European Data Centre Association's
Technical Committee

Scope Emissions White Paper

Revision 1

EUROPEAN DATA CENTRE ASSOCIATION

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Revisions

Rev1 – Specific company reporting profiles removed to avoid confusion. – December 2023

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Scope 1, 2, 3 emissions

Scope 1 and 2 emissions reporting is already mandatory (under the Corporate Sustainability Reporting Directive – CSRD) for many companies, and this reporting is starting to extend to include Scope 3. This will bring some challenges to the data centre industry, not only for data centre operators but for the extended supply chain that they rely on.

This paper explains why scope emissions reporting is relevant, where it originated from and the relevant standards. It also takes a brief look at what is coming next in terms of Scope 3, looks at two reporting profiles within the tech industry and finally looks at the relationship between scope emissions reporting and Whole Life Carbon Assessments (WLCAs).

Why are scope emissions relevant?

Climate change and its impacts are being witnessed around the world, with scenarios forecast for the future becoming a premature reality. Continued emission of greenhouse gasses (GHG) is driving this, and every degree in temperature increase will continue to impact lives and ecosystems in a catastrophic way.

Urgent change is needed to accelerate efforts to reduce GHG emissions. All levels of governments, financial institutions and industry leaders must plan and implement policies and actions to address the climate emergency.

Policymakers and analysts are seeking to assess and communicate the effects of policies and actions on GHG emissions — both before adoption to inform the design of policies and actions and after implementation to understand whether the intended effects were achieved. An effective way to do this, as set out by the Greenhouse Gas Protocol, is accurate reporting of Scope 1, 2 and 3 emissions.

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What is Scope 1, 2, 3?

Scope 1, 2, 3 refers to a framework that originates from the Greenhouse Gas (GHG) Protocol. The GHG Protocol Initiative is a multi-stakeholder partnership of businesses, non-governmental organisations, governments, and several voluntary organisations, convened by the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD). It was first published in 2001 and sets out to standardise the approach to GHG accounting and reporting from private and public sector operations, value chains and mitigation actions, helping businesses effectively adopt these principles and shape policy.

The GHG Protocol can be used by countries, cities, and companies. Table 1 summarises the relevant standards and guidelines for different levels of measurement and reporting.

Table 1 - Types of GHG measurement and associated standards or guidelines at multiple levels

Type of GHG measurement	Countries	Cities and subnational jurisdictions	Companies / Organisations
GHG emissions inventory	IPCC Guidelines for National Greenhouse Gas Inventories	WRI/C40/ICLEI Global Protocol for Community-Scale Greenhouse Gas Emissions Inventories	GHG Protocol: Corporate Standard
GHG reductions	GHG Protocol: Policy and Action Standard (for policies and actions) GHG Protocol for Project Accounting (for projects)		
Goal progress	GHG Protocol: Mitigation Goals Standard	GHG Protocol: Corporate Standard	

GHG Protocol – Corporate Standard

For companies and organisations, greenhouse gas emissions are classified into three scopes which are explained in Table 2. In line with the standard, the reporting company provides these emissions on an annual basis. For each scope, an example of what would typically be included for data centres is provided.

Table 2 – Scope Emissions

Emissions Type	Scope	Definition	Data Centre Examples
Direct emissions	Scope 1	Emissions from operations that are owned or controlled by the reporting company	Direct Emissions from backup generators, Refrigerant and natural gas heating /generation systems
Indirect emissions	Scope 2	Emissions from the generation of purchased or acquired electricity, steam, heating, or cooling consumed by the reporting company	Indirect emissions from the electricity, and purchased / sold heating or cooling the organisation purchases
	Scope 3	All indirect emissions (i.e., those owned, controlled and generated by others) which result from the organisation's activities such as travel, procurement, water and waste. Typically broken down into 15 categories – 8 upstream, 7 downstream	All other emissions, including but not exclusive to: - Purchased goods and services e.g., server racks, generators, chillers - Transportation and distribution e.g., materials for construction - End of life treatment e.g., for racks, facilities and other equipment - Energy used downstream as a result of business activity - Business travel - Employee commuting

Although examples have been provided for data centres under each scope, the split of activities into scopes is a nuanced matter. For different types of data centres (enterprise, co-location, cloud), activities may fall into different categories depending on the reporting party. For the tech giants (Meta, Apple, Microsoft, Amazon, and Google) the reporting will also extend to all the services they provide and products they produce, therefore encapsulating much more than just data centres.

