Sustainable Games Alliance Digital Game Environmental Standard Draft v0.2

Best practice on the measurement and reporting of greenhouse gas emissions from the production, distribution, sale and use of digital games, enabling active reduction and reporting under Topical ESRS E1-E5

***** Please note: the SGA Standard is a living document, and a work-in-progress *****

Who/what is this component of the standard for?

The entire SGA standard (Environmental, Social and Governance components) is designed for digital game makers, with levels of detail and expected disclosures for companies of different sizes (see heading: Principles of corporate boundaries and reporting thresholds). The standard is designed for compatibility with the EU ESRS requirements, beginning by meeting and exceeding the requirements of the ESRS E1: Climate Change. The initial phase of this standard covers GHG emissions, applying and exceeding the GHG Protocol standard for corporate emissions accounting.

The standard provides a common basis for studios to measure their progress towards climate and environmental goals, and provides greater clarity and comparability to stakeholders including ESG investors, researchers, governments, and so on.

The standard is also for companies that are within the value chain of the game production process but who do not wholly develop games themselves: publishers, middleware providers, software vendors, suppliers, and so on. The standard provides guidance on the aspects of your business about which SGA members and developers adopting the standard may ask you to provide data.

Why is the standard necessary?

The entire world is facing increasing physical and transition risks from climate change. As the climate changes, governments adopt stricter rules and regulations to combat

environmental impacts from emissions to water use, biodiversity protection and circular economy principles. Long-term investors shift capital allocation towards businesses that align with the Paris Agreement, and a majority of gamers "say that the **gaming industry has a responsibility to act on global warming**, and it should **do what it can to reduce its own carbon emissions**." (Leiserowitz et al. 2022: 27)

Without consistent effort and management, **digital games produce greenhouse gases (GHGs) across the entire value chain**. Businesses are increasingly looking for guidance on how to minimise their impact on the planet, while also complying with increasingly complex mandatory disclosure requirements. Becoming a responsible industry requires a collective effort to assess these emissions and chart credible pathways to eliminate them. The SGA believes the best way to do this is with a globally applied standard for calculation that enables as close to direct measurement of game emissions as possible, reflects the latest science and best practices from across the industry, and delivers real clarity for decision-makers. The standard aims to focus on the most impactful areas of game industry emissions and speak to game development in ways that simplify and reduce the burden of compliance with often complex EU regulatory documentation.

About Greenhouse Gas Emissions

Greenhouse Gas emissions – referred to throughout this standard as GHGs – are a class of typically invisible gases that, when they enter the atmosphere, contribute to the greenhouse effect, trapping heat and contributing to changing the climate of our planet. There are multiple sources of GHGs but the major source of them is the combustion of fossil fuels. Combustion of fossil fuels occurs in power stations attached to electricity grids, in vehicles, boilers and central heating systems, in backup or emergency power generators, and so on.

The main GHGs considered by the IPCC are X Y and Z. Each has a different degree of contribution to the greenhouse effect in the atmosphere, so a common unit of measurement is typically applied: the carbon-dioxide equivalent (CO_2e). For example, methane (CH_4) is a more potent greenhouse gas than carbon dioxide, with methane having nearly 100x the effect of the same amount of CO_2. By using a CO_2e figure, we can describe the total impact of multiple GHGs commonly and comparably.

(** If you want to get really technical about it, different GHGs also have different lifetimes in the atmosphere, and so the IPCC and other tools often use the "GWP100" or global-warming potential over 100 years as the measurement of a particular GHG and its real-world impact**)

Guiding Principles

1. The goal of applying the SGA standard is to ***measure emissions***, in order to *reduce* them in the short term and eliminate them long term.
2. The SGA standard is ***an interpretation and addition*** to the "Greenhouse Gas Protocol Corporate Accounting and Reporting Standard", existing to clarify emissions accounting for the games industry without compromising on rigour and reliability and ensure that it meets or exceeds European Sustainability Reporting Standards.
3. The SGA standard will always prefer ***measurement*** of emissions based on known scientific principles, with ***estimates*** as fallback when direct measurement is not yet possible. For example, the standard prefers operational data ("Activity data" in GHG Protocol terms) over financial or spend-based data, but includes processes for applying the latter when necessary due to operational reasons, the high difficulty/cost of data collection, or when data is incomplete or unreliable.
4. The SGA standard aspires to cover as much of the game production process as possible, however, measurement of emissions ***does not always guarantee ownership of responsibility***.
5. The SGA standard is a ***living document***, with all aspects to be considered open to revision in line with new scientific developments, and emerging best practices. Similarly, the development process aims to uphold principles of **open and participatory development** of the standard for SGA members.
6. The SGA standard acknowledges the **shared nature of the work of reducing GHG emissions**, and ensuring long-term sustainability. The standard aims to facilitate open data sharing, verification and novel approaches to eliminating GHG emissions.
7. Where the SGA Standard does not currently cover a specific area, aspect, edge case, or other potential emissions source explicitly, users are encouraged to attempt measurement and disclosure even if the Standard may not require it. Users are also encouraged to contact the SGA to consider these for future inclusion in the Standard.

