

# Greenhouse Gas Protocol

## Detailed Summary of Scope 3 Stakeholder Survey Responses

March 2024

---

### Introduction

The GHG Protocol secretariat solicited stakeholder feedback on the use of the *Scope 3 Standard* and *Scope 3 Technical Guidance* from November 2022 to March 2023 to understand user needs, identify topics which may warrant updates or additional guidance, and solicit recommendations for specific updates or new guidance.

Surveys were conducted for *The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard* (“**Corporate Standard**”), the *GHG Protocol Scope 2 Guidance* (the “**Scope 2 Guidance**”), the *Corporate Value Chain (Scope 3) Accounting and Reporting Standard* (the “**Scope 3 Standard**” or “**Standard**”), the *Technical Guidance for Calculating Scope 3 Emissions* (the “**Scope 3 Technical Guidance**” or “**Technical Guidance**”). The latter two were included in the scope 3 survey. The fourth survey concerned market-based accounting approaches. Respondents could submit proposals with the option to have their proposal(s) posted publicly. Over 230 proposals were submitted that related to one or more of the four survey topics.

Approximately 350 individuals and/or organizations submitted feedback through the scope 3 survey. Respondents exhibited a diversity of opinion. This document provides a detailed summary of all respondents’ feedback. In preparing this summary, every effort was made to achieve completeness in reflecting the range of feedback provided. No major feedback was intentionally omitted.

The inclusion of feedback in this document does not indicate that a given recommendation will be implemented or reflected in updates to either the *Scope 3 Standard* or *Scope 3 Technical Guidance*. This document is not a scope of work for planned updates, but instead a report of feedback received through the survey.

The GHG Protocol secretariat and governance bodies are prioritizing which topics to address in the updates process, including the scope of work for updates and additional guidance and resources. The aim of any updates will be to align with best practice approaches to ensure that the GHG Protocol standards for corporate accounting and reporting are effective in providing a rigorous and credible accounting foundation for businesses to measure, plan, and track progress toward science-based and net-zero targets in line with the global 1.5°C goal. Any future updates will seek harmonization and interoperability with accounting rules under development through major disclosure initiatives.

As with all Greenhouse Gas Protocol standards, any updates or additional guidance will be developed through an inclusive, global, multi-stakeholder process, with participation from business, non-governmental organizations (NGOs), academia, and government worldwide.

This summary of survey responses does not include recommendations from submitted scope 3 proposals, which are summarized in the *Scope 3 Proposals Summary* available [here](#).

This document organizes survey feedback into the following sections:

- A. Presentation
- B. Harmonization
- C. Identification and classification
- D. Boundary setting
- E. Data collection
- F. Quantification
- G. Allocation
- H. Targets and performance tracking
- I. Assurance
- J. Reporting
- K. Tools & support
- L. Interoperability
- M. Market-based accounting approaches

Within each section, survey feedback is organized into the following sub-sections:

- **Background:** Provided by the GHG Protocol secretariat to summarize the current GHG accounting and reporting approach on a topic in the *Scope 3 Standard*, *Scope 3 Technical Guidance*, or other GHG Protocol standards and guidance documents if relevant.<sup>1</sup>
- **Feedback:** Summary of stakeholder feedback to contextualize recommendations and requests.
- **Recommendations:** Proposed updates, changes, and/or non-changes from respondents.
- **Support requests:** Requests for additional guidance that should not require changes.
- **Category-specific feedback:** Lists of recommendations and support requests that are specific to a scope 3 category. Approximately 20% of feedback was readily classified as being category specific. The remainder was general or category-agnostic.

Throughout this document, the lists of feedback, recommendations, and requests are not listed or ranked in order of priority or response frequency.

---

<sup>1</sup> For the official, complete accounting and reporting requirements and guidance on a given topic, please refer to each GHG Protocol standard or guidance directly, available [here](#). Other GHG Protocol standards and guidance documents include the *Product Life Cycle Accounting and Reporting Standard* (the “Product Standard”), *The GHG Protocol for Project Accounting* (the “Project Protocol”), and the draft *Land Sector and Removals Guidance*.

## Executive Summary

### General feedback

The scope 3 survey included initial questions on respondents' level of satisfaction with the *Scope 3 Standard* and the *Scope 3 Technical Guidance* and on the need for updates. Most respondents expressed satisfaction (being somewhat satisfied or very satisfied) with the *Scope 3 Standard* and the *Technical Guidance*. Most respondents expressed a need for minor rather than major updates.

Much of the survey feedback was focused on requests for additional guidance, clarification, and supporting resources, rather than revisions to the standard. Many respondents requested tools, databases, examples, and other resources to facilitate implementation. Respondents also highlighted the need for higher-quality data and calculation methods, and more transparency for consistent and comparable greenhouse gas (GHG) emissions results. Several respondents highlighted the need to enhance interoperability with external programs and frameworks (e.g., SBTi, PCAF, ISSB, etc.).

Requests were also made to limit optionality (e.g., removing or limiting use of the spend-based method, expanding minimum boundaries of scope 3 categories), tighten requirements, add new calculation methods, or make updates to parts of the current *Standard* and *Technical Guidance*.

### Section A: Presentation

This section outlines survey respondents' feedback concerning consolidating or streamlining guidance.

Generally, survey respondents proposed consolidating or streamlining the standards and guidance documents to facilitate ease-of-use and adoption. Respondents provided various suggestions for making the existing corporate suite of standards and guidance easier to use and reference, including for small- to medium-sized enterprises (SMEs). Suggestions included removing overlapping content, developing plain text and numbered checklists for requirements, and improving document navigability. Some respondents recommended that the GHG Protocol prioritize improving the current guidance over revising or developing new requirements.

### Section B: Harmonization

This section outlines survey respondents' feedback concerning harmonizing the GHG Protocol standards and guidance, including the *Scope 3 Standard* and the *Technical Guidance*, the *Scope 3 Standard* and the *Product Standard*, and the *Scope 3 Standard* and the *Scope 2 Guidance*.

Respondents strongly urged the GHG Protocol to improve harmonization between the corporate suite of standards and guidance. Several respondents requested more clarity and guidance on accounting for emissions from purchased energy across all standards. Some respondents identified a need to harmonize guidance regarding leased assets. Others recommended developing a consolidated glossary of terms instead of each standard containing a unique glossary. Harmonizing the *Scope 3 Standard* and *Scope 2 Guidance* was raised by many respondents, including to specify whether and/or how to use scope 2 emissions data calculated using the market-based method in a scope 3 inventory.

## Section C: Identification and classification of scope 3 emissions

(Reference: *Scope 3 Standard*, Chapter 5)

This section outlines survey respondents' feedback concerning identification and classification of value chain (scope 3) emissions. This includes feedback on the three consolidation approaches, identifying and classifying business activities by category, and industry-specific guidance.

Many respondents recommended tightening the minimum boundaries by scope 3 category and reviewing the minimum versus optional boundaries to reduce non-uniformity between reporting entities. This includes recommendations to make currently optional activities part of the required minimum boundaries (e.g., requiring the inclusion of remote work, the optional inclusion of life cycle emissions associated with manufacturing vehicles, facilities, or infrastructure for upstream transportation and distribution). A few respondents provided feedback concerning reviewing scope 3 category names and organization.

Many respondents requested more support in identifying business activities that relate to multiple scopes and categories, including requests for industry-specific support. Many noted that the GHG Protocol's industry-agnostic requirements and guidance was difficult for some companies to apply to their specific activities and operating circumstances, without detailed industry-specific guidance.

## Section D: Boundary setting

(Reference: *Scope 3 Standard*, Chapter 6)

This section outlines survey respondents' feedback concerning boundary setting for scope 3 inventories. This includes feedback concerning optionality vs. prescriptiveness, tightening the definitions of relevance, materiality, and influence to avoid ambiguous interpretation, the treatment of biogenic emissions, and the double counting of emissions between companies' GHG inventories.

Many respondents advocated for reducing optionality and requiring that companies report all scope 3 emissions categories to conform with the GHG Protocol *Corporate Standard*. Some advised that this requirement be phased in over a period of years. Others expressed concern about making the inclusion of scope 3 emissions mandatory and cautioned the GHG Protocol to consider what most companies can feasibly measure and report.

## Section E: Data collection

(Reference: *Scope 3 Standard*, Chapter 7 and Appendix C)

This section outlines survey respondents' feedback concerning prioritizing data collection and accessing, selecting, and using emission factors and global warming potential values.

Many respondents requested additional support in sourcing, verifying, calculating, and using emission factors. Several respondents outlined issues of inconsistency on the current use of activity data and emission factors and encouraged the GHG Protocol to develop further guidance and tools to support both reporting organizations and suppliers to improve data quality. Many respondents asserted that the lack of supplier-specific emissions data and paywalled life cycle inventory emission factor databases — remains a major hurdle for market-wide adoption of scope 3 accounting and reporting.

Respondents expressed challenges from the perspective of both SMEs, which often face cost and capacity constraints, and large-cap companies, which often face supply-chain complexity and data availability constraints. Many respondents cautioned that too many companies are relying on spend-based emission factors from environmentally extended input-output (EEIO) models, proxies, and less reliable calculation methods due to primary and/or supplier-specific data limitations. Many respondents requested additional guidance concerning improving GHG inventory quality and reliability.

Some respondents recommended establishing tighter data quality requirements and restricting or limiting available calculation methods, which could be implemented over a phase-in period.

## **Section F: Quantification**

(Reference: *Scope 3 Technical Guidance* and *Scope 3 Standard*, Chapter 7)

This section outlines survey respondents' feedback concerning measuring and calculating emissions. Itemized calculation methods (including formulas, activity data, emission factor types, and data collection guidance) are specified in detail in the *Scope 3 Technical Guidance* and summarized in Appendix D therein (available as a stand-alone reference document [here](#)).

Many respondents provided feedback concerning the spend-based method, with many expressing concerns regarding its unreliability. Many requested that the GHG Protocol limit its use and/or provide more guidance on its applicability and reliability. Some asserted that removing this method entirely would make *Scope 3 Standard* conformance impossible for many reporting entities in the short term.

Many respondents provided feedback on estimating, projecting, and modeling emissions, especially downstream emissions which may occur in future years. Some respondents recommended standardizing modeling best practice (e.g., product category rules), forward-year emission factors, product lifespan ranges, product use profiles, and other elements) to improve consistency and reliability. A few respondents proposed a new method for quantifying emissions from product use and, separately, using the project-based method from the *Project Protocol*.

Respondents provided feedback concerning quantifying emissions from various services, intermediate products, intermediary activities, infrastructure, and other activities. For financial institutions, many respondents requested that the GHG Protocol refer to standards provided by the Partnership for Carbon Accounting Financials (PCAF) for quantification and allocation guidance for investments.

## **Section G: Allocation**

(Reference: *Scope 3 Standard*, Chapter 8)

This section outlines survey respondents' feedback concerning allocating quantified GHG emissions, including by suppliers for clients (i.e., supplier-specific emissions data), for complex supply chains, and in the context of allocating value chain emissions reductions.

Several respondents requested more guidance on choosing between allocation methods. A few respondents proposed alternative allocation concepts to account for emissions from value chain business activities, including integrating inventory aging rules for purchased goods, utilizing a stock approach, developing depreciation and amortization rules to allocate cradle-to-gate emissions over the lifespan of a product, and annualizing emissions associated with the use of sold products.

Many respondents raised the topic of accounting for emissions associated with long-lived and durable products, the allocation of cradle-to-gate emissions attributable to recycled or reused goods and materials, and other economic activities that divert waste from landfill and which 'unlock' circularity.

## **Section H: Targets and performance tracking**

(Reference: *Scope 3 Standard*, Chapter 9)

This section outlines survey respondents' feedback concerning base year recalculations, target setting, internal metrics or key performance indicators (KPIs), establishing external KPIs, accounting for and reporting offsets and/or credits separately from the scopes, avoided emissions, and quantifying and reporting value chain emissions reductions.

Several respondents requested more guidance setting targets when calculations methods change over time. This included concerns that recalculating base year emissions is often not feasible when calculation methods are changed and when organizations switch to using primary data. Many respondents noted that the optionality and flexibility built into the *Scope 3 Standard* by design makes it challenging or impossible to normalize or make comparable GHG inventory results between companies, including for developing industry-specific or comparable KPIs. Many respondents asked for clearer guidance on which calculation methods and data sources are reliable to quantify emissions reductions.

## **Section I: Assurance**

(Reference: *Scope 3 Standard*, Chapter 10)

This section outlines survey respondents' feedback concerning assuring and verifying inventory results.

Survey feedback included requests for checklists to support third-party assurers or auditors of GHG inventories. Respondents differed in their view of the GHG Protocol's role in assurance. Several respondents recommended strengthening the requirements for assurance and encouraged alignment with mandatory disclosure rules. Some urged the development of legally defensible compliance checklists for companies, regulators, and enforcers, including for auditing purposes. Other respondents cautioned against requiring assurance due to the high level of uncertainty of scope 3 inventory results; they noted that data quality, calculation methods, and the complexities of compiling value chain data can dramatically affect accuracy. Some asserted that compiling audit-quality emissions results for most of the value chain is not possible beyond direct vendors. They cautioned that third-party verification for thousands of value chain partners is currently not feasible for many, if not most, organizations.

## **Section J: Reporting**

(Reference: *Scope 3 Standard*, Chapter 11)

This section outlines survey respondents' feedback concerning reporting requirements, comparability, and claims based on scope 3 inventory results. Respondents identified two approaches to reporting. Either (i) maintain existing calculation methods and data quality optionality but tighten the reporting requirements or (ii) maintain current reporting optionality but tighten the calculation methods and data quality requirements. Absent tighter reporting requirements, some respondents asserted that the GHG Protocol should communicate more caution that corporate scope 3 inventory results are potentially unreliable and likely incomparable. Many respondents encouraged the GHG Protocol to consider and prioritize comparability during the updates process. Others requested that the GHG Protocol distinguish

itself from disclosure frameworks that establish and enforce requirements for corporate-level or product-level claims of emissions increases or decreases and other performance metrics.

### **Section K: Tools & Support**

(Reference: GHG Protocol [Calculation Tools and Guidance](#) and [Online Training](#))

This section outlines survey respondents' feedback concerning guidance, tools, training, educational resources, and other support services. Many respondents asserted that collecting supplier-specific emissions data is the biggest challenge for organizations to perform scope 3 emissions accounting and requested open-source emission factor databases or similar tools that could be freely relied upon. Respondents also requested other resources to facilitate implementation, such as additional examples, FAQs, and forums.

### **Section L: Interoperability**

(Reference: GHG Protocol [Review Service](#) regarding the Built on GHG Protocol mark)

This section outlines survey respondents' feedback concerning interoperability with external standards, guidance, frameworks, and programs.

Respondents requested improved interoperability with programs and standards, such as the Science Based Targets initiative (SBTi) and the International Sustainability Standards Board (ISSB) standards developed by the International Financial Reporting Standards (IFRS). Many survey respondents provided industry- and/or sector-specific feedback and referenced external, third-party supplementary guidance documents. [Appendix A here](#) provides a consolidated list of external sources referenced by survey respondents.

### **Section M: Market-based accounting approaches**

This section outlines survey respondents' feedback concerning the use of scope 2 emissions data, calculated using the scope 2 market-based method, in a scope 3 inventory and feedback concerning market-based accounting approaches generally.

There is no mention of market-based accounting approaches in the *Scope 3 Standard* (2011) or *Technical Guidance* (2013), including using value chain partners' emissions data, calculated using the scope 2 market-based method, in a scope 3 inventory. Many respondents were unsure how to interpret the *Scope 3 Standard's* absence of guidance concerning whether and/or how to use scope 2 emissions data calculated using the market-based method. Some respondents requested that the GHG Protocol make clear in the *Scope 3 Standard* whether scope 2 emissions data calculated using the market-based method is allowed, and many urging the GHG Protocol to allow it.