Signatories of the Climate Neutral Data Centre Pact shall ensure data centre electricity demand will be matched by 75% renewable energy or hourly carbon-free energy by December 31, 2025 and 100% by December 31, 2030. This would mean emissions associated with purchased power (scope 2) would be zero if a market-based assessment was being undertaken.

An industry agreement should be reached regarding whether scope 2 emissions will be accounted for under a market-based or location-based approach.

A location-based method reflects the average emissions intensity of grids on which energy consumption occurs (using mostly grid-average emission factor data).

A market-based method reflects emissions from electricity that companies have purposefully chosen, through PPA's and carbon offset schemes.

Figure 1 is extracted from the GHG Protocol and provides a graphical representation of the scopes summarised in Table 2. It gives an overview of each scope and subcategories across the value chain. It shows that scope 3 emissions are broken down into 15 subcategories for reporting and accounts for both upstream and downstream activities.

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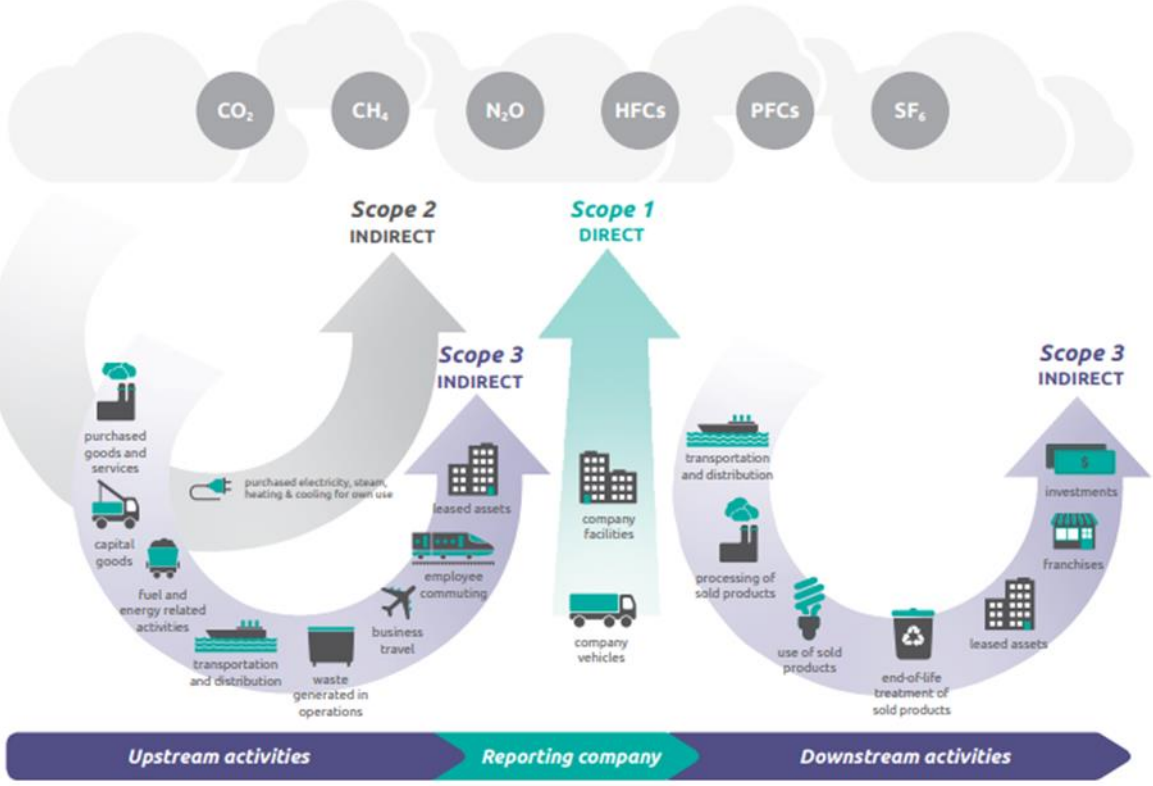