Guiding Principles of the GHG Protocol Corporate Standard (2004)

In line with SGA Standard Guiding Principle No.2 – the global standard for corporate emissions accounting known as the Greenhouse Gas Protocol states the following principles on which "GHG accounting and reporting shall be based":

RELEVANCE
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.

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

CONSISTENCY
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.

TRANSPARENCY
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.

ACCURACY
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.

Core Concepts of GHG Accounting – Three Scopes

A key element of almost all GHG accounting standards is the categorisation of emissions into one of three “scopes”, with implications for approaches to calculation and implementation of solutions for each.

Scope 1 – Direct release of GHG emissions

Examples of Scope 1 emissions are the combustion of fossil fuels (coal, oil, gas), and the release of refrigerant gasses such as R32, propane, etc. Responsibility for Scope 1 emissions is considered directly owned by the emitter of these emissions, and is relatively straightforward.

Scope 2 – Indirect release of GHG emissions via consumption of electricity or heat

Scope 2 emissions occur from the consumption of electricity that has been generated by fossil fuels. This can include coal-fired power plants, LNG-peaking power generators, and other non-renewable electricity sources. Purchased heat from district heating systems (and in rare cases purchased *cooling* from similar district cooling systems) are also included in Scope 2 emissions. Responsibility for these emissions is largely considered the responsibility of the user of the power/heat, with the possibility to avoid or reduce these sources through purchases of renewable energy/heat sources.

Scope 3 – Value chain emissions

Scope 3 emissions are the bulk of most organization's emissions, and are as diverse as the activities of the entire world's businesses. Scope 3 emissions are further broken down into multiple components, first by categorising according to whether they are "upstream" or "downstream" from the point of production, and second into one of fifteen Scope 3 Categories. These distinctions help differentiate responsibility for acting on different parts of the Scope 3 GHG emissions challenge and to identify who has the most access to solutions and control over the emissions across parts of the value chain.

Scope 3 emissions are, by definition, a "shared" responsibility – with no single organisation or actor typically "responsible" for them, and novel approaches to calculating and reducing value chain emissions are desperately needed. The SGA Standard aims to intervene in this situation and provide a member-driven consensus on approaches to calculation and reduction across this essential part of the industry's environmental impact.

How to use this standard (*TBC*)

> Read the standard
> Collect the data
> Fill out data sheet (Google sheet TBD)
> ALT: apply the boundary criteria/guidelines/whatever for your ESG platform software
> ALT: input data identified in Standard into ESG platform software
> …?
> Output your completed reporting for submissions to EU CSRD, and other reporting agencies.

The SGA standard uses **metric** system measurements.

Corporate Boundaries & Reporting Thresholds

The SGA standard is informed by several principles when it comes to corporate accounting. The European Union **Directive 2013/34/EU** lays out principles of financial reporting, including financial and employment thresholds for categories of undertakings and groups (**Chapter 1, Article 3**) – these thresholds are set by delegated acts that are periodically updated to reflect the changing nature of business done in the EU. The latest version of these thresholds should always be assumed to apply in determining the level of detail required when applying the standard.

