

Sustainability Reporting Alert

SCOPE 1 & 2 GHG EMISSIONS

OCTOBER 2023

CPA Canada's series of Sustainability Reporting Alerts (the **Alerts**) introduce concepts within sustainability disclosure and assurance standards. The Alerts are meant for preparers and auditors of sustainability disclosures, typically CPAs or other sustainability professionals.

Sustainability disclosures are not yet required in Canada; however, the newly formed Canadian Sustainability Standards Board (**CSSB**) is working with the International Sustainability Standards Board (**ISSB**) to support the adoption of International Financial Reporting Standards (**IFRS**) Sustainability Disclosure Standards (the **Standards**) in Canada. Until the Standards are required, they may be applied voluntarily.

IFRS S1 *General Requirements for Disclosure of Sustainability-related Financial Information* (**IFRS S1**) and IFRS S2 *Climate-related Disclosures* (**IFRS S2**) were issued in June 2023 effective for annual reporting periods beginning on or after January 1, 2024. Transitional relief in IFRS S1 allows an entity to disclose information on only climate-related risks and opportunities (as set out in IFRS S2) in the first year it applies IFRS S1 and IFRS S2.

IFRS S1 and IFRS S2 disclosures are meant to be complementary to both IFRS Accounting Standards and other Generally Accepted Accounting Principles and will form part of an entity's general purpose financial reporting.

Background

As we move to a financial reporting landscape that considers sustainability-related disclosures, CPAs will play a key role in transforming climate and other sustainability-related data into high-quality, investor-focused information.

In order to set meaningful greenhouse gas (**GHG**) emissions reduction targets and track progress over time, entities will need to measure and report on their carbon footprint, including direct and indirect GHG emissions.

To improve the consistency and comparability of GHG emissions disclosure, paragraph 29(a)(i) of IFRS S2 requires an entity to disclose its absolute gross GHG emissions by scope. In addition, IFRS S2 outlines acceptable methodologies to measure GHG emissions and requires disclosures

on methodologies applied and inputs used. With the exception of specific methods required by a jurisdictional authority or an exchange on which it is listed, an entity is required to disclose its GHG emissions measured in accordance with the Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (2004) and the Corporate Value Chain (Scope 3) Accounting and Reporting Standard (**GHG Protocol**). The GHG Protocol separates the source of emissions into three different categories, known as scope 1, 2 and 3 GHG emissions.

The purpose of this Alert is to:

- raise awareness of the scope 1 and 2 GHG emissions disclosure requirements;
- identify some specific topics that are anticipated to be areas of challenge; and
- help preparers get their organization ready for IFRS S2 reporting requirements.

A separate CPA Canada Sustainability Reporting Alert will address scope 3 GHG emissions disclosure requirements.

How are scope 1 and scope 2 GHG emissions defined?

The GHG Protocol defines scope 1 and 2 GHG emissions as follows:

Scope 1 GHG emissions are direct GHG emissions that occur from sources that are owned or controlled by an entity. This category includes direct emissions from the following activities:

- **generation of electricity, heat, or steam** – emissions from fuel combustion in stationary sources (e.g., boilers, furnaces, turbines)
- **physical or chemical processing** – emissions from manufacturing or processing of chemicals and materials (e.g., cement, aluminum, waste processing)
- **transportation of materials, products, waste and employees** – emissions from fuel combustion in company owned/controlled mobile sources (e.g., cars, trucks, buses, trains, airplanes, ships)
- **fugitive emissions** – emissions from intentional or unintentional releases (e.g., equipment leaks from joints, seals, packing and gaskets, methane leakages from gas transport)

Scope 2 GHG emissions are indirect GHG emissions that occur from the generation of purchased electricity, steam, heat and cooling consumed by an entity's owned or controlled equipment or operations. Scope 2 GHG emissions physically occur at the facility where electricity is generated.

Quantifying scope 1 GHG emissions

IFRS S2 requires companies to disclose absolute scope 1 and 2 GHG emissions for the reporting period, expressed as metric tonnes of carbon dioxide equivalent (**MT of CO₂e or tCO₂e**), calculated using the GHG Protocol.