This document summarizes feedback on market-based approaches received through the scope 3 survey. The GHG Protocol solicited feedback related to market-based approaches through a separate survey (summarized in the *Scope 3 Proposals Summary* (available [here](#)). Stakeholder feedback on the scope 2 market-based method was solicited through the scope 2 survey and is summarized in the *Detailed Summary of Survey Responses on Scope 2 Guidance* and the *Summary of Proposal Submissions Related to Scope 2 Guidance* (both of which are available [here](#)).

## Table of Contents

Introduction .....	1
Executive Summary .....	3
A. Presentation .....	10
A.1. Consolidate the corporate standards and guidance .....	10
A.2. Streamline the requirements and guidance .....	10
B. Harmonization between GHG Protocol standards and guidance.....	12
B.1. Harmonize all the GHG Protocol standards and guidance .....	12
B.2. Harmonize the Scope 3 Standard and Technical Guidance.....	12
B.3. Harmonize with the Product Standard .....	13
B.4. Harmonize with the Scope 2 Guidance .....	14
C. Identification and classification of scope 3 emissions .....	15
C.1. Consolidation approaches .....	15
C.2. Identifying business activities .....	16
C.3. Industry-specific guidance.....	18
C.4. Minimum boundaries for categories 1 through 14.....	18
C.5. Minimum boundaries for category 15 (Investments) .....	23
C.6. Temporal boundaries .....	26
C.7. Double counting .....	27
C.8. Re-name or re-organize categories .....	30
D. Boundary setting.....	32
D.1. Requirements .....	32
D.2. Optionality vs. prescriptiveness .....	33
D.3. Relevance and materiality terminology .....	33
D.4. Biogenic emissions and removals.....	34
E. Data collection .....	36
E.1. Prioritization.....	36
E.2. Emission factors .....	36
E.3. Global warming potential values .....	38
E.4. Data collection and availability .....	39
E.5. Data quality, gaps, and proxies.....	40
E.6. Data improvements .....	41
E.7. Data management.....	42
F. Quantification.....	43
F.1. Calculation methodologies .....	43
F.2. Spend-based method .....	46
F.3. Usage-data method (live, real-time, or annual) .....	48
F.4. Project-based method .....	48
F.5. Estimating downstream emissions .....	49
F.6. Non-physical products (e.g., services, digital, cloud, SaaS).....	50

F.7. Intermediaries (intermediary parties and activities) .....	51
F.8. Infrastructure.....	52
F.9. Investments.....	53
F.10. Other case-specific calculation guidance .....	54
G. Allocation .....	55
G.1. Allocation methods.....	55
G.2. Inventory practices .....	57
G.3. Durability and long-lived products.....	58
G.4. Reuse, recycling, circular economy .....	59
G.5. Depreciate, amortize, or annualize GHG results.....	62
H. Target setting and performance tracking.....	63
H.1. Base year recalculations .....	63
H.2. Target setting .....	64
H.3. Internal metrics and KPIs.....	65
H.4. External performance-based KPIs .....	66
H.5. Offsets and credits .....	67
H.6. Avoided emissions.....	68
H.7. Value chain reductions.....	70
I. Assurance .....	71
I.1. Requirements for assurance and verification.....	71
I.2. Checklist .....	72
J. Reporting .....	73
J.1. Reporting requirements.....	73
J.2. Uncertainty.....	75
J.3. Comparability .....	75
J.4. Claims.....	76
K. Tools & support.....	78
L. Interoperability (with external standards, guidance, frameworks, and programs) .....	80
M. Market-based accounting approaches .....	83
M.1. Using scope 2 market-based emissions data in a scope 3 inventory.....	83
M.2. Other market-based accounting approaches.....	85
Appendix A: External References (cited by survey respondents) .....	87
Appendix B: Emission factor sources (cited by survey respondents) .....	91

## A. Presentation

This section outlines survey respondents' feedback concerning consolidating requirements between the standards and guidance documents (A.1) and streamlining the requirements (A.2).

### A.1. Consolidate the corporate standards and guidance

Background:

Section 1.1 of the *Scope 3 Standard* lists other GHG Protocol standards and guidelines that were available at the time the *Scope 3 Standard* was published in 2011. Scope 3 calculation methods and guidance are detailed in a companion document, the *Technical Guidance for Calculating Scope 3 Emissions*, available on the GHG Protocol website.

Feedback from respondents:

Some respondents expressed that the current array of GHG Protocol corporate standards and guidance are complex and confusing to follow. This creates a barrier to entry and makes adoption more difficult. Several respondents recommended focusing on enhancing the accessibility of the corporate suite of standards and guidance to support comprehensive familiarity, consistent interpretation, and more common use of reported inventory results.

Recommendations from respondents:

1. Merge and consolidate the *Scope 3 Standard* and the *Scope 3 Technical Guidance*.
2. Make no major revisions; make only basic revisions to update references and fix broken links.
3. Remove or avoid overlapping content between the corporate suite of standards and guidance (e.g., accounting principles, consolidation approaches, leased asset guidance, and glossaries).
4. Create a single, concise, consolidated standards document next to the *Corporate Standard*, *Scope 2 Guidance*, *Scope 3 Standard*, and *Scope 3 Technical Guidance* and serve as universal standards reference to support consistency, ease of use, and alignment across the scopes.

### A.2. Streamline the requirements and guidance

Feedback from respondents:

Many respondents requested that the requirements of the corporate suite of standards be simplified or streamlined in some fashion, expressing that this could facilitate wider market adoption, including by small- to medium-sized enterprises. Some recommended consolidating the requirements between the corporate suite of standards and guidance to streamline assurance and verification processes. This could support corporate accounting professionals who are preparing GHG inventories that will need to be assured or audited. Recommendations to streamline and consolidate the corporate suite were often listed alongside feedback that reporting companies need more examples, case studies, and industry-specific guidance to apply standard requirements (see C.3 [here](#)). Separately, several respondents expressed being overwhelmed by the number of third-party supplementary standards, disclosure frameworks, climate programs, and current or future regulations that point to or reference the GHG Protocol standards and guidance document for conformance (see L [here](#)).

Recommendations from respondents:

1. Improve navigability by slimming down the text, using plain text, and normalizing formatting.
2. Provide more intuitive (non-PDF) formats, and electronic interfaces that can be accessed online and cross-referenced.
3. Distinguish requirements versus recommendations and guidance clearly. List the requirements using a numbered (not bullet-point) checklist or consolidated appendix. Make the standards read more like codified legislation and less like textbooks.
4. Provide requirements for specific situations (e.g., if no primary data is available, then follow requirements x, y, z).
5. Remove all case studies and examples and house them in stand-alone guidance documents.

Support requests from respondents:

6. Prepare a short “How to begin” guide.
7. Provide more specific workflow guidance at a more detailed level than the *Technical Guidance*.
8. Provide more case study examples.
9. Create dynamic lists and guides for small- to medium-sized enterprises.
10. Translate the corporate suite of standards and guidance into all major languages.
11. Integrate practical guidance to adopt or “phase in” scope 3 accounting (like this EPA website<sup>1</sup>).

---

<sup>1</sup> EPA: Scope 3 Inventory Guidance. Accessed 2023.09.26. <https://www.epa.gov/climateleadership/scope-3-inventory-guidance>

## B. Harmonization between GHG Protocol standards and guidance

This section outlines survey respondents' feedback concerning harmonizing all GHG Protocol standards and guidance (B.1) and harmonizing the *Scope 3 Standard* with the *Scope 3 Technical Guidance* (B.2), the *Product Standard* (B.3), and the *Scope 2 Guidance* (B.4).

### B.1. Harmonize all the GHG Protocol standards and guidance

Feedback from respondents:

A few respondents identified inconsistencies between the GHG Protocol's corporate standards and guidance as itemized below. This included feedback to reduce repetition, redundancy, and overlaps between the documents with the objective of improving harmonization, interoperability, and ease-of-use of the corporate standards and guidance for assessing scope 1, scope 2, and scope 3 emissions.

Recommendations from respondents:

1. Harmonize and standardize the terms and definitions across all GHG Protocol standards and guidance to ensure consistency, readability, and interpretability.
2. Develop a consolidated glossary of terms across all standards and guidance. This was identified as important for all stakeholders to prepare and interpret GHG inventory results effectively.
3. Reconcile how energy generation and purchased energy are accounted for across scope 1, 2, and 3, including transmission and distribution losses (this point is expanded upon in [C.4 here](#)).
4. Harmonize standard guidance regarding leased assets (category 8 and category 13) across all standards, including in appendices, case studies, and examples. Some respondents expressed confusion applying guidance to various distinct contract types.
5. Update references to the IPCC with the recent IPCC 2006 publication or the 2019 refinement.
6. Provide definitions of commonly used and/or popularized terms that have not otherwise been used in the GHG Protocol standards (e.g., well-to-tank, tank-to-wheel, well-to-wheel).

### B.2. Harmonize the Scope 3 Standard and Technical Guidance

Feedback from respondents:

Some respondents identified inconsistencies between the *Scope 3 Standard* and the *Scope 3 Technical Guidance* that require harmonization and clarity, as itemized below.

Recommendations from respondents:

1. Correct text inconsistencies and references in Table 4.1 of the *Scope 3 Technical Guidance* and Table 5.7 from the *Scope 3 Standard*.
2. Review consistency of the "who pays" language in the *Scope 3 Standard* and *Scope 3 Technical Guidance* for transportation and distribution (category 4 and category 9).
3. Provide stricter guidance on the use of life cycle, cradle-to-gate, and combustion emissions factors for transportation and distribution. Transportation-related GHG emissions appeared to some to be cradle-to-gate or tank-to-wheel (TTW) in the *Scope 3 Standard* and well-to-wheel

(WTW) or full life cycle in the *Scope 3 Technical Guidance*.<sup>1</sup> Some users are unsure whether to include well-to-wheel (WTW) missions.

4. Fix business travel (category 6) guidance inconsistency between the *Scope 3 Standard* and the *Scope 3 Technical Guidance* body text and Appendix D (p. 171).
5. Harmonize guidance on waste-related emissions for the processing of sold products (category 10). The *Scope 3 Technical Guidance* states that the site-specific method “involves determining the amount of fuel and electricity used and the amount of waste generated from processing of sold intermediate products by the third party.” However, the *Scope 3 Standard* has a sub-section titled: “No allocation for waste generated in production (e.g., within category 1, category 2, and category 10)” (p.91).

### B.3. Harmonize with the Product Standard

Background:

The *Scope 3 Standard* and *Product Standard* both take a value chain or life cycle approach to GHG accounting and were developed at the same time. The relationship between the two standards is explained in the *Scope 3 Standard*, on p. 7, and the *Product Standard*, on p. 6.

Feedback from respondents:

Some respondents identified inconsistencies between the *Product Standard* and the *Scope 3 Standard*. Several noted that, while the standards reference each other, more detailed references at various steps could be beneficial. This was identified as important because product-level, cradle-to-gate emissions data (primary and secondary) is foundational for several of the scope 3 categories (including category 1 and category 2). Some respondents recommended harmonizing guidance in the *Product Standard*, which permits the inclusion of biogenic emissions, and *Scope 3 Standard*, which does not.

Recommendations from respondents:

1. Harmonize biogenic CO<sub>2</sub> emissions inclusion or exclusion rules with the *Product Standard*.
2. Harmonize co-product allocation rules with the *Product Standard* (refer to [G.1 here](#) for more).
3. Strengthen interoperability with the *Product Standard* and the *Scope 3 Standard*.
4. Review both the Recycled Content Method and Closed Loop Approximation Method referenced in the *Product Standard* and the *Scope 3 Standard* (refer to [G.4 here](#) for more).
5. Expand upon Box 8.5 of the *Product Standard* regarding questions to ask or information to review when selecting lifecycle databases, which states that users should review whether the emission factor values were developed using a consistent methodology. Some respondents suggested that these questions should provide much more detail about emission factor selection, including scope, boundary, in/exclusion, functional unit, methodological choices, assumptions, global warming potential (GWP) values, and allocation method(s) (refer to [E.2 here](#) for more on emission factors).

<sup>1</sup> Neither the *Scope 3 Standard* nor the *Technical Guidance* uses any of the following terms: well-to-tank (WTT), tank-to-wheel (TTW), and/or well-to-wheel (WTW). The GHG Protocol uses the term “cradle-to-gate” which includes well-to-tank activities and associated emissions.

## B.4. Harmonize with the Scope 2 Guidance

### Background:

The *Scope 2 Guidance* was published in 2015 while the *Scope 3 Standard* and *Technical Guidance* were published in 2011 and 2013, respectively. Results calculated using the location-based or the market-based method as specified in the *Scope 2 Guidance* represent two separate ways of allocating emissions from energy generation and each method's results can reflect some of the emissions reflected in the other method (p. 40). Regarding scope 3 category 3, the *Scope 2 Guidance* states that a reporting "company **shall** disclose whether a market-based or location-based scope 2 total is used as the basis for calculating scope 3 category 3" emissions (p. 10). Further, companies should disclose which calculation method they used to calculate and report transmission and distribution losses in scope 3 category 3, but do not need to dual report (Appendix B, p. 96-97). For more scope 2 Stakeholder Survey feedback, refer to the *Detailed Summary of Responses from the Scope 2 Guidance Stakeholder Survey* [here](#).

### Feedback from respondents:

Many respondents identified that the *Scope 3 Standard* lacks guidance on whether/how to use scope 2 emissions data calculated using the market-based method (refer to section [M](#) for feedback concerning market-based accounting approaches). In this context, some respondents expressed concern that allowing the scope 2 market-based method for category 3, absent a dual reporting requirement, could result in the non-reporting of life cycle emissions. Some respondents requested that the GHG Protocol make the inclusion of scope 3 category 3 emissions mandatory, as this is necessary to cross-compare alternative energy.

### Recommendations from respondents:

1. Clarify whether value chain entities must provide supplier-specific emissions data using the location-based method. State clearly whether market-based scope 2 emission factors from value chain entities can be used in a reporting entity's scope 3 inventory (refer to [M here](#) for more).
2. Harmonize with section 5.2.1 of the *Scope 2 Guidance* (p. 34) regarding classifying emissions from leased electricity generating assets, depending on ownership, operation, and/or control. See recommendation 5 in [B.2 here](#) and recommendation 4 in [B.1 here](#) regarding leased assets.

## C. Identification and classification of scope 3 emissions

This section outlines survey respondents' feedback concerning identifying and classifying emissions. This includes feedback on the three consolidation approaches (C.1), identifying and classifying business activities by scope 3 category (C.2), industry-specific guidance (C.3), the minimum and optional boundaries of each category (excluding category 15) (C.4), the minimum and optional boundaries of category 15 (C.5), temporal boundaries (C.6), double counting of emissions between company GHG inventories (C.7), and reviewing category names and organization (C.8). For current guidance, refer to Chapter 5, Identifying Scope 3 Emissions, in the *Scope 3 Standard* (p. 26-57), and Chapter 6, Setting the Scope 3 Boundary (p. 58-63).

### C.1. Consolidation approaches

Background:

The *Corporate Standard* and the *Scope 3 Standard* provide the three consolidation approaches that organizations can use to set each their organizational boundary. These are: equity share, financial control, and operational control (*Scope 3 Standard*, p. 29). The *Corporate Standard* and the *Scope 3 Standard* require that the same consolidation approach be used across a company's scope 1, scope 2, and scope 3 inventory. See the *Corporate Standard*, chapter 3, Setting Organizational Boundaries, for more information on each of the consolidation approaches.