Figure 1 - Overview of GHG Protocol scopes and emissions across the value chain

Reporting requirements

The standard sets out the framework for what should be included in the reporting to comprehensively cover all a company's emissions. Despite this, the focus until recently has only been on reporting scope 1 and 2 emissions.

In 2019 in the UK, the Streamlined Energy and Carbon Reporting Scheme (SECR) was introduced which requires obligated companies to report on their energy consumption and associated greenhouse gas emissions within their financial reporting for Companies House. Under the SECR, Scope 1 and 2 are mandatory to report, whereas Scope 3 is currently voluntary.

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As of 5th January 2023, large companies based within the E.U. who meet two of the three below requirements are required to report in line with the Corporate Sustainability Reporting Directive (CSRD).

- €40million in net turnover,
- €20million in assets,
- 500 or more employees

Non-EU companies that have an annual turnover of above €150million inside the EU, will also have to comply with this directive.

The adoption of the CSRD has greatly increased the number of companies required to report under its remit, with the number of firms expected to be subject to EU sustainability reporting requirements between 2024 and 2029 according to the different threshold-based phase-in dates reaching approximately 49,000. The CSRD aligns with the Task Force on Climate-Related Financial Disclosures (TCFD) and as a result requires Greenhouse Gas Protocol (GHG) reporting for company emissions. With the increased scope of the CSRD, it is expected that a large proportion of the data centre industry will fall under this regulation bracket.

The regulatory requirements in the US are far less stringent, and most reporting is voluntary for now. Under current requirements, facilities emitting 25,000+ metric tons CO2e annually (Scope 1) must report to the U.S. EPA, and facilities in California emitting 10,000+ metric tons CO2e must report to the California Air Resources Board. This mostly captures power plants, cement plants, chemical manufacturing, etc., but not data centres. The Security and Exchange Commission proposed a law that would require all public companies to disclose their Scope 1 and 2 emissions, and Scope 3 if material. This proposal faced considerable opposition in the House of Representatives. Eventually, the law was adopted in March 2024, but all public companies are now required to disclose only their Scope 1 and 2 emissions, without any reference to Scope 3.

Companies succeeding in reporting all three scopes will likely gain a sustainable competitive market advantage – SECR states companies who report Scope 3 emissions are more likely to identify opportunities for operational improvement, strengthen relationships

with stakeholders and their supply chain and future proof their future compliance and protect their business from reputational risk.

Furthermore, whilst Scope 3 reporting is currently voluntary, this will likely become a mandatory reporting requirement and subsequently taxed accordingly. For this reason, companies around the world are looking to establish their internal Scope 3 reporting process ahead of its enforcement.

Tech Reporting Company Examples

The data centre market incorporates a huge range of companies including major tech firms, data centre providers, operators, manufacturers, contractors, consultants, and many more. These are all likely to be subject to some level of reporting under the GHG protocol and to different extents will need to understand and include for the emissions associated with data centre facilities. The facilities could be enterprise, managed services, co-location, or cloud services.

It should be noted that for different types of companies within the sector, the reporting profiles can vary hugely as the services they offer and the emissions producing activities they are linked to can be very different. Whilst many different companies operate within the data centre industry, their reporting profiles are rarely comparable given the wide range of extra activity they must account for, outside of data centre operations.