Absolute emissions vs. Emissions intensity: ‘Absolute emissions’ refers to total emissions produced in contrast to ‘emissions intensity’ which measures the volume of emissions produced against some other relevant unit – for example, carbon emissions per dollar of revenue.

What is the GHG Protocol?

The GHG Protocol is a multi-stakeholder partnership of businesses, non-governmental organizations (NGOs), governments and others convened by the World Resources Institute (WRI), which is a U.S.-based environmental NGO, and the World Business Council for Sustainable Development (WBCSD). The mission of the GHG Protocol is to develop internationally accepted GHG accounting and reporting standards.¹

The GHG Protocol provides standards and guidance for companies and other types of organizations preparing a GHG emissions inventory.

For more background on the GHG Protocol, its standard-setting process and an overview of its key features, see CPA Canada’s report, [A Closer Look at the GHG Protocol](#).

In terms of measuring scope 1 and 2 GHG emissions, direct monitoring or measurement of emissions is uncommon. Scope 1 activity data may include purchased fuel volume, for example, whereas scope 2 activity data may be metered electricity consumption. The basic quantification methodology for calculating GHG emissions employed is outlined by the following calculation: Activity x Emission Factor x GWP (defined below) = CO₂e

- **Activity** is the measure of a level of activity that results in GHG emissions (e.g., quarterly litres of fuel or kWh of electricity consumed).
- **Emissions factor²** is to reflect the average GHG intensity per unit of activity data for a given source. Emissions are determined based on the emissions factor hierarchy from the preferred site-specific measured activity data to default factors from regulatory or industry association publications and/or engineered estimates.
- **Global Warming Potential (GWP)** is a metric that examines each GHG’s ability to trap heat in the atmosphere compared to CO₂. It is the mass of CO₂ that would warm the Earth as much as the mass of that gas. Thus, it provides a common scale for measuring the climate effects of different gases. It is calculated as GWP x mass of the other gas.

¹ [Greenhouse Gas Protocol. \(n.d.\). Companies and organizations.](#)

² Scope 1 GHG emissions factors are available on the GHG Protocol’s website - [Calculation Tools and Guidance | GHG Protocol](#) – however, it is recommended that entities use region and sector specific information whenever possible as the industrial processes or the composition of fuels used by businesses may differ by region and sector. Canadian entities may look to Canada’s National Inventory Report for province and sector specific emission factors.

For example, Delivery Company has a fleet of delivery vans. Delivery Company purchased 400,000 litres of diesel that was used by the fleet in the year. The activity data is the volume of fuel combusted, being 400,000 litres of diesel. Per Canada's National Inventory Report,³ the fuel combustion emission factor is 2.681 kg of CO₂ per litre of diesel fuel. As a result, the estimate of CO₂ emissions in the year from the use of the delivery vans is 1,072,400 Kg or ~1,072 tCO₂.

When emissions represent gases other than CO₂, the emissions are converted to CO₂e using the GWP values. The larger the GWP, the more that a given gas warms the Earth compared to CO₂ over a time period. For example, Nitrous Oxide (N₂O) has a GWP 273⁴ times that of CO₂ for a 100-year time horizon. IFRS S2 (paragraph B21) requires that entities use GWP values based on the latest Intergovernmental Panel on Climate Change (IPCC) assessment, based on a 100-year time horizon.

Continuing from the Delivery Company example above, along with the release of CO₂, the diesel fuel combustion also releases methane (CH₄) and N₂O. Delivery Company will use the same activity factor (fuel combusted) and the appropriate emission factors for CH₄ and N₂O per litre of diesel fuel to calculate estimated CH₄ and N₂O emissions. In addition, the emissions will also need to be converted from CH₄ and N₂O to CO₂e by multiplying the product of each by the appropriate GWP.