Feedback from respondents:

Several respondents asserted that having multiple consolidation approaches makes it difficult, if not impossible, to compare GHG inventories between companies. Many recommended limiting the number of approaches, arguing that potential non-uniformity between companies' GHG inventories is not serving the greater market. Some requested that the GHG Protocol review the legal implications of consolidation approach definitions across the corporate suite of standards, including in terms of liability and enforceability. Refer to section B, Feedback on organizational boundaries, in the *Detailed Summary of Responses from the Corporate Standard Stakeholder Survey* [here](#) for more feedback thereof.

Recommendations from respondents:

1. Replace the equity share approach with a "net equity basis boundary" to normalize boundaries across all companies and to facilitate comparison and risk assessment.
2. Change the definition of operational control to: "GHG emissions from operations under the control of..." and not "... over which it has operational control."

Category-specific feedback from respondents:

3. Category 3 (Fuel- and energy-related activities not included in scope 1 or scope 2):
  - a. It's not clear how to account for emissions from owned (not controlled) generating facilities in the power sector.
  - b. Provide mining sector guidance in terms of selecting consolidation approaches by and between all parties involved, and the implications for inclusion or exclusion.

4. Category 7 (Employee commuting):
  - a. Provide guidance regarding how operational control interacts with employee commuting services, including services owned/controlled by a company, and renewable electricity (home or on-site) (refer to commuting-specific feedback in [C.4 here](#)).
  - b. Provide guidance regarding co-working spaces. A building owner may lease space to a co-working company (lessee) which sub-leases both dedicated desks, private offices, and full floors to companies and shared work/amenity spaces to freelancers.
5. Category 8 and category 13 (Upstream and Downstream leased assets):
  - a. Close the potential loophole whereby a lessor(s)/lessee(s) can exclude scope 1 and scope 2 emissions depending on the consolidation approach.
  - b. Provide more guidance for various lease types (e.g., operating, financial, and triple-net leases, with or without sub-metering), lessees, sub-tenants, and co-working spaces.
  - c. Consider how to account for third-party ownership, for example, PPAs, whereby a third-party developer operates and maintains a solar photovoltaic (PV) system on leased land.
  - d. Control is not always straightforward in the case of leased equipment. Clarify what gives rise to or constitutes operational control, including for leased vehicles and machinery.
  - e. The term "control" is not always straightforward for leased buildings or spaces. For lessees, lessor capex decisions heavily influences energy use and operating conditions (e.g., temperature) may be controlled by the lessor. For lessors: cash flow or contractual constraints limit the purchase/installation of new equipment and lessees often control or heavily influence the type of equipment installed for and operated in leased spaces.
6. Category 15 (Investments): Provide consolidation approach guidance for establishing boundaries between parties in principal-agent transactions and multi-party arrangements.

## C.2. Identifying business activities

Background:

There are fifteen scope 3 categories, delineated as upstream or downstream relative to the position of the reporting company and its owned or controlled activities.

Upstream or downstream	Scope 3 category
<b>Upstream scope 3 emissions</b>	<ol style="list-style-type: none"> <li>1. Purchased goods and services</li> <li>2. Capital goods</li> <li>3. Fuel- and energy-related activities (not included in scope 1 or scope 2)</li> <li>4. Upstream transportation and distribution</li> <li>5. Waste generated in operations</li> <li>6. Business travel</li> <li>7. Employee commuting</li> <li>8. Upstream leased assets</li> </ol>
<b>Downstream scope 3 emissions</b>	<ol style="list-style-type: none"> <li>9. Downstream transportation and distribution</li> <li>10. Processing of sold products</li> <li>11. Use of sold products</li> <li>12. End-of-life treatment of sold products</li> <li>13. Downstream leased assets</li> <li>14. Franchises</li> <li>15. Investments</li> </ol>

Figure 1. List of scope 3 categories. Source: *Scope 3 Standard*, Table 5.3 (p. 32).

## Feedback from respondents:

Some respondents asserted that the category classification rules need to support more consistent and unambiguous interpretation for best practice adoption of standard-conforming scope 3 accounting and reporting. Several respondents requested a more focused division of upstream vs. downstream categories. Many respondents requested more support identifying business activities that interact with multiple scopes and categories.

## Support requests from respondents:

1. Develop general or industry-specific screening tools for hot-spot analysis and prioritization.
2. Provide more guidance regarding classifying business activities by category (including industry-specific guidance, as detailed in [C.3 here](#)).
3. Provide guidance on classifying emissions associated with the sub-contracting of operational parts. Respondents are unsure whether this should be included in scope 1 or scope 3 emissions.

## Category-specific feedback from respondents:

4. Category 1 (Purchased goods and services):
  - a. Some respondents expressed difficulty in classifying purchased goods (category 1) versus capital goods (category 2) (e.g., office equipment like printers) and applying a fixed asset criterion. The *Scope 3 Technical Guidance* directs users to “follow their own financial accounting procedures” for classification (p. 36). Some respondents believe that non-optionality would be more effective.<sup>1</sup>
  - b. Develop guidance on how repair and maintenance services provided by a company to support clients in extending the lifespan and use of machinery (category 2) and projects (category 15) should account for and report emissions, including how or whether such service providers should account for category 20 or category 11 emissions.
5. Category 2 (Capital goods): Provide more guidance on accounting for downstream emissions associated with the use of sold/leased equipment that reduces clients’ scope 1 or scope 2 emissions due to efficiency improvements. A lessor entity’s downstream emissions would increase with product sales thereby, while lessee (client) entities’ emissions would decrease.
6. Category 4 and 9 (Transportation and distribution): Several respondents expressed confusion classifying upstream vs. downstream transportation and distribution activities and recommended replacing the “who pays” rule for classifying upstream vs. downstream activities in a value chain (e.g., relative to a company’s owned or controlled activities).
7. Category 10 and 11 (Processing and Use of sold products): Several respondents expressed confusion in classifying product processing vs. use activities for companies selling intermediate products, which are used in numerous final products downstream.
8. Category 14 (Franchises): Provide more guidance and clarity regarding franchises and intellectual property (including trademarks). Licenses could be classified in multiple categories (including category 1, category 11, and/or category 14).

<sup>1</sup> (*Technical Guidance*, p. 36): “Capital goods are final products that have an extended life and are used... to manufacture a product; provide a service; or sell, store, and deliver merchandise... treated as fixed assets or as... [PP&E like] machinery, buildings, facilities, and vehicles.”

### C.3. Industry-specific guidance

Background:

Table 5.4 (*Scope 3 Standard*, p. 34-37) itemizes the minimum boundaries of each scope 3 category for all companies and sectors, in an industry-agnostic rather than an industry-specific manner.

Feedback from respondents:

Many respondents requested more industry-specific guidance, including for activity classification, identifying category relevance, and boundary determination. Some respondents asserted that boundary guidance is too industry-agnostic and open to interpretation. Several identified third-party guidance for the GHG Protocol to reference (refer to [Appendix A here](#)), noting that industry associations may be best equipped to develop and maintain industry-specific guidance.

Support requests from respondents:

1. Develop and maintain detailed sector-specific guidance for major sectors; and develop general materiality frameworks for small industries.
2. Develop industry-specific guidance on category relevance, significance, prioritization, commonly included or excluded activities, and pinpoint the core activities underpinning each category.
3. Develop an industry-specific screening tool for hotspot analysis or category prioritization.
4. Expand the Built on GHG Protocol mark (see [here](#)) for external guidance and interoperability.

### C.4. Minimum boundaries for categories 1 through 14

Background:

While all emissions in scope 3 necessarily include the scope 1 and scope 2 emissions from value chain partners, some scope 3 categories also require reporting companies to include some of their value chain partners' scope 3 emissions. The term "cradle-to-gate" is used to indicate these situations where reporting companies shall include "all emissions that occur in the life cycle of purchased products, up to the point of receipt by the reporting company" (*Scope 3 Standard*, p. 57).

Figure 2 (next page) summarizes the minimum and optional boundaries by category. For full minimum and optional boundary specifications and category descriptions, refer to Table 5.4 (*Scope 3 Standard*, p. 34-37) and Table I (*Scope 3 Technical Guidance*, p. 7-10).

Feedback from respondents:

Many respondents asked for more guidance on interpreting and applying the minimum boundaries. Several respondents asserted that the current boundary definitions are inconsistent or unclear to determine the inclusion or exclusion of some activities. Combined, category 10 and category 11 accounted for nearly half of all requests for category-specific guidance; and category 3 accounted for a sizeable fraction. Several respondents expressed concern that optionality gives rise to year-over-year GHG inventory fluctuations, including because there is no consistency regarding inclusion or exclusion when assets are owned, leased, outsourced, or franchised. Several asserted that this negatively affects

Position	Cat.	Category name	Minimum boundary	Optional boundary
Up-stream	1	Purchased goods and services	All upstream (cradle-to-gate) emissions	-
	2	Capital goods	All upstream (cradle-to-gate) emissions	-
	3	Fuel- and energy-related activities (not included in scope 1 or scope 2)	Extraction, production, and transportation of fuels and energy purchased or acquired	-
	4	Upstream transportation and distribution	Scope 1 & 2 emissions of transportation providers	Life cycle emissions associated with manufacturing vehicles, facilities, or infrastructure
	5	Waste generated in operations	Scope 1 & 2 emissions of waste management providers	Emissions from transportation of waste
	6	Business travel	Scope 1 & 2 emissions of transportation carriers	Life cycle emissions associated with manufacturing vehicles or infrastructure
	7	Employee commuting	Scope 1 & 2 emissions of transportation providers	Emissions from employee teleworking
	8	Upstream leased assets	Scope 1 & 2 emissions of lessors	Life cycle emissions associated with manufacturing or constructing leased assets
Down-stream	9	Downstream transportation and distribution	Scope 1 & 2 emissions of transportation providers	Life cycle emissions associated with manufacturing vehicles, facilities, or infrastructure
	10	Processing of sold products	Scope 1 & 2 emissions of downstream companies	-
	11	Use of sold products	Scope 1 & 2 direct use-phase emissions sold products over their expected lifetime (of end users)	Indirect use-phase emissions of sold products over their expected lifetime
	12	End-of-life treatment of sold products	Scope 1 & 2 emissions of waste management companies	-
	13	Downstream leased assets	Scope 1 & 2 emissions of lessees	Life cycle emissions associated with manufacturing/constructing leased assets
	14	Franchises	Scope 1 & 2 emissions of franchisees	Life cycle emissions associated with manufacturing or constructing franchises
	15	Investments	Scope 1 & 2 emissions associated with invested capital, debt holdings, and long-term financing of projects	Debt investment (without known use of proceeds), managed investments and client services, and other investments or financial services

**Figure 2.** Scope 3 category boundaries, adapted from Table 5.4 (*Scope 3 Standard*, p. 34-37).

Note: This table is a summary only; refer to the original sources for complete requirements.

the development of consistent performance metrics, which may compromise the principles of consistency and relevance. Boundary optionality was raised as a leading factor affecting inventory incomparability. Some recommended tighter minimum boundaries to enable more consistent and meaningful performance tracking of emissions and requiring the entities transparently document any changes to the data, inventory boundaries, methods, or other relevant factors (refer to [J here](#) for more on reporting requirements, including for claims).

## Recommendations from respondents:

1. Review, adjust, and fix any minimum boundary inconsistencies between categories and between the GHG Protocol standards and guidance documents.
2. Nest a column with “relevance” measures for each category in Table 5.4 (*Scope 3 Standard*) and Table I (*Scope 3 Technical Guidance*) in addition to the current category descriptions and the minimum and optional boundary descriptions. Establish a clear decision-making framework and process to establish materiality for boundary determination (refer to [D.3 here](#)).
3. Make currently optional boundaries required across all categories.
4. Align minimum inclusion and disclosure requirements with the International Sustainability Standards Board (ISSB) IFRS Sustainability Disclosure Standards (IFRS SDS) and other disclosure frameworks and/or regulations (refer also to feedback on interoperability in [L here](#)).
5. Integrate guidance regarding technological removal and sequestration from the *Land Sector and Removals Guidance* ([here](#)) with the *Scope 3 Standard*.
6. Some respondents question whether it’s inconsistent to require the reporting of scope 1 and scope 2 emissions of relevant projects annually, each year during the term of an investment, the projected lifespan emissions “separately from scope 3”, while lifespan emissions associated with category 2 or category 11 are reported on a cumulative basis in the scopes and not separately from them. Refer also to feedback regarding annualizing results in [G.5 here](#).

## Support requests from respondents:

7. Provide more guidance on interpreting results from hotspot screening and identifying relevance. Some respondents found it challenging to determine material vs. immaterial and/or relevant vs. irrelevant activities (refer to [D.3 here](#) for more).
8. Provide more guidance itemizing, distinguishing, and classifying intermediate vs. final products and articulate the implications for classifying the processing vs. use of sold products.
9. Provide industry- or product-specific guidance for the chemicals sector regarding accounting for downstream emissions of intermediate products. More guidance is necessary for the chemicals industry to accurately and reliably account for downstream emissions during further processing (Category 10), use of final sold products (Category 11), and EOL treatment (Category 12), including from product degradation or decomposition during use before disposal.
10. Provide guidance on projecting or modeling the range of downstream processing/use scenarios for intermediate products which are used in hundreds of thousands of final products, like chemicals or other common components. This includes product-specific guidance for quantifying or projecting the EOL emissions associated with intermediate products used in final products (category 12). Absent stricter guidance, add explicit exceptions (refer to [C.4 here](#) for more).
11. Provide more guidance on assessing emissions from co-products and co-packaging (refer to [G.1 here](#) for more feedback on allocating emissions between studied products and co-products).

## Category-specific feedback from respondents:

12. Category 2 (Capital goods):
  - a. Add further criteria for including or excluding capital equipment.
  - b. Cradle-to-gate activities associated with infrastructure and property, plant, and equipment (PP&E), including public infrastructure, should be made mandatory for category 4, category 6, and category 9.

13. Category 3 (Fuel- and energy-related activities not included in scope 1 or scope 2):
  - a. Include all cradle-to-gate emissions associated with manufacturing capital equipment and infrastructure used to perform upstream energy-related activities (e.g., mining, extracting, refining, etc.). Some argued that excluding capital equipment and infrastructure makes it impossible to compare energy generated from hydrocarbons versus low-carbon (renewable) technologies and understates the GHG-intensity of renewable energy. This makes it difficult for stakeholders to assess the GHG-intensity of alternative energy sources, including per unit delivered or consumed energy.
  - b. Provide guidance for the broad range and diversity of ownership models in the power sector, including third-party energy distributors. Clarify whether a gas station or commodities distributors should account for well-to-tank (WTT) or cradle-to-gate (category 3) and tank-to-wheel (TTW) or product-use (category 11) emissions. State unambiguously whether companies selling intermediate and/or final fossil products and sold energy (to market intermediaries and/or end-customers) should include category 3 and category 11 emissions. Specify whether all traders that buy/sell fossil fuels and purchased electricity should account for category 3 emissions. Table 3.2 (*Scope 3 Technical Guidance*, p. 40) itemizes scope 1, scope 2, and scope 3 emissions for a coal mining, processing and transport company and a power generator — but does not specify how distributors, traders, and other intermediaries (including commodities contract traders) should account for category 3 emissions.
  - c. Clarify whether leased office spaces that combust fuel on site or that use electricity should include cradle-to-gate emissions. Require this in the minimum boundary thereof.
14. Category 4 (Upstream transportation and distribution):
  - a. Expand the minimum boundary for category 4 to include the life cycle emissions of fuels. Mandate the use of life cycle emission factors for transportation that include cradle-to-gate emissions rather than allowing the use of combustion emission factors (scope 1 and scope 2). Make this rule consistent for all categories that involve fuel combustion.<sup>1</sup>
  - b. Provide guidance on which activities from transport and distribution should be included in scope 3, including fuel, electricity, refrigerant(s), capital equipment, and infrastructure (roads, bridges, ports, etc.).
15. Category 5 (Waste generated in operations):
  - a. Require the inclusion of emissions associated with the transportation of waste for completeness, including when waste material is recycled or transported for re-processing or re-use (refer to [G.4 here](#) for more).
  - b. Provide boundary guidelines regarding the inclusion and extent of emission from wastewater treatment that applies to waste generated in operations.
  - c. Provide clearer guidance regarding excluding emissions related to municipal solid waste (MSW) carve-outs and landfill assumptions; and specify that avoided emissions associated with diverted landfill waste is not in the scopes and should be reported separately (refer to [H.6 here](#)).
16. Category 6 (Business travel):
  - a. Make hotel stays required in the minimum boundary rather than optional.<sup>2</sup>
  - b. Provide guidance regarding accounting for emissions associated with “special events” (e.g., conferences, meetings, short-term even space, etc.).