Other reporting principles that the Standard aligns with include:

- IFRS S2 – specifically, it is expected that the reporting entity for sustainability information is to be the same as the reporting entity for financial reporting
- European Sustainability Reporting Standard principles/requirements – details ***TBC***

As of January 2024, the following thresholds apply to ***single companies*** applying the SGA standard:

	Micro-undertakings	**Small undertakings**	**Medium undertakings**	**Large undertakings**
Definition:	Do not exceed more than one of the below criteria	Do not exceed more than one of the below criteria	Do not exceed more than one of the below criteria	Exceed 2 or more of the below criteria
Balance sheet	€350,000.00	€4,000,000.00	€20,000,000.00	€20,000,000.00
Net turnover	€750,000.00	€8,000,000.00	€40,000,000.00	€40,000,000.00
Avg no. employees during the financial year	10	50	250	250

As of January 2024, the following thresholds apply to ***consolidated groups*** applying the SGA standard:

	Small groups	**Medium groups**	**Large groups**
Definition:	Small groups shall be groups consisting of parent and subsidiary undertakings to be included in a consolidation and which, on a consolidated basis, do not exceed the limits of at least two of the three following criteria on the balance sheet date of the parent undertaking:	Medium-sized groups shall be groups which are not small groups, which consist of parent and subsidiary undertakings to be included in a consolidation and which, on a consolidated basis, do not exceed the limits of at least two of the three following criteria on the balance sheet date of the parent undertaking:	Large groups shall be groups consisting of parent and subsidiary undertakings to be included in a consolidation and which, on a consolidated basis, exceed the limits of at least two of the three following criteria on the balance sheet date of the parent undertaking
Balance sheet	€4,000,000.00	€20,000,000.00	€20,000,000.00
Net turnover	€8,000,000.00	€40,000,000.00	€40,000,000.00
Avg no. employees during the financial year	50	250	250

TBC Establishing thresholds for applying the SGA standard

Plan for future tiered requirements for reporting – establish your detail level according to the above thresholds micro/small/medium/large. For purposes of comparison – the ideal situation is to have everyone apply the whole standard, and as the GHG Protocol emphasises establishing thresholds can be counter-productive as knowing if one is over a threshold often requires completing data collection and measurement to the same degree. However the SGA aims to provide guidance based on member activity and data collection that can guide smaller game businesses on areas with *highly likely no or negligible impact*.

Process looks like:

- Decide your organisational boundaries:
    - For small orgs, this is easy, it's just the one entity
    - For large orgs, what do we specify? "All entities connected to a game development value chain to be included?"
    - List all sites of operations by… building? Excluding WFH.
- Decide your operational boundaries

Measuring Scope 1 GHG emissions – Topical ESRS E1

Emissions from:	• Combustion of fossil fuels within the organisational boundary of business • The use, purchase, or escape of other GHGs • Recording *avoided emissions* through renewable electricity generation from owned facilities (e.g. on-site rooftop solar)
Examples:	• Natural Gas heating • Petrol, diesel, used in vehicles or generators • Refrigerant (leaks) • CO2 fire extinguishers
Data sources:	• Gas utility bill • Fuel purchase receipts • Travel logs for company vehicles • Purchases of new heat pumps, CO2 fire extinguishers, air-conditioning inspection report

Emissions from:	• Combustion of fossil fuels within the organisational boundary of business • The use, purchase, or escape of other GHGs • Recording *avoided emissions* through renewable electricity generation from owned facilities (e.g. on-site rooftop solar)
Data types:	• Quantity of natural gas (m^3, Therms or BTU) • Volume of petrol, diesel, or other fuel (Litres, Gallons, etc) • Units of refrigerant leaked (• Units of refrigerant in new heat pump (volume, cubic m – recorded for future calculation) • Capacity of fire extinguishers (volume)

Standard Specification:

Measurement of Scope 1 GHG emissions shall involve **a simple multiplication** of the collected data for each emissions source with **the most accurate emissions factor** available for the **relevant period**. The resulting subtotal for each emissions source shall be summed to produce a single Scope 1 GHG emissions figure.

For emissions from the combustion of a liquid or solid fuel, users shall prefer emissions factors that provide the most scientifically accurate factor for that fuel available (see SGA guidance on high-quality sources ***TBC***). In an instance where data for the quantity of liquid or solid fuel is not available (e.g. when fuel receipts have not been kept) a distance-based estimate is *permitted* for owned vehicles. For emissions factors for refrigerants, it is *permitted* to use a vendor-supplied emissions factor from a supplied datasheet or air-conditioning inspection report.