Quantifying scope 2 GHG emissions

When calculating scope 2 GHG emissions, electricity consumption (e.g., metered consumption) is the activity data, however, the emission factors used differ depending on the method applied. The [GHG Protocol Scope 2 Guidance](#) provides two approaches for measuring scope 2 GHG emissions, being the location-based approach and the market-based approach. The **location-based approach** measures the average GHG emissions intensity of grids on which energy consumption occurs (using mostly grid-average emission factor data). The **market-based approach** measures emissions from electricity that an entity has purposely chosen. It derives emission factors from contractual instruments, which include any type of contract between two parties for the sale and purchase of energy bundled with attributes about the energy generation, or for unbundled attribute claims.

For example, assume Consumer Company physically receives its electricity from the local power grid. The local power grid has an average emission factor of 100 g CO₂e/kWh. Consumer Company has entered into power purchase arrangements with Wind Company and Solar Company where it receives renewable energy certificates (RECs). The RECs convey an emission factor of zero (0 g CO₂e/kWh). As a result, assuming Consumer Company receives an equivalent kWh volume of RECs as electricity consumed, it will use an emission factor of 100 g CO₂e/kWh when reporting its scope 2 GHG emissions under a location-based approach and 0 g CO₂e/kWh when reporting its scope 2 emissions under a market-based approach.

³ National Inventory Report 1990-2020: Greenhouse Gas Sources and Sinks in Canada (2022), Part 2

⁴ Per the IPCC's sixth Assessment Report

Paragraph 29(a)(v) of IFRS S2 requires companies to disclose scope 2 GHG emissions using the location-based approach and provide information about any contractual instruments that are necessary to inform users' understanding of the entity's scope 2 GHG emissions.

Paragraph 29(iii) of IFRS S2 requires entities to disclose the approach it uses to measure emissions including:

- the measurement approach, inputs and assumptions the entity uses to measure its emissions;
- the reason why the entity has chosen the measurement approach, inputs and assumptions it uses to measure emissions; and
- any changes the entity made to the measurement approach, inputs and assumptions during the period and the reason for those changes.

Setting the organizational boundary

In measuring and disclosing GHG emissions, an entity must establish its 'organizational boundary.' The organizational boundary determines whether and how GHG emissions from different investments or business operations are included in an entity's scope 1 and 2 GHG emissions.

The GHG Protocol establishes three possible approaches to determining organizational boundaries that should be applied consistently.

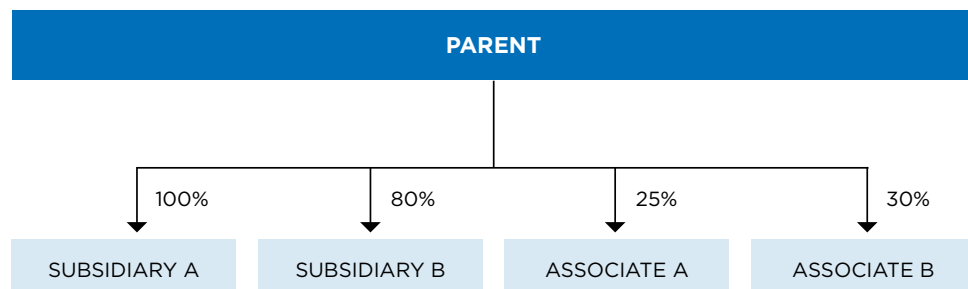
The three approaches are summarized in Chapter 3 of the GHG Protocol as follows:

- **Equity share:** Scope 1 and 2 GHG emissions of the investment are included in the entity's scope 1 and 2 GHG emissions based on the percentage of equity owned in the investment.
- **Financial control:** 100% of scope 1 and 2 GHG emissions of the investment are included in the entity's scope 1 and 2 GHG emissions if the entity has financial control of the investment. Financial control arises when the entity is able to direct the financial and operating policies with a view to gaining economic benefits.
- **Operational control:** 100% of scope 1 and 2 GHG emissions of the investment are included in the entity's scope 1 and 2 GHG emissions if the entity has operational control of the investment. Operational control arises if the entity has the full authority to introduce and implement its own operating policies.

Depending on the organizational boundary selected, emissions from certain investments or business operations may fall within a different category of the entity's GHG emissions (i.e., scope 1, 2, or 3⁵). For example, when an investment is identified as being inside the organizational boundary, then certain of its direct and indirect emissions would be included in scope 1 or scope 2.