<sup>1</sup> (*Scope 3 Standard*, p. 70): “Companies should use life cycle emission factors [that represent all emissions in the upstream supply chain] to calculate scope 3 emissions related to fuels and energy consumed in the reporting company’s value chain, except for category 3.”

<sup>2</sup> (*Scope 3 Standard*, p. 46): Currently, “Companies may optionally include emissions from business travelers staying in hotels”.

- c. Provide category classification guidance for business travel by third-party consultants and service providers including if/when activities are reimbursed.
17. Category 7 (Employee commuting):
- a. Provide guidance on the inclusion or exclusion of employee commuting when vehicles are owned and operated by a reporting company (refer also to commuting-specific minimum boundary feedback in [C.1 here](#)).
  - b. Include remote work (“teleworking”) in the minimum boundary. Many respondents requested that remote work be made mandatory with more guidance. Provide guidance on remote work performed by third-party consultants and other service providers (see also feedback in [C.1 here](#)).<sup>1</sup>
  - c. A few respondents requested that remote work not be included in the minimum boundary, and that it should remain optional.
  - d. Specify whether commuting emission factors should include WTT emissions. The Science Based Targets initiative (SBTi) includes WTT in emission factors (refer to [L here](#)).
18. Category 8 (Leased assets, upstream):
- a. Some respondents recommended that currently optional cradle-to-gate emissions associated with manufacturing and constructing leased assets be required in the minimum boundary.
  - b. Provide guidance on perimeter definitions for long-term rental/service contracts for fixed assets, and other PP&E.
  - c. Clarify whether lifecycle emissions associated with the construction and manufacturing of leased assets should be classified in category 8, category 1 (as a purchased service), or category 2. Consider how consolidation approaches and lease duration affects this determination. Some respondents are unclear whether to account for the entire cumulative lifecycle emissions of a leased office building each year given that the asset isn’t purchased (refer to [G.5 here](#) for more on depreciating sunk emissions).
  - d. Provide clarity and interpretation guidance regarding leased assets (e.g., vehicles or machines) that combust fuels. Companies are itemizing fuel burn emissions disparately as scope 1 or scope 3.
  - e. Respondents requested more examples or case studies for leased assets and a review of Appendix A of the *Scope 3 Standard* (p. 126-127). See recommendation 5 in [B.4 here](#) and recommendation 4 in [B.1 here](#) regarding leased asset.
19. Category 9 (Downstream transportation and distribution):
- a. Standardize the boundary for customer travel to retail stores and determine necessary methodological assumptions to account for emissions when shopping is not the sole reason for a trip (with multiple errands or stops) and for last-mile delivery by third-party distributors contracted via e-commerce platforms.
20. Category 10 (Processing of sold products):
- a. Provide additional guidance on disclosing and justifying exclusion of category 10 emissions when there are many downstream applications of intermediate products (building on current guidance on this topic in chapter 5 and chapter 6).
  - b. Fix language in Example 11.3, Calculating use-phase emissions from sold intermediate products (*Technical Guidance*, p. 124), which some respondents found inconsistent with existing minimum boundary guidance, unclear in its interpretation, and/or impossible to calculate with any reasonable or meaningfully level of representativeness or accuracy. Some asserted that this example is only applicable for physical products, however, service-providers do as much to ‘facilitate’ indirect downstream emissions. For example,

<sup>1</sup> (*Technical Guidance*, p. 89-90): Table 7.1 provides formula guidance to account for scope 1 and scope 2 emissions from remote work.

flying an airplane is as dependent upon engines as it is on software (e.g., GPS software, flight operations software, and air traffic management software). However, there is no way to allocate indirect emissions to upstream software providers. A few interpret the category 11 minimum boundary guidance to include a fraction of emissions associated with manufacturing an engine (category 10) and a fraction of emissions associated with using an engine in a vehicle (category 11).

#### 21. Category 11 (Use of sold products):

- a. Make indirect use-phase emissions required in the minimum boundary.
- b. Provide minimum boundary clarity regarding direct and indirect energy use attributable to the use of sold products and whether or how to include the cradle-to-gate emissions associated with fuel or energy use by consumers (in their scope 1 or scope 2 emissions). Some respondents are unclear whether all cradle-to-gate emissions associated with fuel burned by customers should be included in a reporting company's category 11.<sup>1</sup>
- c. Clarify whether all indirect use-phase emissions should be included by all value chain entities. Table 3.2 of the *Technical Guidance* (p. 40) requires oil and gas entities to include downstream emissions (category 11), however, this rule does not follow for non-fossil intermediate product manufacturers explicitly. Some assert that the "implied rule" from Table 3.2, which includes all upstream and downstream emissions attributable to fossil fuel products, is that every company should project and include all downstream category 10 and category 11 emissions associated with intermediate products.
- d. State explicitly whether and clarify how emissions associated with mechanical energy and/or energy loss should be accounted for by intermediate product or component manufacturers. Guidance is unclear in the *Scope 3 Standard* regarding the inclusion or exclusion of mechanical energy.<sup>2</sup> Apply updates to Example 11.3 as per 21.b above.
- e. Clarify whether the cradle-to-gate emissions attributable to constructing renewable energy generating facilities that generate the electricity consumed by end-users should be included in the category 11 minimum boundary of a reporting company.
- f. A few respondents from the energy-sector assert that some oil and gas companies (including service providers and middlemen) may be misinterpreting the *Scope 3 Standard* by excluding category 11 emissions associated with fuel product combustion. Consider tightening language in Table 3.2 (*Technical Guidance*, p. 40).

### C.5. Minimum boundaries for category 15 (Investments)

#### Background:

Category 15 includes emissions from equity investments, debt investments, and project finance. Additionally, the *Scope 3 Standard* identifies managed investments and client services and "other investments" as optional investments activities that may be included in their boundary. [Figure 3](#) (next page) provides a list of investment activities and minimum boundary requirements. Calculation methods are detailed in the *Technical Guidance* (p. 136-152) and itemized in Appendix D (p. 162-182). Refer to [Figure 6](#) for a matrix of scope 3 calculation methods for investments.

<sup>1</sup> (*Scope 3 Standard*, p. 70): "Companies should use life cycle emission factors [that represent all emissions in the upstream supply chain] to calculate scope 3 emissions related to fuels and energy consumed in the reporting company's value chain, except for category 3."

<sup>2</sup> (*Scope 3 Standard*, p. 57): "In the case of a motor (an intermediate product) that becomes part of an automobile (a final product), the direct use phase emissions of the intermediate product by the end consumer are the emissions resulting from use of the motor, not the emissions resulting from use of the automobile." Further, refer to Example 11.3 in the *Technical Guidance* (p. 124).

Type	Scope 3, category 15 (investments) boundaries	
	Minimum	Optional
Equity investments	Proportional scope 1 and scope 2 emissions of equity investments	Companies may establish a threshold (e.g., equity share of 1 percent) below which the company excludes equity investments from the inventory, if disclosed and justified
Debt investments ( <u>known</u> use of proceeds)	Proportional scope 1 and scope 2 emissions of relevant projects that occur in the reporting year (reported in scope 3, category 15). If an initial sponsor or lender, total projected lifetime scope 1 and scope 2 emissions of relevant projects financed during the reporting year, reported separately from scope 3.	-
Project finance		
Debt investments ( <u>unknown</u> use of proceeds)	-	Scope 1 and scope 2 emissions of the investee that occur in the reporting year
Managed investments and client services	-	Emissions from managed investments and client services
Other investments or financial services	-	Emissions from other investments

**Figure 3.** Category 15 boundaries, adapted from Table 5.9 (*Scope 3 Standard*, p. 53), Table 5.10 (*Scope 3 Standard*, p. 55), Chapter 15 (*Technical Guidance*, p. 136-152). Note: This table is a summary only; refer to the original sources for complete requirements and guidance.

#### Supplementary background:

The Partnership for Carbon Accounting Financials (PCAF) published the *Global Accounting and Reporting Standard for the Financial Industry* (2020), which was reviewed by GHG Protocol and is in conformance with the requirements set forth in category 15, having been granted a Built on GHG Protocol mark. It is hyperlinked on the GHG Protocol's website under the guidance tab [here](#). PCAF launched the second version of this standard in three parts: *Financed Emissions* (Part A), *Capital Market Instruments* (Part B), and *Insurance-Associated Emissions* (Part C). Facilitated emissions and insurance-associated emissions, as per PCAF, should not be aggregated in scope 3 category 15. Finally, PCAF permits only two consolidation approaches (operational or financial control).

#### Feedback from respondents:

Several respondents provided recommendations to adjust, update, and/or revise the minimum boundary for investments (category 15).

#### Recommendations from respondents:

1. Make all currently optional types of financial investments required.
2. Make clear that category 15 applies to non-financial organizations in addition to financial institutions and organizations. Many respondents requested that it be made clear that "types of companies should account for emissions associated with investments.
3. Do not require category 15 for SMEs for which investments are irrelevant or immaterial.

4. Include “facilitated emissions” in category 15 relying on guidance from the PCAF *Facilitated Emissions* (Part B).<sup>1</sup> Some respondents recommended keeping it separate from scope 3 as is currently specified by PCAF.<sup>2</sup> Some respondents did not recommend integrating it but asked for guidance regarding how or whether to account for facilitated emissions.
5. Include “insurance-associated emissions” in category 15, relying on guidance from PCAF *Insurance-Associated Emissions* (Part C).<sup>3</sup> Some respondents recommended including insurance-associated emissions separately from scope 3 as specified by PCAF. Some respondents did not recommend integrating but asked for guidance regarding how or whether to account for insurance-associated emissions.
6. Consider splitting the minimum boundary into (3.15.1) financing activities (upstream) and (3.15.2) investment activities (downstream).
7. Include financed emissions attributable to or facilitated by bank deposits and credit accounts. Consider a new “category 16” for financed emissions. Classify whether deposits reflect financed or facilitated emissions. Distinguish between personal versus business accounts, provide guidance on deposits/withdrawals within a reporting year, and government- or state-sponsored insurance (e.g., U.S. FDIC).
8. Include minority share investments in the minimum threshold for reporting on investments.<sup>4</sup>
9. Clarify and tighten the minimum boundary for including lifespan emissions associated with financed projects like “infrastructure and industrial projects” (*Technical Guidance*, p. 146). Some assert that the minimum boundary is unclear regarding the separate reporting of “*total projected lifetime scope 1 and scope 2 emissions of relevant projects*” financed during the reporting year” (*Technical Guidance*, p. 138) which, as per the in-text footnote, defines relevant projects to “include those in GHG-intensive sectors (e.g., power generation), projects exceeding a specified emissions threshold (defined by the company or industry sector), or projects that meet other criteria.” This optionality, some assert, leaves it open for companies to set superficially low thresholds for inclusion or exclusion (refer to [D.1 here](#)).
10. Itemize the “GHG-intensive sectors” that signify a “relevant project” and unambiguously specify the minimum requirements for including downstream lifetime scope 1 and scope 2 emissions. In the absence of such guidance, GHG Protocol should align with and reference organizations that provide industry-specific technical guidance documents.
11. The *Scope 3 Standard* on p. 54 states that “where relevant, companies should also account for the scope 3 emissions of the investee or project”. The *Technical Guidance*, in Table 15.1 (p. 138), states that “companies should also account for the scope 3 emissions of the investee or project”. This is significant guidance that should be specified in the standard proper and not noted as “Additional guidance on key concepts in Table 5.9” (*Scope 3 Standard*, p. 54).
12. It is inconsistent to require the reporting of scope 1 and scope 2 emissions of relevant projects annually, each year during the term of an investment, and to account for projected lifespan emissions associated with financed projects “separately from scope 3”, while lifespan emissions associated with category 2 or category 11 are reported on a cumulative basis in the scopes. Refer also to feedback regarding annualizing these GHG results in [G.5 here](#).
13. Provide clarity regarding whether financial services (e.g., from investment advisory firms) are to be classified as purchased services (category 1) or as deployed/invested capital (category 15).

<sup>1</sup> (PCAF, December 2023): Part B: *Facilitated Emissions* (formerly *Capital Market Instruments*. Accessed 2023.12.12.

<https://carbonaccountingfinancials.com/files/downloads/pcaf-capital-market-instruments-proposed-methodology-2022.pdf>

<sup>2</sup> Importantly, PCAF in Part B articulates that “facilitated emissions differ from financed emissions” and “views facilitation as a separate but important metric”, explaining that they are off “balance sheet (representing services rather than financing)” and “temporary” (p. 8).

<sup>3</sup> The second version of the PCAF Standard is available here: <https://carbonaccountingfinancials.com/en/newsitem/pcaf-launches-the-2nd-version-of-the-global-ghg-accounting-and-reporting-standard-for-the-financial-industry>

<sup>4</sup> Minority interest is the portion of a corporation’s stock not owned by a parent company, generally less than fifty percent (50%).

If financial services should be classified as category 1, then the minimum boundary text of Table 5.4 (*Scope 3 Standard*, p. 34-37), Table I (*Technical Guidance*, p. 7-10), and text in Table 5.10 (*Scope 3 Standard*, p. 55) should be revised to reflect this.

14. Some respondents are indifferent regarding aligning with PCAF but request that the GHG Protocol provide clear guidance on interoperability (refer to [L here](#) for more).
15. Some respondents requested that the GHG Protocol not integrate PCAF, noting that PCAF's "attribution ratios" (PCAF terminology) would not work for commercial real estate or real estate projects, and possibly not well for listed equity and corporate bonds.
16. Clarify the boundary for investors to include or exclude the downstream, indirect scope 3 emissions of investees if an investee's "scope 3 emissions are significant compared to other source[s] of emissions or otherwise relevant" (*Technical Guidance*, p. 138). Given that scope 3 emissions consistently account for the lion share of any company's GHG inventory (scope 1, 2, and 3), this guidance effectively requires (mandates) the inclusion of the scope 3 emissions of most if not all investees, by investors in their scope 3 category 15 (refer also to [D.3 here](#)).

## C.6. Temporal boundaries

### Background:

Activities occurring in a company's reporting year may reflect emissions that have also occurred in the reporting year, or emissions that have occurred before or will occur after the reporting year. For example, emissions associated with the purchase of a product include emissions that may have occurred one or several years prior, under the control of one or several different entities in a supply chain. [Figure 4](#) (next page) details the temporal distribution of emissions for each scope 3 category.

### Feedback:

A few respondents recommended reconsidering the temporal boundaries of value chain emissions. Some scope 3 categories like category 11 and category 15 require the reporting of cumulative projected lifespan emissions, in a reporting year, while most categories require the reporting of only annual emissions in a reporting year. Further, a few respondents asserted that reporting cumulative projected lifespan scope 1 and scope 2 emissions of a project financed in a reporting year, separately from scope 3 inventory results, and actual scope 1 and scope 2 emissions annually during operation (assuming no change of ownership), reflects a form of double counting that is confusing for some project owners, including because ownership or control often changes rapidly in a short period.