	Example 1a	**Example 1b**	**Example 2a**	**Example 2b**
Type of emissions source	Natural Gas Heating (by volume)	Natural Gas Heating (by thermal energy)	Fuel (e.g. petroleum or diesel) by volume	Company car (by distance driven)
Data source	Gas Utility Bill	Gas Utility Bill	Fuel receipts listing volume	Distance travelled (measured or

				estimated) (km/miles)
Data type	Volume of gas combusted (m^3), (*BTU need a conversion method TBC*)	Thermal value of gas combusted (Therm) (*BTU needs a conversion method TBC*)	Litres (convert from gallon if necessary, ensure separate calculations for each fuel type)	km/miles
Collected data:	3681 m^3	1,291 thm	512 L	8533.3 km
Type of emissions factor	Fuel combustion (gas, natural gas)	Fuel combustion (gas, natural gas)	Liquid fuel combustion	Estimate of CO2e by distance
Example emissions factor	2.038 (kg CO2e per m^3) (DEFRA)	5.5982 (kg CO2e per Therm) (DEFRA converted)	2.0975 (kg CO2e per L) (DEFRA, liquid petroleum fuel)	0.1672 (kg CO2e per km) (DEFRA, medium car)
Calculation method	Multiplication (Volume x emissions factor)	Multiplication (Energy unit x emissions factor)	Multiplication (Volume x emissions factor)	Multiplication (km x emissions factor)
Example calculation	3681 x 2.038	1291 x 5.5982	512 x 2.0975	8533.3 x 0.1672
Result	7501.878 (kg CO2e)	7227.332602 (kg CO2e)	1073.92 (kg CO2e)	1426.77 (kg CO2e)

	Example 3	**Example 4**	**Example 5**
Type of emissions source	Refrigerant leaks	CO2 fire extinguisher purchases	Avoided emissions from on-site renewable generation
Data source	Datasheet	Datasheet/product details	Solar system electronic

			production records
Data type	Weight of refrigerant gas (e.g. R32, R410A, R290)	Weight of CO2	kWh of electricity produced
Collected data:	R290 Refrigerant load: “0.15 kg” per unit	3.5 kg CO2 fire extinguisher	3,658 kWh
Type of emissions factor	Refrigerant GWP (Global Warming Potential) value	GWP for CO2	N/A
Example emissions factor (as Global Warming Potential)	R32 GWP: 675 R410 GWP: 2088	GWP for CO2: 1 kg CO2e	N/A
Calculation method	Multiplication (Number of units w/ leaks or replaced x weight of refrigerant x GWP)	Multiplication (number of purchases x weight of CO2 x GWP)	Data recorded
Example calculation	1 R32 A/C unit x 5 kg x 675	3 x 3.5 kg x 1	N/A
Result	3375 kg CO2e	10.5 kg CO2e	3,658 kWh

Equations for Scope 1 measurement by GHG source

Natural Gas

measured, m^3 (volume)

$$Nat.\ gas\ GHG\ subtotal = volume\ (m^3) \times nat.\ gas\ combustion\ EF$$

measured, Therm/British Thermal Unit (heat/energy)

$$Nat.\ gas\ GHG\ subtotal = Energy\ content\ of\ gas\ used\ (Therm\ or\ BTU) \times energy\ content\ EF$$

estimated, €/$ or other local currency

$$Nat.\ gas\ GHG\ subtotal = (Spend\ total\ on\ nat.\ gas\ (€/\$) - supply\ cost\ if\ applicable\ (€/\$)) \times spend\ based\ EF$$

Fuel use in company-owned vehicles & equipment

measured, L (volume, each fuel type to be calculated separately)

$$Fuel\ GHG\ subtotal\ =\ Litres\ of\ fuel\ purchased\ (L)\ \times\ combustion\ EF\ for\ fuel\ type\ (e.g.\ Petrol/Diesel)$$

estimated, km (each vehicle type to be calculated separately)

$$Fuel\ GHG\ subtotal\ =\ Distance\ travelled\ (km)\ \times\ vehicle\ type\ distance\ based\ EF$$

Refrigerant

measured, volume (L)

$$Refrigerant\ GHG\ subtotal\ =\ Litres\ of\ refrigerant\ lost\ from\ AC\ system\ (L)\ \times\ Refrigerant\ EF\ (GWP100)$$

estimated, number of units

$$Refrigerant\ GHG\ subtotal\ =\ Count\ of\ refrigerant\ using\ units\ \times\ Typical\ refrigerant\ volume\ \times\ Common\ ref$$

estimated, square feet of office

$$Refrigerant\ GHG\ subtotal\ =\ Square\ feet\ of\ office\ \times\ Average\ refrigerant\ use/leak\ per\ sq\ ft\ of\ office$$