Companies within the data centre sector should not be directly compared in terms of Scope 1, 2, 3 emissions. The purpose of reporting is for companies to measure the emissions they are responsible for and subsequently reduce these emissions in order to achieve the targets they have committed to. An important aspect of achieving the reduction will be working with the supply chain which will likely be common across a number of the reporting companies. It is worth saying that benchmarking and industry comparisons are still useful, but at a more granular level, as opposed to trying to compare company-wide emission reporting for companies that operate in very different ways.

Connecting Scope 1, 2, 3 to WLCA

The GHG Protocol was set up to reduce emissions and that should be the primary purpose of adopting the Scope 1, 2 and 3 reporting methodology. The associated standard aims to allow companies to prepare a true and fair Scope 3 inventory. The value of scope emission reporting is not its ability to compare like for like, but the ability to measure, monitor and reduce emissions.

Scope emission assessments are often a top-down approach, providing emissions estimates for organisations around annual operation. This offers a high-level overview for organisations regarding their carbon impact, and works with a company's growing need to set company level targets. To make this approach more meaningful, it needs to be supported by bottom-up methodologies such as whole life carbon assessments (WLCAs), which provide more granular insight to project level specifications, life cycle impact and global warming potential. The results from WLCAs can be used to more accurately report Scope 3 emissions. For further information on WLCA's refer to the EUDCA whitepaper here.

Scope 1, 2 and 3 emissions are similar to, but not the same as, embodied and operations carbon. Scope 1, 2 and 3 emissions relate to an organisation's emissions, whilst operational and embodied carbon are emissions associated to a specific building. Operational and embodied carbon emissions contribute to an organisations total scope emissions.

As shown in Figure 2Figure 1, through adopting both types of reporting in an organisation, it can help with driving sustainable development by connecting targets and actions. Ideally, as the industry matures, organisations will start to work in a more circular motion, combining these two approaches to streamline their push to reduce emissions through their operation. However, until then, both approaches still push for emissions reductions and can be a driving force for positive change.