Some asserted that including cumulative lifespan emissions associated with the processing and use of sold products distorts the potential GHG-efficiency associated with long-lived products (refer to [G.3 here](#) for more feedback on accounting for and allocating emissions from long-lived or more durable products).

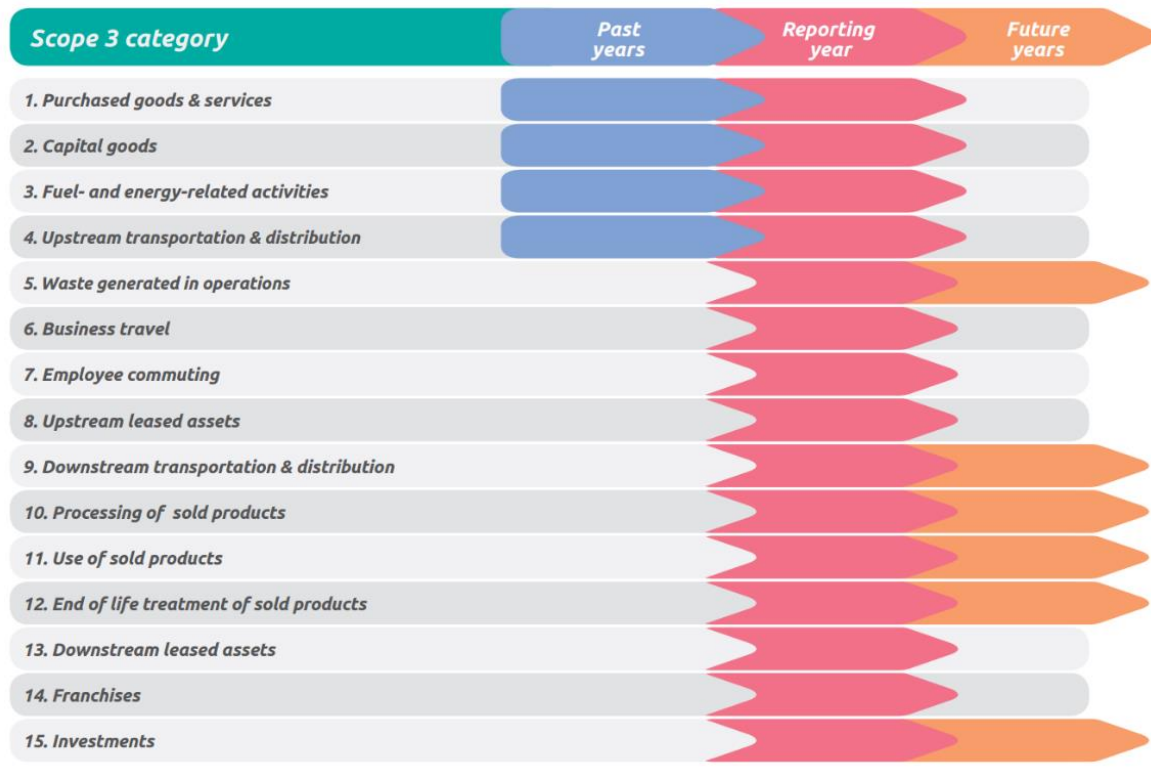


Figure 4. Time boundaries by category (*Scope 3 Standard*, p. 33).

#### Recommendations:

1. Some respondents assert that including forward-year emissions should be reconsidered as the emissions have yet to occur, are parameter-driven and therefore less certain and/or unverifiable, and/or may be distortionary to other scopes or categories. Some recommended splitting some categories and developing category-specific disclosure requirements (refer to [C.8 here](#) for more on re-naming or re-organizing categories).
2. Previous-year emissions should also be reconsidered. Some PMs are unsure how to account for purchased goods and services (category 1) for projects that take multiple years to complete and for which materials, components, fixtures, and/or services are purchased (often bulk) prior to a reporting year or are paid for retroactively. Some propose a “bill of materials approach” or more flexibility with multi-year projects (see also recommendations to amortize upfront emissions in [G.5 here](#)).

### C.7. Double counting

#### Background:

The double accounting of emissions does not occur within a company’s GHG inventory. As per the *Scope 3 Standard*, “scope 1, scope 2, and scope 3 are mutually exclusive for the reporting company, such that there is no double counting of emissions between the scopes [or categories]. In other words, a company’s scope 3 inventory does not include any emissions already accounted for as scope 1 or scope 2 by the same company... The scopes are defined to ensure that two or more companies do not

account for the same emission within scope 1 or scope 2. By properly accounting for emissions as scope 1, scope 2, and scope 3, companies avoid double counting within scope 1 and scope 2” (p. 27).

The multiple accounting of emissions may occur *between* companies’ inventories where those companies exist in the same value chain, typically in a different scope/category. As per the *Scope 3 Standard*, “by definition, scope 3 emissions occur from sources owned or controlled by other entities in the value chain (e.g., materials suppliers, third-party logistics providers, waste management suppliers, travel suppliers, lessees and lessors, franchisees, retailers, employees, and customers)” (p. 27).

As such, “in certain cases, two or more companies may account for the same tonne GHG emission within scope 3. For example, the scope 1 emissions of a power generator are the scope 2 emissions of an electrical appliance user, which are in turn the scope 3 emissions of both the appliance manufacturer and the appliance retailer. Each of these four companies has different and often mutually exclusive opportunities to reduce emissions. The power generator can generate power using lower-carbon sources. The electrical appliance user can use the appliance more efficiently. The appliance manufacturer can increase the efficiency of the appliance it produces, and the product retailer can offer more energy-efficient product choices” (*Scope 3 Standard*, p. 27).

This is not accidental, but by design. “By allowing for [the] GHG accounting of direct and indirect emissions by multiple companies in a value chain, scope 1, scope 2, and scope 3 accounting facilitates the simultaneous action of multiple entities to reduce emissions throughout society. Because of this type of double counting, scope 3 emissions should not be aggregated across companies to determine total emissions in a given region” (*Scope 3 Standard*, p. 27-28). Within a reporting entity’s GHG inventory, the scope 3 “categories are designed to be mutually exclusive, such that, for any one reporting company, there is no double counting of emissions between categories” (*Scope 3 Standard*, p. 31). Further, “if a company identifies any potential double counting of emissions between scope 3 categories or within a scope 3 category, the company should avoid double counting [within said entity’s GHG inventory] by only reporting scope 3 emissions from the activity once, clearly explaining where the emissions are reported” (*Scope 3 Standard*, p. 57).

Section 9.6, Addressing double counting of scope 3 reductions among multiple entities in a value chain, provides more guidance on double counting. It states that “companies may find double counting within scope 3 to be acceptable for purposes of reporting scope 3 emissions to stakeholders, driving reductions in value chain emissions, and tracking progress toward a scope 3 reduction target. To ensure transparency and avoid misinterpretation of data, companies should acknowledge any potential double counting of reductions or credits when making claims about scope 3 reductions. For example, a company may claim that it is working jointly with partners to reduce emissions, rather than taking exclusive credit for scope 3 reductions.” In this context, “if GHG reductions take on a monetary value or receive credit in a GHG reduction program, companies should avoid double counting of credits from such reductions. To avoid double crediting, companies should specify exclusive ownership of reductions through contractual agreements.” (*Scope 3 Standard*, p. 108)

Section 9.4, Accounting for scope 3 emissions and reductions over time, states that: “Accounting for actual reductions in indirect emissions (i.e., scope 2 or scope 3 emissions) to the atmosphere is more complex than accounting for actual reductions in direct emissions (i.e., scope 1) to the atmosphere... Companies may use the project method to undertake more detailed assessments of actual reductions from discrete scope 3 GHG mitigation projects, in addition to reporting comprehensive scope 3 GHG emissions using the inventory method” (*Scope 3 Standard*, p. 106).

### Feedback from respondents:

Some respondents requested support to identify and manage the various forms of double counting. Some requested changes to the requirements that manage potential double counting. Several respondents recommended clarifying that some forms of double counting (e.g., between multiple companies' GHG inventories) are known characteristics of scope 3 emissions accounting that conforms with the *Scope 3 Standard*. Some respondents expressed that it is conceptually difficult to understand why the *Scope 3 Standard* was designed to allow double counting between organizations' inventories. Others expressed skepticism whether sharing responsibility for the same unit of emissions incentivizes or catalyzes decarbonization. They asserted that sharing responsibility uniformly — irrespective of the varying level(s) influence that companies may have to mitigate emissions — dilutes accountability.

Separately from quantifying emission values, there was criticism by a few respondents concerning the lifecycle inventory approach, which permits double counting between companies versus mandating mutually exclusive record keeping of cradle-to-gate emissions between companies in a market. A few respondents explained that providing measures of financed emissions at the portfolio level is challenging for investors, for example, because investee companies often execute a significant level of trade with one another, which double counts emissions in their fund or portfolio roll-ups. Some requested guidance on how to report emissions at the portfolio level. Other respondents asserted that double counting between investees does not present a problem for their funds or for investors.

### Recommendations from respondents:

1. Consider breaking up scope 3 emissions by ownership/responsibility to measure risk exposure to, for example, account for regional or global carbon taxes that may be legislated.
2. Review possible inconsistencies in allowing the double counting of emissions associated with virgin goods but not recycled or resold goods. Refer to Box 5.6 of the *Scope 3 Standard* (p. 46) and to [G.4 here](#) for more feedback on reuse, recycling, and the Recycled Content Method.

### Support requests from respondents:

3. Clarify that double counting is not an error. Develop plain language guidance and examples.
4. Provide more guidance on the implications for underwriting two companies' GHG inventories if/when double counting occurs between them.
5. Provide more guidance on accounting for cradle-to-gate and roll-up emissions associated with inter-company transfers between subsidiaries that maintain separate operational or financial control — despite being owned by a single umbrella company.

### Category-specific feedback from respondents:

6. Category 3 (Fuel- and energy-related activities not included in scope 1 or scope 2): Provide guidance for oil drillers that use a fraction of their sold product and are potentially double counting scope 1 and scope 3 category 3 emissions.
7. Category 15 (Investments): Investors are being asked to assess financed emissions at the portfolio level and need guidance aggregating portfolio holding inventories. Provide guidance for portfolio level and umbrella company (subsidiary and franchisee) GHG inventory roll-ups.<sup>1</sup>

<sup>1</sup> "Scope 3 should not be aggregated across companies to determine total emissions in a given region" (*Scope 3 Standard*, p. 27-28).

## C.8. Re-name or re-organize categories

### Feedback from respondents:

Many respondents did not raise objection with the GHG Protocol's scope structure (scope 1, scope 2, and scope 3), the scope 3 categories, or the category names. Some recommended making as few changes as possible to the current categorization. Some respondents recommended either (1) revisiting the scope 3 category names, (2) adding new scope 3 categories or sub-categories, (3) removing or changing the scope 3 categories, or (4) bundling the scope 3 categories into super-categories, as presented in the following recommendations. A few respondents recommended revisiting the categories to ensure that they are up to date and reflect where most global emissions originate.

### Recommendations from respondents:

1. Revisit the scope 3 category names:
  - a. Map the scope 3 categories to independent, industry-specific category classifications.
  - b. Add teleworking to the category 7 name.
  - c. Add events to the category 6 name.
2. Add new scope 3 categories or sub-categories:
  - a. Sub-categorize category 3 using Table 3.1 (*Technical Guidance*, p. 39) categories.
  - b. Add sub-categories to category 1. Distinguish purchased emissions by use, for example, (3.1.1) production-related vs. (3.1.2) non-production-related emissions, or by purchased products used in (3.1.1) sold products vs. (3.1.2) overhead, and then (3.1.3) professional services, (3.1.4) digital services, or (3.1.5) other.
  - c. Add a new category for client travel and/or visitor travel (including tourism, events, tours, etc.) or explicitly make it part of Business travel (category 6). Consider making sub-categories within Business travel.
  - d. Sub-categorize category 11 emission between (3.11.1) direct vs. (3.11.2) indirect.
  - e. Sub-categorize category 11 emissions between (3.11.1) physical goods vs. (3.11.2) services or intangibles.
  - f. Sub-categorize category 11 emissions as (3.11.1) combustion-related and leakage vs. (3.11.2) grid-related. This would help investors to prioritize investments that support electrification and differentiate unavoidable or optimal lifespan use-phase emissions.
  - g. Sub-categorize category 15 by (3.15.1) financing activities (debt, equity) that fund operations versus (3.15.2) investing activities (e.g., stocks) spent to generate return or income, like cash flows from financing vs. investing activities in a cash flow statement.
  - h. Create new categories for infrastructure, vessels at-berth (maritime industry), logistics and inventorying, and/or Software-as-a-service (SaaS).
3. Remove/change the scope 3 categories:
  - a. Merge category 1 (Purchased goods and services) and category 2 (Capital goods).
  - b. Remove both scope 3 and scope 2 emissions classifications and simply call it "cradle-to-gate" or "upstream" emissions. Further, only use, calculate, and/or record scope 1 emissions and GHG inventories to pass on as secondary cradle-to-gate emissions data.
  - c. Split leased asset classifications by lease duration (e.g., short-, medium-, long-term) for Category 8 and category 13 (refer also to feedback regarding leased assets in [C.1 here](#)).
  - d. Remove Category 14. Franchisees should be considered within the organizational boundary of the franchisor (reporting company).

- e. Make a stand-alone category 15 standard. Some respondents recommended adopting the new PCAF standards rather than developing and publishing new rules in the *Scope 3 Standard* (refer to [C.5 here](#) for more).
  - f. Consider creating a sixteenth “Other” or “Roll-up” category for companies to include emissions from activities that they do not own or control but over which they have some influence (e.g., a contractor that can influence emissions while not being responsible for their reduction due to contract limitations). Including these emissions in a separate scope 3 category would allow for clear reporting and inclusion in emissions metrics and targets as appropriate.
4. Bundle the scope 3 categories:
- a. Harmonize with mainstream financial statements to create super-categories such as Operational (Categories 1 through 8, excluding category 2), Assets (category 2 and category 15), Customers (categories 9, category 10, category 11, category 13, and category 14), and bundle category 7 and category 12 as “other” scope 3 activities on the basis that a reporting company has limited influence over the commuting decisions made by employees or the EOL decisions made by customers.
  - b. Mirror the direct/indirect classifications published by the International Organization for Standardization (ISO) in ISO 14064-1:2018.<sup>1</sup>
  - c. Focus on the disclosure of revenue-related versus capital expenditure-related GHG emissions, which may tie better to national records (e.g., gross value added plus imported emissions).

---

<sup>1</sup> (ISO, 2018): Annex B (p. 19) of ISO 14064-1:2018: *Greenhouse gases — Part 1: Specification with guidance at the organization level for quantification and reporting of greenhouse gas emissions and removals*.

## D. Boundary setting

This section outlines survey respondents' feedback concerning boundary setting. This includes accounting and reporting boundary requirements (D.1), optionality vs. prescriptiveness (D.2), defining relevance, materiality, and influence (D.3), and treating biogenic emissions separately from the scopes (D.4). Refer to Chapter 6, Setting the Scope 3 Boundary, in the *Scope 3 Standard* (p. 58-63).

### D.1. Requirements

Background:

Table 1.1 (*Scope 3 Standard*, p. 6) details two corporate-level reporting options available to entities that rely on the GHG Protocol corporate suite of standards: *Corporate Standard* and *Scope 3 Standard* conformance. Including scope 3 emissions is not required for *Corporate Standard* conformance. For *Scope 3 Standard* conformance, companies shall account for all scope 3 emissions and disclose and justify any exclusions according to the minimum boundary for each category (*Scope 3 Standard*, p. 59). Companies shall account for CO<sub>2</sub>, methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorochemicals (PFCs), sulfur hexafluoride (SF<sub>6</sub>), and nitrogen trifluoride (NF<sub>3</sub>) emitted in the value chain. Note that NF<sub>3</sub> is required as per an Accounting Amendment published in 2013 (available [here](#)). Finally, biogenic CO<sub>2</sub> emissions shall not be included in the scopes but shall be reported separately.