Purchased CO2

measured, kg (weight)

$$Purchased\ CO2\ GHG\ subtotal\ =\ kg\ of\ CO2\ purchased$$

GHG Scope 1 Total

$$Scope\ 1\ total\ =\ \sum GHG\ source\ A\ +\ GHG\ Source\ B\ ...\ +\ GHG\ Source\ N$$

Measuring Scope 2 GHG emissions – Topical ESRS E1, continued

Emissions from consumption of purchased:	• Electricity • Steam • Heating/cooling
Examples:	• Purchased electricity • Purchased district heating • Purchased cooling
Data sources:	• Electricity utility bill • District heating supplier bill
Data types:	• Quantity of electricity consumed (kWh) • Quantity of steam? (Energy (MWh) / volume m^3 / cost ($/€)) • Quantity of cooling (Energy (MWh) / volume m^3 / cost ($/€))

Standard Specification

Measurement of Scope 2 GHG emissions shall follow the GHG Protocol requirement to calculate both **location-based** and **market-based** Scope 2 electricity consumption emissions. For each method, Scope 2 GHG emissions shall consist of a simple sum of all sources of emissions across the whole reporting period. For both methods, the unit of calculation is to be kWh, and a record of the amount of electricity consumed is to be provided (in kWh) alongside the emissions calculation result.

Location-based electricity consumption

Measurement of location-based Scope 2 GHG emissions shall involve **a simple multiplication** of the collected data for each emissions source with **the most accurate emissions factor** available for the **relevant period**. For location-based electricity consumption, the following hierarchy of emissions factors will be applied in order of preference:

1. 24/7 real-time calculation of emissions based on at least 30 min accurate emissions intensity
2. City, Sub-Regional or State based emissions factor
3. National emissions factor
4. Continental emissions factor or world average emissions factor.

For location-based electricity consumption, calculations should be performed on the smallest possible time period for which data for both electricity consumption and the emissions intensity of the grid is available. For instance, if kWh consumption is recorded at 30-minute intervals, and emissions factors for the energy system are available only on an hourly basis, then hourly calculations of electricity consumption emissions are to be undertaken. Conversely, if only annual average grid intensity figures are available, annual kWh consumption may be calculated. It is *recommended* that either quarterly or monthly average grid-intensity figures be targeted. Note: for businesses with more than one location, a separate location-based measurement must be undertaken for each location.

Market-based electricity consumption

Measurement of market-based Scope 2 GHG emissions from electricity consumption shall involve either the recording of energy provider-supplied **total GHG emissions** from the consumption of electricity, or in the absence of a supplied total, by **simple multiplication** of the **emissions factor** provided by the energy supplier and the amount of electricity consumed (in kWh).

For market-based electricity consumption, the following hierarchy of emissions factors shall be applied, in order of preference:

1. 24/7 real-time calculation of emissions based on at least 30 min accurate emissions intensity, supplied by energy provider
2. City, Sub-Regional or State based emissions factor supplied by energy provider
3. National emissions factor supplied by energy provider

When providing market-based electricity consumption emissions, a statement of the percentage of renewable energy included in the purchase mix shall be made.

District Heating

Measurement of district heating emissions shall consist of a simple multiplication of the amount of purchased or consumed heat, in the form of either kWh, Therms or BTU, multiplied by the most accurate available emissions factor for the time period.

District Cooling

Measurement of district cooling is TBC – considered to be *very low applicability* at present.

The total Scope 2 emissions shall be two figures, one for location-based and one for market-based GHG emissions. The location-based figure shall involve summing all other Scope 2 figures besides the market-based electricity consumption GHG figure. Market-based figure shall involve summing all other Scope 2 figures besides location-based electricity consumption GHG figure.

Equations for Scope 2 measurement by GHG source

Electricity consumption

measured, kWh (energy) – location-based

$$Electricity\ GHG = kWh\ total \times most\ precise\ available\ EF$$

measured, kWh (energy) – market-based

$$Electricity\ GHG = kWh\ total \times utility\ supplied\ EF\ representative\ of\ \%\ renewable$$

measured, kWh (energy) – real-time

$$Electricity\ GHG = GHG\ total\ output\ from\ realtime\ energy\ monitoring\ system$$

