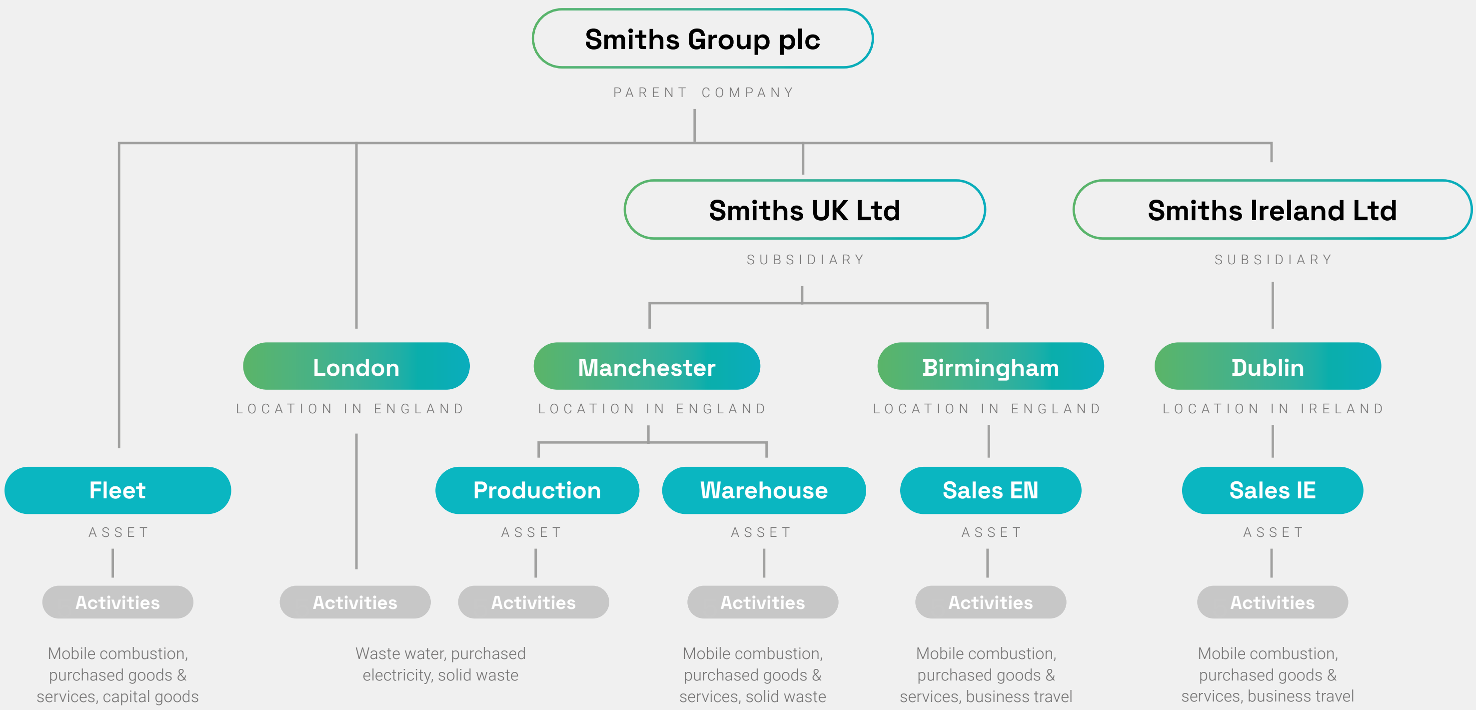
03.

The Five-Step Guide: Mastering Carbon Footprint Measurement with Ease

Step 1: Define System Boundaries

Before starting measurement, it's crucial to **determine the scope of your carbon footprint.** This means setting **system boundaries** – the limits that determine what will be included in your calculation. These boundaries outline the operations, activities, and locations relevant to your emissions data, while excluding those that are not.

Example: Corporate structure & emissions



There are three primary approaches to define system boundaries:

- **Organisational boundaries:** Decide which business entities to include, such as subsidiaries, joint ventures, or franchises. This establishes the legal and financial scope of your measurement.
- **Operational boundaries:** Determine which emission sources will be covered. This is where you'll classify emissions according to the GHG Protocol's three scopes *(Scope 1, 2, and 3).*
- **Geographical boundaries:** Sometimes system boundaries are defined geographically. Depending on regional requirements, a company might measure its carbon footprint for a specific site or region or cover entire global operations.

In complex business structures, defining organisational boundaries is particularly important to ensure accurate measurement. The GHG Protocol offers *two main methods* for doing this:

- **Equity share approach:** Emissions are reported based on the company's ownership share in an operation. For example, if a company owns 30% of a joint venture, it reports 30% of the venture's emissions.
- **Control approach:** Emissions are calculated based on the company's control over an operation, which can be defined in two ways:
  - **Operational control:** The company reports 100% of emissions from operations where it has authority to implement policies and procedures.
  - **Financial control:** Emissions are reported if the company has the financial power to direct operations and policies, regardless of ownership share.

Setting clear system boundaries at the outset ensures transparency and accuracy in CCF measurement. It also enables consistent tracking of emissions, helping companies to assess progress toward reduction goals.

Step 2: Data Collection

From meeting CSRD requirements to advancing climate strategies, **reliable data is the cornerstone of precise measurement and trustworthy reporting.** For an accurate carbon footprint assessment, begin by reviewing existing records for key emission sources – such as fuel use, electricity, transport, purchased goods, and services. This process helps to identify both available data and existing gaps.

For missing data, consider using credible estimates, industry averages, or supplier questionnaires. Software solutions can streamline this process by integrating information from multiple databases and filling gaps with validated inputs. This not only improves data consistency and accuracy while reducing manual effort but also supports ongoing tracking for future reporting.