Feedback from respondents:

Many recommended requiring all or some scope 3 categories over a phase-in period. Some respondents recommended only requiring the disclosure of upstream scope 3 emissions. Others suggested removing downstream activities from scope 3 entirely. Arguments for excluding or removing downstream scope 3 activities included that companies have limited control, limited influence, and/or difficulty reliably estimating downstream emissions. In cautioning against requiring scope 3 emissions, some argued that the GHG Protocol needs to balance the reality of what most companies can measure, track, and reasonably be expected to report on and/or influence. Some respondents asserted that the GHG Protocol's corporate suite of standards and guidance should be inclusive and accessible, and that all requirements should be reasonably achievable by all organizations facing a range of constraints and with varying capacities. Some respondents recommended leaving it to programs or regulators, exclusively, to mandate prescriptive scope 3 accounting and reporting requirements.

Recommendations from respondents:

Refer to section C.6. (Feedback proposing to require scope 3 emissions under the *Corporate Standard*) in the *Written Summary of Survey Responses for the Corporate Standard* [here](#) for feedback and recommendations concerning corporate-level reporting requirements for *Corporate Standard* conformance. The following recommendations were not specified in the *Written Summary of Survey Responses to the Corporate Standard*.

1. Make mandatory the inclusion of upstream scope 3 categories for corporate-level GHG Protocol reporting that complies with the *Corporate Standard* and make downstream categories optional.
2. Prepare industry-specific requirements for including upstream and downstream scope 3 emissions for corporate-level GHG Protocol reporting that complies with the *Corporate Standard*. Consider requiring the inclusion of the two most material scope 3 categories by

industry and sub-industry. Consider developing dedicated rules for specific industries, including electric grid infrastructure (e.g., generating stations, substations, transmission lines, distribution lines, charging stations), other infrastructure (e.g., roads, tunnels, bridges, railways, sewers, pipes, ports, canals, dams), and the information and communications technology (ICT) sector.

3. Consider industry-specific mandates for complete scope 3 reporting. For example, require complete scope 3 reporting for all energy sector companies following the GHG Protocol *Corporate Standard* (refer to similar category 3-specific feedback [here](#) in C.4).
4. Do not require the inclusion of category 10, category 11, or category 12 emissions in a scope 3 inventory for *Scope 3 Standard* conformance. Consider whether other categories should be made optional for *Scope 3 Standard* conformance.

## D.2. Optionality vs. prescriptiveness

Feedback from respondents:

Some respondents asserted that too much of the standard is recommended or optional, rather than being unambiguously specified and required. Some believe that this is confusing and results in the inconsistent application of the *Standard*. A few cautioned that some reporting entities take the stance to be as inclusive as possible with activities, while others maximize exclusion, for example, by never exceeding the minimum boundary requirements of the *Scope 3 Standard*. Other respondents noted that several companies set a high bar for calculation methods and data quality improvements, while other companies rely entirely on secondary data and associated calculations methods with no intent to improve data quality. While inclusion is often dictated by factors like data availability, cost constraints, and value chain partner participation, however, optionality complicates data exchange and risks material omissions which affects performance metrics, comparability, and claims ([J here](#)).

Recommendations from respondents:

1. Review all optional (“should” or “may”) rules and consider making them required (“shall”) to tighten requirements, improve reliability, accuracy, and completeness, and to normalize reported inventory results between entities to enhance consistency (refer to [D.3 here](#)).

## D.3. Relevance and materiality terminology

Background:

Materiality is defined as the concept that “errors, omissions and misrepresentations [individually or in aggregate] could affect the GHG inventory and could influence the intended users’ decisions” (*Scope 3 Standard*, p. 139). Materiality is presented in Chapter 10, section 10.5 (*Scope 3 Standard*, p. 116).

Feedback from respondents:

Many respondents requested that the GHG Protocol develop tighter definitions for “relevance”, “materiality”, “influence”, and “meaningful”. This should be coordinated with changes, if any, made to the minimum boundaries ([C.4 here](#) and [C.5 here](#)) and other requirements ([D.1 here](#)). Some expressed confusion regarding how “relevance”, “materiality”, or “meaningful” relate or differ, with implications for assessing completeness. Some expressed difficulty numerically assessing materiality to determine inclusion and exclusion. Some respondents requested that companies be left to select their own

relevance and materiality thresholds, subject to transparent disclosure of the chosen numerical thresholds. Some respondents believe that materiality or relevance thresholds should not be prescriptively set by the GHG Protocol but by disclosure frameworks or legislators.

Other respondents recommend providing a tighter definition for “influenceability” in the context of completeness and relevance. One respondent identified that while the *Scope 3 Standard* lists influence as a criterion for identifying relevant emissions (Table 6.1, p. 61), however, this is not specified or standardized numerically in Appendix B (p. 128-131). Some respondents expressed confusion understanding or assessing their influence parameter uncertainty. Several respondents recommended tightening language concerning influence. The *Standard* states that “each entity in the value chain has some degree of influence” and that emissions reduction necessitates the “simultaneous action of multiple parties” (p. 108), while also stating that, “in some situations, companies may” have limited ability to “influence GHG reductions” (p. 60). This broad stance should be tightened to support the reporting, tracking, and prioritization of corporate efforts. Finally, some argued that control should dictate inclusion rather than a company’s “relative degree of influence over” value chain emissions or activities.

#### Recommendation:

1. Develop fixed, rigorous materiality thresholds to reduce interpretive discrepancies by organizations that prepare GHG inventories to both improve the quality and reduce the cost of assurance. This could facilitate the consistency of GHG inventories among companies.

#### Support requests from respondents:

2. Refine Table 6.1 (*Scope 3 Guidance*, p. 61) and Table II, Criteria for identifying relevant scope 3 activities (*Scope 3 Technical Guidance*, p. 12) and specify whether companies should include emissions over which a company has no or limited ability to influence.

## D.4. Biogenic emissions and removals

#### Background:

Biogenic CO<sub>2</sub> emissions that occur in the value chain (p. 21) are to be reported separately from the scopes, including from the “combustion or biodegradation” of biomass (p. 61) and “upstream CO<sub>2</sub> removals from biological carbon sequestration that occurs in trees” (p. 63).<sup>1</sup> All non-CO<sub>2</sub> greenhouse gas emissions (e.g., CH<sub>4</sub> and N<sub>2</sub>O) are to be reported in the scopes. Accounting for emissions and removals from Agriculture, Forestry and Other Land Use (AFOLU<sup>2</sup>) is being addressed by the GHG Protocol via the *Land Sector and Removals Guidance* [here](#).

#### Feedback from respondents:

Some respondents requested more guidance on biogenic emissions and removals. While some respondents expressed concern about adding two more documents to the corporate suite, most who

<sup>1</sup> (*Scope 3 Standard*, p. 121): Section 11.1 Required information, in Chapter 11, Reporting, states that: “For each scope 3 category, any biogenic CO<sub>2</sub> emissions [must be] reported separately.”

<sup>2</sup> Note that AFOLU is termed by some as Forest, Land and Agriculture (FLAG), and/or as Land Use, Land Use Change, and Forestry (LULUCF). Land-use change (LUC) is sometimes itemized independently. All involve biogenic CO<sub>2</sub> and/or non-CO<sub>2</sub> emissions and/or removals.

provided feedback regarding biogenic and/or land-use emissions recommended harmonizing with both the *Land Sector and Removals Guidance* and *Product Standard* (refer to [B.3](#)). Other respondents highlighted the challenge of accounting for energy generated from biomass and other biogenic fuel sources. Some respondents raised the topic of biogas in the context of biomethane production from agricultural methane feedstocks.<sup>1</sup>

Some respondents raised the topic of sustainable aviation fuels (SAFs) and sustainable marine fuels (SMFs), which may rely on a biogenic feedstock(s) and requested guidance accounting for such fuels in their scope 3 inventory. Some respondents discussed SAFs or SMFs in the context of developing a market-based accounting approach utilizing tradeable instruments (refer to [M here](#) for more).

#### Recommendations from respondents:

1. Reconsider the exclusion of biogenic CO<sub>2</sub> emissions. Respondents asserted that it is inconsistent to exclude “biogenic CO<sub>2</sub> emissions that occur in the value chain” (*Scope 3 Standard*, p. 21), including from biomass “combustion or biodegradation” (p. 61), and “upstream CO<sub>2</sub> removals from biological carbon sequestration that occurs in trees” (p. 63), while including non-CO<sub>2</sub> greenhouse gas emissions associated with the end-of-life treatment of biogenic products that contain carbon, for example, from decomposing food waste or other biogenic materials in municipal solid waste (MSW). Including the non-CO<sub>2</sub> emissions caused by decomposing biogenic materials in landfills (e.g., food, leaves, and MSW) may overstates emissions by not accounting for the counterbalancing from CO<sub>2</sub> removal, i.e., the temporarily embedded (contained) carbon in materials.
2. Include biogenic CO<sub>2</sub> removals attributable to virgin and recycled bio-based materials in the scopes. This may have implications for circular material or product flows (refer to [G.4 here](#) for more).
3. Consider how the draft *Land Sector and Removals Guidance* will or will not integrate with both the *Scope 3 Standard* and *Product Standard* — and harmonize guidance between them.
4. Ensure interoperability with SBTi’s *Forest, Land and Agriculture (FLAG) Science-Based Target-Setting Guidance* (refer also to [L here](#)).
5. Consider whether and how including or excluding biogenic emissions affects how companies account for GHG reductions and waste-to-energy (WTE). For feedback regarding accounting for WTE, see recommendation 3 [here](#) in [G.4](#).

<sup>1</sup> (*Scope 2 Guidance*, p. 57): 6.12 Treatment of biofuel emissions.

## E. Data collection

This section outlines survey respondents' feedback concerning data collection. This includes prioritizing activities (E.1), accessing, selecting, and using emission factors (E.2), global warming potential conversion factors (E.3), data collection and availability (E.4). The three sub-sections, E.1, E.2, and E.3, correspond with the three types of data input necessary to calculate GHG emissions values (i.e., activity data, emission factors, and GWP values), as presented in the *Scope 3 Standard* (Table 7.1, p. 68). Further, feedback is summarized concerning data quality, gaps and proxies (E.5), data improvements (E.6), and data management (E.7). Refer to Chapter 7, Collecting Data (p. 64-85), and Appendix C, Data Management Plan (p. 132-137), in the *Scope 3 Standard*.

### E.1. Prioritization

Background:

Section 7.1 of the *Scope 3 Standard* (p. 65-67) provides guidance for prioritizing data collection efforts. It states that “companies should prioritize data collection efforts on the scope 3 activities that are expected to have the most significant GHG emissions, offer the most significant GHG reduction opportunities, and are most relevant to the company’s business goals. Collecting higher quality data for priority activities allows companies to focus resources on the most significant GHG emissions in the value chain, more effectively set reduction targets, and track and demonstrate GHG reductions over time.” Further, “companies may use a combination of approaches and criteria to identify priority activities. For example, companies may seek higher quality data for all activities that are significant, activities that present larger risks and opportunities in the value chain, or activities for which more accurate data can be readily obtained” (p. 65).

Feedback from respondents:

Several respondents requested guidance on prioritizing data collection for significant sources. Some respondents expressed concern that a reporting company’s capacity to influence emissions sources varies significantly and is often out-of-step with the most significant emissions sources, for example, for manufacturers of fashion, apparel, and beauty or electronics products, for which product use may accounts for most product life cycle emissions. Some asserted that the potential disconnect between emissions vs. capacity to influence may distort the perceived responsibility of companies which may misdirect efforts and resources.

Recommendations from respondents:

1. Develop a rigorous method for hotspot identification and prioritization. Consider the efficacy of the spend-based method or environmentally extended input-output (EEIO) emission factors for prioritization versus purely monetary measures or other activity data.

### E.2. Emission factors

Background:

Section 7.2 of the *Scope 3 Standard* provides an overview of quantification methods and data types, including guidance on emission factors.

## Feedback from respondents:

Many respondents requested support sourcing, verifying, calculating, and using emission factors. Some asserted that the optionality written into the *Scope 3 Standard* and the limited consistency in selecting emission factors negatively affects adoption of GHG accounting and the reliability of GHG inventory results. Some asserted that the absence of a uniform database of emission factors coupled with this optionality is a major contributing factor that undermines the cross-comparability of GHG inventories internally and between companies (refer to [J.4 here](#) for more).

Several respondents pointed out that emission factors often pack multiple assumptions (e.g., scope and boundary, functional unit, allocations, global warming potential values, etc.) with implications for consistency (refer to [I.1 here](#)). Some identified various business activities for which secondary LCA emission factors are needed and acknowledged differing needs by various industries and companies.<sup>1</sup> Others identified that emission factor granularity is necessary to improve the completeness and relevance of scope 3 inventories (refer to [E.2 here](#)). Some respondents asserted that brand-specific product-level emission factors are needed to supplement aggregated data, and that this would help the market assess climate action and performance. Others asserted that currently available emission factors, via public and paywall life cycle inventory (LCI) databases, are sufficient for companies to identify hotspots and to inform decarbonization activities and capital allocation.

## Recommendations from respondents:

1. Develop more constraints or limitations on the use of emission factors, for example, limit the use of EEIO (along with limiting the spend-based method, summarized in detail in [F.2 here](#)) or other secondary emission factors and require the use of supplier-specific or combustion-related emission factors.<sup>2</sup> If EEIO emission factors remain unconstrained, be more explicit about transparent data reporting requirements (refer to [J.1 here](#) for more on reporting).
2. Add supplier-specific, revenue-based emission factors to derive current-year proxies based on previous-year supplier-specific emissions per unit sales to clients.
3. Allow the use of revenue-based emission factor proxies using previous-year GHG inventory results for current year assessments.
4. Specify uniform emission factors for electricity and gas consumption by grid, country, and region.
5. Specify forward-year emission factor schedules (refer to [F.5 here](#) for more on this).
6. Specify uniform emission factors for air-travel (category 6) and air-freight (category 4 and category 9) and account for radiative forcing (refer to [E.3 here](#) for more).

## Support requests from respondents:

7. Establish formal guidance or requirements for information (e.g., metadata) when exchanging emission factors. Provide more guidance on auditing emission factors (e.g., for in/exclusion, scope, boundary, calculation methods, GWPs, functional units, allocations, etc.), selecting emission factors for each category, and updating legacy emission factors.

<sup>1</sup> Products and business activities include raw materials (including industry-specific), intermediate products (pre-processed materials, components), precursor manufacturing (sometimes termed pre-processing), land-use change (LUC), deforestation, animal- and plant-based fibrous materials, rail, transportation, and oil and gas.

<sup>2</sup> For example, Climatiq's Data Explorer, as of October 31, 2023, featured 51,705 emission factors and Ecoinvent's v3.9.1 dataset contains emission factors for over 18,000 activities relying on various methods (e.g., ReCiPe, TRACI, EDIP, IMPACT 2002+, IPCC 2021) and system models (including cutoff, consequential, EN15804, and apos).

8. Create a standardized framework for developing supplier-specific and/or business activity-specific emission factors from primary data to pass on to end users.
9. Develop and manage a comprehensive, universal repository of emission factors that are free and updated regularly. Emission factors need to be publicly available for the consistent adoption of GHG accounting and reporting, and to improve the reliability and accuracy of reported results. Such a database should include LCA, cradle-to-gate, PCF, EEIO, spend-based/monetary, and other secondary emission factors by product- or facility-type, and for waste management, water treatment, and public infrastructure (refer to [K here](#) for more feedback on tools).