Purchased heat

measured, kWh (energy)

$$Purch.\ heat\ GHG = kWh\ total \times utility\ supplied\ district\ heating\ EF$$

measured, Therm (thermal energy)

$$Purch.\ heat\ GHG = Therm \times district\ heating\ EF$$

measured, BTU (thermal energy)

$$Purch.\ heat\ GHG = BTU \times district\ heating\ EF$$

Scope 2 supplied electricity – 3 methods			
	Example 1a – Location-based	**Example 1b – Market-based**	**Example 1c – Market-based 24/7 real-time measurement**
Type of emissions source	Electricity use (location-based)	Electricity use (market-based)	Electricity use (real-time 24/7 measured) ** NB: this is a highly difficult to realise configuration, more for future proofing*
Data Source(s)	Electricity supplier usage portal, bill	Electricity supplier usage portal, bill	Real-time 24/7 power measurement system
Data Type(s)	1. Location 2. Time period 3. Kilowatt hours (kWh)	1. Location 2. Electricity supplier emissions factor 3. Time period 4. Kilowatt-hours (kWh)	1. Location 2. kWh consumption over time 3. Resolution of period 4. EF of grid matched at same resolution
Collected data:	Copenhagen, Denmark	Copenhagen, Denmark	Copenhagen, Denmark
	Q1 2024	0.15165 kg/CO2 per kWh (Denmark 2023 avg EF) 0.08215 kg/CO2 per kWh (Supplier EF for premium rate purchase of higher percentage renewable power)	File output from monitoring system
	2,392 kWh	2024 average	30 min resolution
		2,392 kWh	File output recording of grid CO2 intensity per kWh over time period
Type of emissions factor	Emissions intensity of electricity supplied from grid (location-based) for a given period	Emissions factor of electricity supplied from grid (market-based, provided by utility)	EF intensity (kg/CO2e per kWh) matched to time and location

Location hierarchy of EF preference	1. City/State/Subregion avg EF 2. National avg EF 3. Continent avg EF 4. World avg EF	1. City, State, Subregion or National utility specific EF	1. City/State/Subregion real time EF 2. National real time EF *NB: For orgs with more than 1 geographic location, each site must be treated separately by system (but total can be aggregated at ouput)*
Period hierarchy of EF preference	1. Daily/Weekly avg EF 2. Monthly avg EF 3. Quarterly avg EF 4. Annual avg EF	N/A	N/A
Period covered by EF (examples)	December 2023 Q4 2023 2023	Use period of EF from electricity supplier.	Real time
Example emissions factors	0.231 kg/kWh (London GB, December 2023) 0.207 kg/kWh (UK, 2023) 0.251 kg/kWh (European Union, 2023) 0.485 kg/kWh (World – via Ember Climate)	0.08215 kg/kWh (Denmark avg 2023)	(File tracking real time EF of supplied electricity)
Calculation method	Multiplication (kWh x emissions factor)	Multiplication (kWh x emissions factor)	Automated output from real time monitoring system
Example calculation	2,392 x 0.231	2,392 x 0.08215	N/A
Result	552.552 kg CO2e	196.5028 kg CO2e (green power premium)	CSV/File output, probably some charts, and a total kg CO2e figure based on real time measurement and grid intensity

Scope 2 – Purchased Heat/Steam/Cooling			
	Example 2a – Purchased heat/steam	**Purchased cooling**	

Type of emissions source	District heating	District cooling (TBC – very low initial applicability)	
Data Source(s)	District heating bill		
Data Type(s)	1. Thermal quantity of heat purchased (MWh, BTU) 2. Volume of purchased heat (m^3) 3. Cost of quantity of heat purchased (€/$USD)		
Collected data:	1,406 MWh(th)		
	7821 m^3		
	€3,560 / X USD		
Type of emissions factor	Conversion factor from MW to CO2e Volume based EF (for volume of air presumably?) Spend based EF		
Hierarchy of EF preference	Thermal EF > Spend based EF		
Period hierarchy of EF preference	Shorter period > longer (e.g. monthly > quarterly > yearly)		
Period covered by EF	Q1 January 2024		
Example emissions factors	??? 18.31 kg CO2e / €		
Calculation method	Multiplication		
Example calculation	??? €3,560 * 18.31 kg CO2e / €		
Result	46873.6 kg CO2e		

Measuring Scope 3 GHG emissions – Topical ESRS E1, continued

TBD.

Measuring and disclosing Pollution – Topical ESRS E2

TBD.

Measuring and disclosing use of Water and Marine Resources – Topical ESRS E3

TBD.

Measuring and disclosing Biodiversity and Ecosystem Impacts – Topical ESRS E4

TBD.

Measuring and disclosing Resource Use and Circular Economy – Topical ESRS E5

TBD.

APPLIED CASE STUDIES