⁵ Scope 3 GHG emissions include all indirect emissions not otherwise included in an entity's scope 2 GHG emissions that occur in the upstream or downstream activities of an entity's value chain.

Consider the following group structure:



The group prepares its financial statements under IFRS Accounting Standards and in doing so consolidates Subsidiary A and Subsidiary B and applies the equity method to its investments in Associate A and Associate B. The following percentages represent the results included in the consolidated financial statements of the group:

ENTITY	PERCENTAGE
Subsidiary A	100%
Subsidiary B	100%
Associate A	25%
Associate B	30%

For purposes of GHG emissions accounting, assume the group has operational control over Subsidiaries A and B as well as Associate B. Operational control does not mean that an entity necessarily has authority to make all decisions concerning an operation. As a result, an entity may have operational control over another entity and yet not consolidate that entity, as it does not have control in the context of IFRS 10 *Consolidated financial statements*. In this example, we also assume that the group does not have financial or operational control over Associate A.

The following table illustrates the percentage emissions that would be picked up from each entity in the group reporting under each method:

ENTITY	EQUITY SHARE	FINANCIAL CONTROL	OPERATIONAL CONTROL
Subsidiary A	100%	100%	100%
Subsidiary B	80%	100%	100%
Associate A	25%	0%	0%
Associate B	30%	0%	100%

If the group elects to use the operational control method, scope 1 and 2 GHG emissions should include 100% of Subsidiary A and Subsidiary B as well as 100% of Associate B. As the group does not have operational control over Associate A, 0% of Associate A's GHG emissions are included in scope 1 and 2 measurements and disclosures.

Under IFRS S2, the group's disclosures would include (in MT of CO₂e):

- absolute scope 1 GHG emissions generated during the reporting period (required by paragraph 29(a)(i)(1));
- absolute scope 2 GHG emissions generated during the reporting period (required by paragraph 29(a)(i)(2));
- scope 1 and 2 GHG emissions disaggregated to show emissions for the consolidated accounting group, which includes Subsidiary A (100%) and Subsidiary B (100%) and emissions for unconsolidated investees, which includes Associate A (0%)⁶ and Associate B (100%) (required by paragraph 29(a)(iv)); and
- an explanation that the group uses the operational control approach and that this is consistent with its peer group and, as such, enhances comparability (required by paragraph 29(a)(iii)).

Reconciling scoping differences between IFRS Accounting Standards and IFRS Sustainability Standards

To facilitate connectivity between information in the financial statements and GHG emissions information, as noted earlier, IFRS S2 requires companies to report GHG emissions disclosure separately for the consolidated accounting group and unconsolidated investees.

The *organizational boundary* options available under the GHG Protocol do not necessarily align with boundaries established for financial accounting.

When first developed, the approaches under the GHG Protocol were connected to IFRS Accounting Standards in effect at that time. However, this connection has drifted as application of the GHG Protocol has largely remained outside the purview of accountants. As a result, there is divergence in application to the extent that organizational boundary for specific items has been driven by accounting, and for which that accounting has evolved.

One example of this disconnect relates to emissions associated with leased assets. Categorizing emissions associated with contractual arrangements is particularly challenging. In the case of emissions arising from leased assets, the guidance⁷ on categorizing these emissions is rooted in the historical IFRS standard on accounting for leases, IAS 17 *Leases*. In the case of a lessee, if an entity has elected the equity share or financial control organizational boundaries, the categorization of emissions would follow the previous IAS 17 lease classification. That is, for leases classified as finance, emissions from fuel combustion would be reported as scope 1 and emissions from purchased electricity, scope 2. If the lease is classified

⁶ In this case, Associate A's emissions would be included in scope 3.

⁷ GHG Protocol Scope 3 Standard

as operating, emissions would be reported as scope 3. If the lessee has elected the operational control organizational boundary approach, emissions from fuel combustion would be reported as scope 1 and emissions from purchased electricity as scope 2, regardless of lease classification, as long as the lease provides operational control over the asset. The current IFRS Accounting lease standard, IFRS 16 *Leases*, removed the lease classification test for lessees, resulting in the majority of leases reported on the balance sheet. This has exasperated divergence and increased application confusion in this space.