Category-specific feedback from respondents:

10. Category 3 (Fuel- and energy-related activities not included in scope 1 or scope 2):
  - a. Provide more guidance for companies to account for upstream category 3 emissions when fuels are sold on an undifferentiated (commoditized) basis. Provide guidance on sourcing and selecting WTT emission factors for undifferentiated fuel and energy.
  - b. Curate more resources, tools, and databases for electric utility providers, including combined electric and gas, and energy companies to calculate category 3 emissions.
  - c. Emission factors for electricity need to be made available, accessible, open-source, and updated regularly to report scope 2 and scope 3 category 3 emissions.
  - d. Develop a repository of combustion and electricity emission factors that itemizes CO<sub>2</sub> values by scope 1, scope 2, and scope 3 category 3, including WTT, T&D loss, TTW, and all well-to-wheel (WTW) activities itemized separately. Supplement this with guidance concerning the use of lifecycle vs. combustion-only emission factors for energy use.
11. Category 11 (Use of sold products): Standardize forward-year emission factor schedules that account for the expected decarbonization of grid electricity (reiterated in [F.5 here](#)).

### E.3. Global warming potential values

Background:

Section 7.2 of the *Scope 3 Standard* provides an overview of the quantification methods and data types, including guidance on GWP values which convert greenhouse gas emissions to units of carbon dioxide equivalent (CO<sub>2</sub>e). Companies should use GWP values provided by the IPCC based on a 100-year time horizon consistently across their scope 1, scope 2, and scope 3 inventory (*Scope 3 Standard*, p. 70). Guidance is provided on which IPCC assessment report values to use.

Feedback from respondents:

Respondents' feedback was limited albeit mixed regarding global warming potential conversion factors. A few respondents noted that emission factor values (CO<sub>2</sub>e) often cannot be disaggregated into constituent gases to satisfy the GHG Protocol reporting requirements or to use alternative GWP values.

Recommendations from respondents:

1. Require the separate disclosure of emissions by greenhouse gas, as is required in the *Corporate Standard*, and not only aggregate GHG emissions (CO<sub>2</sub>e).<sup>1</sup>

<sup>1</sup> The *Corporate Standard* requires the separate disclosure of seven greenhouse gases: CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O, HFCs, PFCs, SF<sub>6</sub>, and NF<sub>3</sub>, the latter added in 2013 via an Accounting Amendment ([here](#)).

2. Consider requiring the separate and dual disclosure of GHG inventory results using 20-year GWP and 100-year GWP values. It was argued that 100-year GWPs inappropriately de-risks the global warming impact of methane.
3. Allow the use of fourth assessment report-vintage GWP values and don't require fifth or sixth assessment report-vintage GWP values.
4. Explicitly specify whether radiative forcing and contrails (and other non-GHG climate forcers) should be factored into air-travel or air-freight. Some respondents asserted that there is too much optionality regarding using multipliers for radiative forcing which may skew results.<sup>1</sup>
5. Consider whether the GWP values of cradle-to-gate, non-CO<sub>2</sub> greenhouse gases attributable to infrastructure or other long-lived assets can be discounted on a decadal measure to adjust for the diminishing GWPs value of non-CO<sub>2</sub> greenhouse gases over time.

Support requests from respondents:

6. Provide guidance on how to deal with decadal delays in GHG releases, for example, from the expected, future EOL treatment of waste one hundred (100) years from now.
7. Provide guidance on adjusting cradle-to-gate emissions factors for upstream and downstream transportation and distribution (category 4 and category 9) and business travel (category 6) that rely on air travel or airfreight.
8. Update the GWPs database online to include GWP vintage values from AR6 (IPCC, 2021).<sup>2</sup>

#### E.4. Data collection and availability

Background:

Section 7.2 of the *Scope 3 Standard* provides an overview of quantification methods and data types, including guidance on activity data. Activity data includes inputs such as material weight, fuel/liquid volume, electric energy, chemical energy, distance traveled, weight-distance freighted, gross floor area, number of products, and amount of money spent or earned.

Feedback from respondents:

Many respondents expressed that the lack of supplier-specific emissions and activity data, and paywalled secondary emission factors for purchased products remains one of the biggest challenges to performing GHG accounting. Several respondents noted that value chain entities exhibit varying levels of adoption, carbon-literacy, capacity constraints, data management protocols, levels of verification, and data quality. Some respondents expressed uncertainty regarding what information is needed from suppliers to verify their supplier-specific emissions or activity data. Many suppliers providing supplier-specific emissions data suffer "survey fatigue" submitting data and information in accordance with multiple climate disclosure programs. Some respondents recommend coordinating data compilation requirements and information templates between various climate programs and disclosure frameworks (refer to [L here](#)). Data access also influenced some respondents' position on encouraging the use of primary data versus making scope 3 disclosure mandatory (for more refer to [D.1 here](#)).

<sup>1</sup> (*Technical Guidance*, p. 53): "For air travel emission factors, multipliers or other corrections to account for radiative forcing may be applied to the GWP of emissions arising from aircraft transport. If applied, companies should disclose the specific factor used."

<sup>2</sup> GHG Protocol: [https://ghgprotocol.org/sites/default/files/Global-Warming-Potential-Values%20%28Feb%2016%202016%29\\_0.pdf](https://ghgprotocol.org/sites/default/files/Global-Warming-Potential-Values%20%28Feb%2016%202016%29_0.pdf)

Respondents described the constraints and challenges faced by both SMEs and large-cap enterprises. SMEs face acute capacity and cost constraints. Third-party manufacturers often don't or can't feasibly prioritize data collection for SME clients. Large-cap businesses face complex supply chains and data management challenges. Despite the internal capacity and budget to perform data collection, some argue that the sheer scale and complexity of data management cannot be overcome absent market-wide adoption of GHG accounting and reporting. Adoption would necessitate enhanced standardization to bring down the cost of data management. A few respondents asserted that organizations cannot feasibly implement GHG accounting using supplier-specific data absent regulation mandating and enforcing controls to ensure that inputs and results are reliable, accurate, complete, and consistent.

Support requests from respondents:

1. Provide guidance on handling the time-lag for data collection, for example, if it takes several months after year-end to collect primary data from suppliers or investees.
2. Provide more guidance aggregating primary supplier-specific data and secondary data, including spend-based or proxy data. Consider coordinating this guidance with other hierarchies.<sup>1</sup>

## E.5. Data quality, gaps, and proxies

Background:

The *Scope 3 Standard* provides guidance on data quality in section 7.3, "Guidance for selecting data" (p. 74-77). The quality of a scope 3 inventory "depends on the quality of the data used to calculate emissions" (*Scope 3 Standard*, p. 74), including emission factors, GWPs, and activity data. Data quality indicators are provided and differ for primary and secondary data (*Scope 3 Standard*, p. 75-77). For more guidance on data quality and data management, refer to Table C.2, Quality assurance/quality control procedures, in the *Scope 3 Standard* (p. 135-137). For guidance on collecting secondary data, including using proxy data to fill data gaps, refer p. 83 in Chapter 7 of the *Scope 3 Standard*.

Feedback from respondents:

Often, respondents made requests for data quality guidance in the context of using specific calculation methods. Some respondents cautioned that varying levels of data quality often go undisclosed and undistinguished, including due to differing calculation methods, data inputs, assurances, and/or outright non-conformance. Several asserted that this compromises GHG inventory accuracy and relevance. Many cautioned that too many companies are relying on approximations due to data limitations. A few respondents asserted that permitting the use of secondary data undermines attempts at holding companies accountable. Other respondents expressed the need to balance flexibility with accuracy, including balancing efforts to improve data quality and "perfect" measures versus informing decisions to act. Several respondents requested more guidance on using industry estimates, secondary data, and proxies, in the context of improving calculation methodologies — as companies integrate hybrid methods for supply chain measures.

Recommendations from respondents:

1. Develop a Data Quality Hierarchy or grading system for the corporate suite of GHG Protocol standards and guidance and list the requirements clearly. Numerical data quality indicators are

<sup>1</sup> Other hierarchies requested by some respondents include: Method Quality Hierarchy ([F.1 here](#)), Assurance Level Hierarchy ([I.1 here](#)), Disclosure Hierarchy ([J.1 here](#)), and Uncertainty Matrix ([J.2 here](#)).

needed for activity data, emission factors, and inventories. Some also noted the need for a calculation method hierarchy with guidance on the data quality implications.<sup>1</sup>

2. Absent a data quality hierarchy, provide more guidance on acceptable approaches (e.g., when spend-based factors are appropriate, relative to more accurate estimates or certifications) and develop best practice guidance for assumptions and methodologies.<sup>2</sup>
3. Mandate the use of primary emission data and only permit the use of primary emissions data to compile cradle-to-gate emissions data (rather than using secondary LCA emission factors).
4. Require the use of primary data for scope 3 emissions, however, utilize thresholds to specify data quality requirements, beyond simply encouraging the use of primary data.
5. Maintain existing flexibility but tighten disclosure requirements (refer to [J.1 here](#) for more).<sup>3</sup>
6. Refine the classification and use of industry-specific EEIO emission factors; they need to be updated regularly for companies to differentiate and track progress (refer to [F.2 here](#) for more).

Support requests from respondents:

7. Provide more guidance on verifying the reliability of supplier-specific data, including activity data, emission factors (cradle-to-gate, product-specific, and other life cycle emission factors), GWP values, calculation methods, allocation methods.
8. Provide additional guidance and/or thresholds to determine when using secondary data is permissible. Primary data is too costly for many companies and SMEs to compile.

## E.6. Data improvements

Background:

Section 7.6 (*Scope 3 Standard*, p. 84) provides guidance on data improves and states that “companies should seek to improve the data quality” of its GHG inventories over time, “by replacing lower quality data with higher quality data as it becomes available.” Further, the *Scope 3 Standard* recommends focusing on high-emitting activities (hotspots) and points to Appendix B therein for uncertainty guidance (refer to [J.2 here](#)).

Feedback from respondents:

Several respondents requested guidance on data quality improvements, data hierarchies, and provided feedback on restricting versus encouraging data quality improvements over time. Many respondents requested guidance concerning improving GHG inventory reliability and identified the need for clearer guidance about the type/quality of data needed for different purposes, including internal benchmarking versus external performance metrics and claims. Some asserted that improving data quality should be required, not just encouraged. A few asserted that the *Scope 3 Standard* needs to increase the use of primary data based on actual production systems to drive investment in empirically validated solutions.

Others, however, asserted that companies should prioritize setting and achieving climate goals rather than focusing on measurement goals. They asserted that primary data provides limited new or uniquely actionable information for companies in terms of prioritizing mitigation and decarbonization activities,

<sup>1</sup> Consider coordinating this with respondent recommendations to develop a Method Quality Hierarchy ([F.1 here](#)), Assurance Level Hierarchy ([I.1 here](#)), Disclosure Hierarchy ([J.1 here](#)), and/or Uncertainty Matrix ([J.2 here](#)).

<sup>2</sup> Review data quality hierarchies like the IFRS 13 Fair Value Measurement, ASC 820 Fair Value Measurement, PCAF, and/or from ISO.

<sup>3</sup> (*Scope 3 Standard*, p. 121): Note that *Scope 3 Standard* conformance requires various disclosures, by category, as detailed in 11.1 Reporting Requirements.

especially absent carbon taxes that internalize the price of carbon. Finally, a few asserted that improving accuracy should be mandated, exclusively, by external programs, disclosures frameworks, and by government agencies and legislators.

Recommendations from respondents:

1. Require that companies improve data quality and accuracy over time (reiterated in [E.5 here](#)).
2. Phase out the spend-based method except for hotspot identification (reiterated in [F.2 here](#)).

## E.7. Data management

Background:

Appendix C, Data Management Plan, of the *Scope 3 Standard* presents guidance on maintaining a data management plan which documents internal quality assurance and quality control (p. 132-137).

Feedback from respondents:

Data management, including collecting activity data, allocating emissions data, keeping records, exchanging data, reviewing supplier-specific emissions data, and integrating various workflows for auditing and control, was a commonly mentioned challenge for respondents. Several respondents recommended developing tools and templates for collecting and transferring supplier-specific data to improve the reliability and accuracy of value chain emissions data. Some asserted that standardization is necessary for interoperability and efficient data exchange between autonomous software solutions.

Support requests from respondents:

1. Create a template for disclosing standard-compliant GHG inventory results that contain all necessary and relevant information about the inventory results, including potential metadata (e.g., creator/author, date created, date modified, auditor, date audited, and other information about the emissions data). This could ease the workload for suppliers, reduce duplication, minimize the need to develop unique workflows, and reduce clerical errors.
2. Develop a standardized supplier-specific emissions data framework and/or inventory metadata framework for necessary and relevant information. Supplement this with data management (transfer and exchange) protocols which third-party databases can rely on to ensure interoperability. Clearly specify necessary data elements, verification levels, and interoperability requirements.

Category-specific feedback from respondents:

3. Category 13 (Downstream leased assets): Lessor/lessee data exchange was raised as a concern for several respondents. Some respondents raised the challenge of some tenants (e.g., triple-net tenants, or sub-metered tenants) not being obligated to share energy consumption data with landlords. Thus, some landlords must rely on industry benchmarks to estimate energy consumption for some floors of a property and/or properties.

## F. Quantification

This section outlines survey respondents' feedback concerning quantifying emissions. This includes feedback on calculation methodologies generally (F.1), the spend-based method (F.2), a newly proposed method for quantifying emissions from product use (F.3), the project-based method (F.4), estimating downstream emissions (F.5), and quantifying emissions attributable to non-physical products (F.6), intermediary parties (F.7), infrastructure (F.8), investments (F.9), and other case-specific calculation guidance (F.10).

### F.1. Calculation methodologies

Background:

The *Scope 3 Standard* specifies two quantification methods: direct measurement and calculation (see Figure 5 below). Direct measurement can be done, for example, using continuous emissions monitors (CEMS) that measure the concentration and flow-rate of gases exiting exhaust pipes. The calculation method relies on the basic formula: Activity data x Emission factor x GWP value.

Multiple calculation methods and formulas are itemized in the *Technical Guidance*, for each scope 3 category, ranked in order of specificity with guidance for emission factor selection. Figure 6 (next page) provides a matrix summarizing the calculation methods provided in the *Scope 3 Technical Guidance* (Appendix D, p. 162-182).

Table [7.1] Quantification methods

Quantification method	Description	Relevant data types
Direct measurement	Quantification of GHG emissions using direct monitoring, mass balance or stoichiometry <b>GHG = Emissions Data x GWP</b>	Direct emissions data
Calculation	Quantification of GHG emissions by multiplying activity data by an emission factor <b>GHG = Activity Data x Emission Factor x GWP</b>	Activity data Emission factors

Table [7.2] Examples of activity data and emission factors

Examples of activity data	Examples of emission factors
<ul style="list-style-type: none"> <li>Liters of fuel consumed</li> <li>Kilowatt-hours of electricity consumed</li> <li>Kilograms of material consumed</li> <li>Kilometers of distance traveled</li> <li>Hours of time operated</li> <li>Square meters of area occupied</li> <li>Kilograms of waste generated</li> <li>Kilograms of product sold</li> <li>Quantity of money spent</li> </ul>	<ul style="list-style-type: none"> <li>kg CO<sub>2</sub> emitted per liter of fuel consumed</li> <li>kg CO<sub>2</sub> emitted per kWh of electricity consumed</li> <li>kg PFC emitted per kg of material consumed</li> <li>t CO<sub>2</sub> emitted per kilometer traveled</li> <li>kg SF<sub>6</sub> emitted per hour of time operated</li> <li>g N<sub>2</sub>O emitted per square meter of area</li> <li>g CH<sub>4</sub> emitted per kg of waste generated</li> <li>kg HFC emitted per kg of product sold</li> <li>kg CO<sub>2</sub> emitted per unit of currency spent</li> </ul>

Figure 5. Quantification methods and data inputs. Source: *Scope 3 Standard*, Chapter 7, Collecting Data, Table 7.1 and Table 7.2 (p. 68).