Step 3: Emissions Calculation

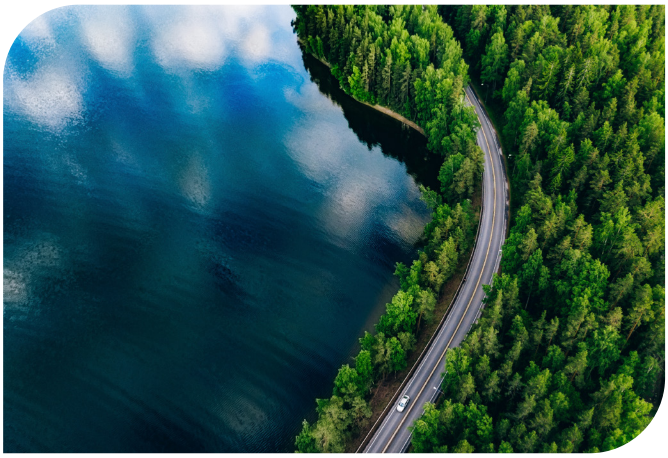
Once the activity data has been compiled, GHG emissions are calculated by applying the appropriate emission factors.

General Formula:

GHG Emissions = Activity Data x Emission Factor

Emission factors should source from reliable databases that are geographically and time-relevant, such as the *EPA, IEA, DEFRA,* or national regulatory bodies. For clarity and consistency, report emissions are broken down by scope, source, and process.

Note: *For CSRD compliance, Scope 2 emissions from purchased electricity must be calculated using both location-based and market-based methods, providing a complete picture of impact.*



Step 4: Documentation and Reporting
Accurate and thorough documentation is key for maintaining credibility. Record all data sources, calculation methods, assumptions, and exclusions (e.g., activities that contribute less than 3% of total emissions). This ensures transparency and traceability throughout the process.

For CSRD and SRS reporting, the CCF will be subject to external audit and third-party verification. Clear, reproducible records not only support compliance but also build stakeholder confidence.

Keep all documentation accessible for future reporting cycles and potential reviews. Consistent record-keeping preserves your methodology over time and makes it easier to update your carbon footprint assessment as operations evolve or regulations change.

Step 5: Integrate Carbon Data into Climate Strategy
The documented carbon data can be an invaluable strategic asset. By analysing scope emissions, companies can pinpoint emission hotspots across operations and the value chain. This makes it possible to set targeted, measurable reduction goals and track progress over time. Integrating these insights into corporate strategy can strengthen sustainability performance, make better-informed investment decisions, and communicate transparently with customers, investors, and regulators.

04.

Overcoming Challenges:
Simplifying Measurement with the osapiens HUB for Corporate Carbon Footprint (CCF)

Measuring a CCF, especially when including Scope 3 emissions, remains challenging. Emissions span complex value chains and require data from multiple stakeholders, while differences in calculation methods can affect consistency. Cooperation with suppliers and customers is crucial but not always straightforward, and collecting accurate data can be resource-intensive, increasing the risk of gaps or errors.

Digital solutions like the osapiens HUB can effectively tackle these challenges. The [osapiens HUB for CCF] is built to turn carbon footprint management from a complex challenge into a streamlined, high-impact process. It combines all emission scopes in one platform, stays fully aligned with the latest regulatory requirements, and gives companies the precision tools they need to act with confidence.

By automating and streamlining Carbon Footprint management, the HUB reduces complexity and effort. It delivers clear competitive advantages in efficiency and transparency, helping businesses to stay ahead of evolving compliance demands.

Key benefits include:

- **Automated Data Collection:** Capture data in real time from multiple sources, eliminating repetitive manual entry and reducing errors.
- **Centralized Data Platform:** Consolidate data from across departments, sites, and stakeholders into one system, ensuring a consistent approach and enabling seamless collaboration.
- **Real-Time Monitoring & Reporting:** Use real-time dashboards to track progress toward climate goals, identify areas for improvement, and generate compliance-ready reports instantly.
- **Supply Chain Integration:** Facilitate secure data exchange with suppliers for more accurate Scope 3 calculations, enhancing transparency and accountability across the value chain.
- **Reliable Regulatory Compliance:** Adapt to evolving sustainability regulations, simplify complex reporting requirements, and ensure readiness for audits and regulation changes.

What is clear overall: Sustainability has become a central pillar of corporate strategy. A reliable Corporate Carbon Footprint measurement system ensures compliance, builds trust, and delivers long-term benefits such as cost savings and reduced risk.

The path to sustainability is continuous. With the right approach and tool, companies can navigate this evolving landscape with confidence, making a measurable contribution to a greener, more sustainable future.

osapiens®

osapiens – one platform for sustainable growth

osapiens develops cloud-based software solutions that empower companies to drive sustainable growth across their entire value chain. With powerful data integration and real-time analytics, osapiens supports companies to consolidate, interpret and act on complex operational data and sustainability metrics.

The osapiens HUB – a scalable, AI-powered platform – combines over 25 solutions to enhance operational efficiency and sustainability in two core areas: **Transparency solutions** enable companies to map and monitor their entire value chain to mitigate supply chain risks and comply with regulatory requirements such as EUDR, Scope 1, 2 and 3 reporting, and CSDDD. **Efficiency solutions** facilitate operational excellence by streamlining maintenance processes, optimising asset performance, and enabling efficient planning, scheduling, and field service operations.

Headquartered in Mannheim, Germany, osapiens works with an international team of over 500 employees to support more than 2,200 customers worldwide.

Contact us

Julius-Hatry-Straße 1
68163 Mannheim

info@osapiens.com
+49 (0) 621 15020690
www.osapiens.com

Visit us on LinkedIn

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