Establishing the operational boundary

Along with determining the organizational boundary, companies will need to establish their operational boundary. The operational boundary determines how activities within the organizational boundary will be categorized. That is, it will determine whether emissions from activities are included in scope 1, 2 or 3.

The future of the GHG Protocol

The WRI and the WBCSD recently invited views on the need for updates to the GHG Protocol standards and guidance, including survey questions directed at its Corporate Standard and its Scope 2 Guidance. The deadline for submission was mid March 2023. Over the course of the five-month survey period, 1,400 survey responses were received.⁸ This may result in amendments to current guidance or issuance of additional guidance in the future.

Setting a base year and developing GHG emissions scope 1 and 2 targets

In order to demonstrate meaningful and consistent comparison of GHG emissions over time, a base year/period is required to be selected. Typically, this is defined as a single year but may be defined as the average of multiple years and may be consistent or different by scope of GHG emissions. The base year is used to measure progress towards climate-related targets, including scope 1 and 2 GHG emissions reduction targets.

Entities are increasingly committing to scope 1 and 2 reduction targets. For example, a growing number of Canadian companies have committed to net zero by 2050 and have set interim reduction targets from their base year in the form of absolute targets (e.g., a 30% reduction in scope 1 and 2 emissions) or intensity-based targets (e.g., a 20% reduction in scope 1 tCO₂e per tonne of product produced). For those entities that have set targets, IFRS S1 (paragraph 51) and IFRS S2 (paragraphs 33–37) include specific disclosure requirements related to those targets, including the metric used to set and monitor progress, the specific quantitative or qualitative target set, the timeframe over which the target applies, the base period from which progress is measured, any interim targets, performance against each target, any revisions to the target, and whether the target has been validated by a third party, amongst others.

⁸ Survey on Need for GHG Protocol Corporate Standards and Guidance Updates | GHG Protocol

Timeliness of data and reporting

Climate-related financial disclosures under IFRS S1 and IFRS S2 are required to be reported at the same time as an entity's financial statements, subject to temporary transition relief.⁹ Preparers should be aware of the challenges this may pose given that GHG emissions disclosure required under local regulations is typically reported 6+ months after an entity's reporting period, which is drastically different from a 90-day reporting deadline, for example. Preparers will need to work with engineers and other professionals to move up the timing of reporting and think about any inputs, assumptions and judgements that go into developing estimates and proxies when actual data is not yet available.

Getting your organization ready for the new standards

For entities without operations subject to regulatory GHG reporting, if you haven't started to collect the GHG inventory data needed to comply with IFRS S2 scope 1 and 2 GHG emissions disclosure requirements, this is the time to understand the processes and resources required to provide detailed information reliably and on time.

If you are already publishing sustainability information, prepare for more scrutiny of this information. As such, it would be prudent to start documenting key GHG emissions accounting policy decisions. For example, organizations should document:

- significant sources of emissions for the organization;
- the organizational and operational boundaries used for the emissions inventory including supporting documentation for "financial control" and "operational control" assessments, as applicable;
- whether there are any mergers, acquisitions or divestitures that require adjustment of the baseline inventory and/or comparative figures;
- how emissions are calculated including underlying methodologies, emissions factors and assumptions; and
- controls over gathering and reporting GHG emissions data.

One of the biggest challenges organizations face with sustainability reporting is procuring the appropriate data. In many organizations, different business units have implemented their own systems for collecting and reporting data and these tend to be less formal and less mature than financial reporting systems and controls. CPAs have the skills to address relevant controls and processes needed to gather and report data; they are well positioned to support the decisions of how to collect and collate data across the organization. These decisions start with reviewing what data needs to be collected and how it will be managed.

⁹ In the first annual reporting period, an entity is not required to publish sustainability-related financial disclosures at the same as the related financial statements.

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Additional resources

CPA Canada (2022) [A Closer Look at the GHG Protocol](#)

CPA Canada (2020) [GHG Emissions Management](#)

Comments

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