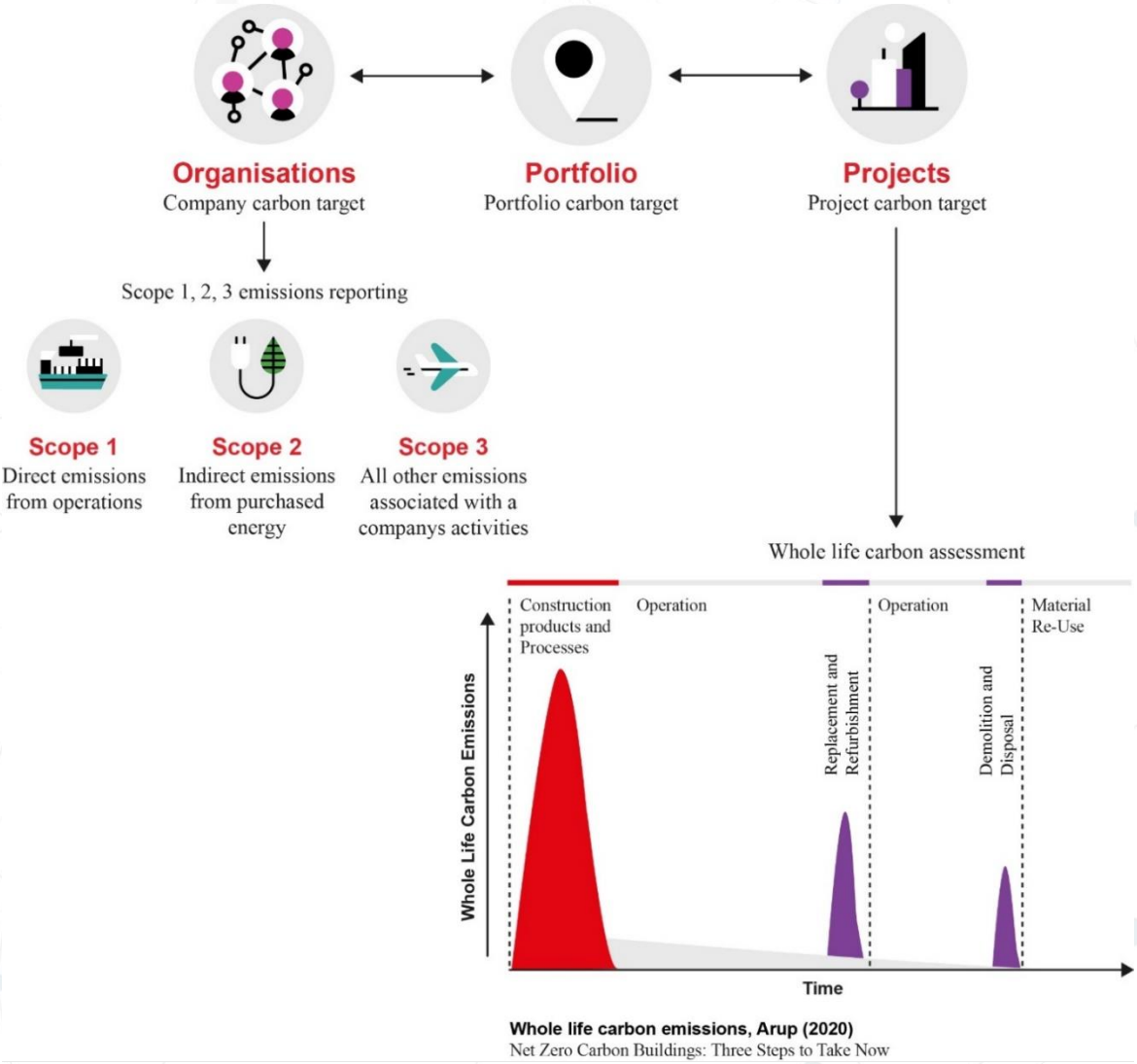

Figure 1 - Connecting carbon targets

Further considerations

The first step in GHG reporting is to identify and set appropriate boundary conditions. The following examples highlight the importance of establishing a consistent industry approach.

Example of scope emissions reporting for power associated with IT load

One perspective could be that any emissions associated with the electricity consumed by the facility (both IT load + overhead) should be accounted for within the facility providers Scope 2 emissions. This is assuming the provider is contractually selling floor / rack space as opposed to power consumed.

An alternative view could be that, on the basis that the contract between the facility provider and end tenant fluctuates based on the actual power consumed, the emissions associated with the IT load could be allocated to Scope 3 for both the facility provider (Scope 3, category 11, Use of sold products) and end tenant (Scope 3, category 8 – upstream leased assets).

Example of emissions associated with a data hall fit out

On the basis that a data hall is sold to an end tenant as an empty space for client fit out, then the emissions associated with the fit out (racks, aisle containment, server, additional cabling etc) could be excluded by the facility provider and instead accounted for by the end tenant.

If the facility provider partially fits out the data hall, they would be responsible for accounting for the associated emissions of the fit out elements (Scope 3, Category 1 – Purchased goods and services).

Whilst these examples will be nuanced between various companies, it is key that a consistent industry approach is established and agreed with all stakeholders. This will ensure that a robust approach is taken to account for all industry emissions and provide a clear picture of the industry's carbon footprint.

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Useful links

GHG Protocol Corporate Value Chain (Scope 3) Standard

Greenstone - How to report GHG emissions from data centre and cloud services

UKGBC Scope 3 reporting in commercial real estate

Scope emission reporting around the globe

Carbon Trust - What are scope emissions

US Environmental Protection Agency – Scope 3 Inventory Guidance

Plan A Earth - What are scope 1, 2 and 3 emissions

EUDCA Whitepaper – Whole Life Carbon Assessments

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