Category	Calculation methods				
	Method 1	Method 2	Method 3	Method 4	Method 5
Category 1	Supplier-specific	Hybrid <sup>1</sup>	Average-data	Spend-based	
Category 2	Supplier-specific	Hybrid <sup>1</sup>	Average-data	Spend-based	
Category 3	Supplier-specific	Average-data			
Category 4 <sup>2</sup>	Fuel-based	Site-specific	Distance-based	Average-data	Spend-based
Category 5	Supplier-specific	Waste-type-specific	Average-data		
Category 6	Fuel-based	Distance-based	Spend-based		
Category 7	Fuel-based	Distance-based	Average-data		
Category 8	Asset-specific	Lessor-specific	Average-data		
Category 9 <sup>2</sup>	Fuel-based	Site-specific	Distance-based	Average-data	Spend-based
Category 10	Site-specific	Average-data			
Category 11 <sup>3</sup>	Fuel-/electricity-based <sup>4</sup>	Fuels/Feed-stocks <sup>5</sup>	Contained/forming <sup>6</sup>	Average-data	
Category 12	Waste-type-specific <sup>7</sup>				
Category 13	Asset-specific	Lessee-specific	Average-data		
Category 14	Franchise-specific	Average-data			
Category 15	Investment-specific <sup>8</sup>	Project-specific <sup>9</sup>	Average-data		

**Figure 6.** Calculation methodologies are summarized based on calculation method classifications from the *Technical Guidance* (Appendix D, p. 162-182). Calculation methods are color-coded based on the activity data and/or emission factor data type for which they are specified: **primary**, **hybrid**, **average/secondary** (in some cases, some primary data may specify alternative formulas that use secondary data) and **spend-based** separately. Note: This figure presents a summary of calculation methods only; readers should refer to the *Scope 3 Technical Guidance* and Appendix D therein for calculation guidance to ensure *Scope 3 Standard* conformance.

<sup>1</sup> Including “where supplier-specific activity data is available for all activities associated with producing the purchased goods” or “where only allocated scope 1 and 2 emissions and waste data are available from supplier” (*Scope 3 Technical Guidance*, p. 164).

<sup>2</sup> For both upstream and downstream transportation and distribution (category 4 and category 9), the fuel-based method, distance-based method, and spend-based method are specified for calculating emissions from transportation, while the site-specific method and average-data method are specified for calculating emissions from distribution.

<sup>3</sup> Not that calculation methods for category 11 are itemized separately for Direct Use-Phase Emissions vs. Indirect Use-Phase Emissions.

<sup>4</sup> Specifically: “Products that directly...” and/or “indirectly consume energy (fuels or electricity) during use” (*Scope 3 Technical Guidance*, p. 177-178).

<sup>5</sup> The Fuels and Feed-stocks method is only itemized for Direct Use-Phase Emissions.

<sup>6</sup> Specifically: “Greenhouse gases and products that contain or form greenhouse gases that are emitted during use” and/or “Intermediate products that directly consume energy (fuels or electricity) during use” (*Scope 3 Technical Guidance*, p. 177).

<sup>7</sup> Relying on “Average waste treatment specific emission factors based upon all waste disposal types” (*Scope 3 Technical Guidance*, p. 179).

<sup>8</sup> The investment-specific method is specified for calculating emissions from equity investments.

<sup>9</sup> The project-specific method is specified for calculating emissions from project finance and from debt investments with known use of proceeds.

## Feedback from respondents:

Some respondents noted that business activities and technologies have developed significantly since the original publication of the GHG Protocol standard and guidance documents. Several recommend reviewing all standards and guidance to address the quantification of emissions from new products, technology developments, digital services, and business models.<sup>1</sup>

Regarding calculation methods, there was consistent criticism of the spend-based method. Some respondents asserted that calculation methods relying on secondary data are less reliable or accurate than results that rely on combustion emission factors and primary data. They recommended mandating or encouraging the use of primary data. Other respondents assert that the *Scope 3 Standard* should not require the development of primary nor audit-quality data, in recognition of the inherent uncertainties baked into emissions estimates that must unavoidably use secondary data.

## Recommendations from respondents:

1. Phase out unreliable methods (e.g., the spend-based).
2. Make mandatory the improvement of calculation methods over time.
3. Develop a Calculation Method Quality Hierarchy. This was listed by some respondents alongside requests for a data quality hierarchy given the interdependency of data inputs and calculation methods (as recommended in [E.5 here](#)).<sup>2</sup> Rank the differing methods in terms of potential reliability or accuracy, assigning a score from poor to excellent for each method and across multiple indicators (e.g., reliability, completeness, temporal correlation, geographical correlation, and representativeness) and include more language on the reliability and accuracy of each calculation method.
4. Mandate the application of contingency factors (i.e., provisions to account for calculation methods that may over or underestimate emissions) for results that rely on lower-quality methods (e.g., 10% for results quantified using the activity-data method and 20% for results quantified using the spend-based method).
5. Add guidance for preparing proxy estimates for all categories and common activities.
6. Remove or re-title the hybrid calculation method, which reflects an assortment of methods, including because effectively all corporate GHG inventories rely on multiple calculation methods and because the *Scope 3 Standard* already requires category-specific disclosures of calculation methods for conformance (refer to [J.1 here](#) for more).

## Category-specific feedback from respondents:

7. Category 1 (Purchased goods and services):
  - a. Provide guidance on calculating category 1 emissions when multiple players or manufacturers are involved. Provide case studies for complex supply chains.
  - b. Provide more extensive diagrams and refined allocation rules, beyond the hyper-simplified diagram shown in Figure 7.3 of the *Scope 3 Standard* (p. 78), to assess supplier-specific emissions (for feedback regarding complex supply-chain and co-product allocations see [here](#) in [G.1](#)).

<sup>1</sup> Alternative products mentioned include low-carbon (renewable) energy generating technologies, energy storage technologies, efficiency improvements, CDR technologies (including CCU, CCS, BECCS, and DACCS), manufacturing processes, resource recovery processes, circular supplies, product lifespan extension, blockchain, and crypto, etc. Alternative business models include product-as-a-service (PaaS), hardware-as-a-service (HaaS), infrastructure-as-a-service (IaaS), communication-as-a-service (CaaS), and software-as-a-service (SaaS).

<sup>2</sup> Other hierarchies requested by some respondents include: Data Quality Hierarchy ([E.5 here](#)), Assurance Level Hierarchy ([I.1 here](#)), Disclosure Hierarchy ([J.1 here](#)), and Uncertainty Matrix ([J.2 here](#)).

8. Category 3 (Fuel- and energy-related activities not included in scope 1 or scope 2):
  - a. Provide guidance on assessing emissions associated with alternative fuels, including biomethane, sustainable aviation fuels (SAFs), sustainable marine fuels (SMFs), renewable diesel, renewable natural gas, e-methane, biofuels (refer to [D.4 here](#)), hydrogen produced with renewable power, nuclear, and/or methane (green, pink, and turquoise), hydrogen produced with fossil fuels with carbon capture (blue), electrofuels (also referred to as e-fuels or bio-e-fuels, and including e-methane), and recycled carbon fuels (RCFs), which generally refers to liquid or gaseous fuels derived from non-renewable solid or liquid waste streams not suitable for material recovery).
9. Category 4 (Upstream transportation and distribution): Provide guidance on assessing and accounting for emissions associated with back hauling (the return of cargo or freight to its origination point) separately from the transportation and distribution of sold products.
10. Category 7 (Employee commuting): Assessing emissions associated with employees working remotely was one of the top ten most cited requests from respondents. Most requested calculation and classification guidance, including for waste generated by employees off-site, templates for data collection, mitigation opportunities.

## F.2. Spend-based method

### Background:

Spend-based formulas are provided as an option for some, but not all, scope 3 categories, in Appendix D of the *Technical Guidance* (p. 162-182) (summarized previously in [Figure 6](#)). Monetary measures are specified in the *Scope 3 Standard* as tools for prioritizing or identifying potential emission hotspots (*Scope 3 Standard*, p. 66), allocating GHG emissions (e.g., revenue-based economic allocations (Box 8.2, *Scope 3 Standard*, p. 91), or creating GHG-intensity targets and other performance metrics (e.g., emissions per unit of revenue) (Table 9.3, *Scope 3 Standard*, p. 102).

Regarding prioritization or identification, the *Scope 3 Standard* says: “Companies should use caution in prioritizing activities based on financial contribution, because spend and revenue may not correlate well with emissions. For example, some activities have a high market value, but have relatively low emissions. Conversely, some activities have a low market value, but have relatively high emissions. As a result, companies should also prioritize activities that do not contribute significantly to financial spend or revenue, but are expected to have a significant GHG impact” (*Scope 3 Standard*, p. 66).

Regarding allocation, economic allocation is listed last in the allocation hierarchy in Figure 8.2, Decision tree for selecting an allocation approach (*Scope 3 Standard*, p. 89). Guidance is provided that economic allocation is “expected to yield more representative estimates in certain situations”, however, in other situations, it “may yield misleading GHG estimates” (*Scope 3 Standard*, p. 95).

Regarding performance metrics, the *Corporate Standard* specifies that revenue-based metrics “must be recalculated for changes in product prices and product mix, as well as inflation” (Box 4, p. 76).

### Feedback from respondents:

Many respondents provided feedback concerning the spend-based method. Respondents recommended either removing it entirely, phasing it out (e.g., over 3 years), limiting its use (e.g., exclusively for hotspot identification or for immaterial categories), keeping it as a proxy method, or extending and specifying its use for all scope 3 categories.

Some respondents asserted that emissions results quantified using the spend-based method are inaccurate and therefore are not good measures of emissions. Inventories using spend-based calculations do not, they asserted, meet the accounting requirements of accuracy and relevance (refer to [D.3 here](#) for more). Some asserted that the spend-based method does not provide reliable information to inform decarbonization. Others asserted that unreliable results misrepresent a reporting entity's indirect emissions and are misleading without transparent methodological disclosures.<sup>1</sup>

Several factors were noted as affecting its unreliability and potentially large margin of error, including non-industry-specific factors (refer to [E.2 here](#)), generic categories, uneven data availability, long time-lags in updates, regional variability, and using inconsistent financial line-items. In addition, it was noted that the spend-based method is not reliable for tracking or differentiating value chain performance (refer to [I here](#)). For example, a company that pays a higher price for high-quality components or materials may calculate higher GHG emissions when using generic EEIO emission factors.

Most respondents who raised the topic of the spend-based method requested that the GHG Protocol limit its use and/or provide more guidance on how to use it effectively. Some respondents requested that the *Scope 3 Standard* and the *Product Standard* be revised to focus on accounting for emissions using primary value chain data from suppliers. Arguments were made in support of moving away from the spend-based method to encourage the use of primary data and to move the market in the direction of improving the cross-comparability of GHG inventory results between companies, rather than all companies reporting "industry average" emissions which are undifferentiated. Counter to this, some respondents cautioned against restricting the spend-based method due to the absence of reliable or cost-effective data and management tools necessary to quantify emissions using other methods. It was argued that removing the spend-based method and making the reporting of scope 3 mandatory for *Corporate Standard* conformance would make compliance impossible for many reporting companies.

#### Recommendations from respondents:

1. Disallow the use of the spend-based method and associated EEIO emission factors entirely as a method to quantify emissions. Only permit its use for hotspot identification, prioritization, benchmarking, and/or for establishing materiality thresholds.
2. Limit the allowable use of the spend-based method. For example, limit its use for no more than 25% of cradle-to-gate or downstream emissions or give companies limited discretion concerning where and how to use the calculation method using principle-based criteria.
3. Add spend-based formulas to all scope 3 categories in the *Technical Guidance*.
4. Add the spend-based method to Appendix D (*Technical Guidance*, 162-182) for category 6 as the spend-based method is detailed for business travel in Figure 6.1 but not in Appendix D.
5. Mandate that companies prepare a "GHG Proxy" inventory for 100% of expenses separately from and to supplement a final reported GHG inventory.

#### Category-specific feedback from respondents:

1. Category 2 (Capital goods) Make clear that the spend-based method cannot rely on non-cash amortization and depreciation expense figures to quantify emissions from capital goods. Some respondents requested more clarity on utilizing balance sheet figures for spend-based

---

<sup>1</sup> (*Scope 3 Standard*, p. 121) states that reporting companies "**shall**" publicly report "separately by scope 3 category... a description of the types and sources of data... methodologies, allocation methods, and assumptions" relied upon and "the percentage of emissions calculated using [primary] data obtained from suppliers or other value chain partners".

- calculations, including the purchase price of assets versus the fair market value. Consider whether purchasing plans (including installments over a period of years) affects this rule.
2. Provide guidance for leased assets (expensed via depreciation and amortization schedules) versus owned assets (expensed/paid upfront and depreciated for tax purposes).

### F.3. Usage-data method (live, real-time, or annual)

Feedback from respondents:

Some respondents proposed standardizing the collection of downstream, primary emissions data on an annual basis over the lifespan of product use. Using real-time use-phase emissions data over the lifespan of sold products, calculated on an annual basis, could be used to replace previously quantified lifespan estimates and improve accuracy and reliability. This method could have application for applying energy attribute certificates (EACs) to downstream energy-use by customers or users.

A few respondents see potential for primary data to be collected via remote sensors, internet of things sensors, satellites, and other monitoring tools to assess site emissions. A few highlighted the value of direct measures in specific cases (e.g., identifying gas flaring at well sites, deforestation, or avoided deforestation) to validate claims.

Recommendations from respondents:

1. Add a “usage-data method” that specifies the use of live or real-time activity data for downstream activities like processing (category 10) and use of sold products (category 11). For example, kilowatt-hour (kWh) per day of use, mileage, megabyte data download or upload per day, application screen time per day, etc. Permit that companies may use fuel type-specific emission factors for actual fuel used, and grid emission factors for actual electricity used by customers. This could be harmonized with feedback to account for downstream emissions from product-use on an annualized basis, as detailed in [G.5 here](#).
2. Quantify and report the annual emissions attributable to product use (category 11), based on a reporting company’s estimated number of sold products currently in circulation (before EOL) in said reporting year.

### F.4. Project-based method

Background:

Project-based reductions must be reported separately from a company’s scope 1, scope 2, and scope 3 emissions. The *Scope 3 Standard*, section 9.4, provides guidance on “Accounting for scope 3 emissions and reductions over time” (p. 106-107). Table 9.6 (p. 107) presents two approaches to account for GHG reductions, the inventory and project method (copied in [Figure 7](#)).

Companies may use the project method to undertake a more detailed assessment of actual reductions from discrete scope 3 emissions mitigation projects, in addition to reporting scope 3 emissions using the inventory method. For more information on quantifying project-based GHG reductions, refer to the *GHG Protocol for Project Accounting* [here](#). Further, refer to a recent review, “Inventory and Project Accounting: A Comparative Review”, prepared by the GHG Protocol [here](#).

**Table [9.6] Methods for accounting for GHG reductions**

<i>Method</i>	<i>Description</i>	<i>Relevant GHG Protocol Publication</i>
<b>Inventory method</b>	Accounts for GHG reductions by comparing changes in the company's actual emissions inventory over time relative to a base year	<i>GHG Protocol Corporate Standard</i> <i>GHG Protocol Scope 3 Standard</i>
<b>Project method</b>	Accounts for GHG reductions by quantifying impacts from individual GHG mitigation projects relative to a baseline (i.e., a hypothetical scenario of what emissions would have been in the absence of the project)	<i>GHG Protocol for Project Accounting</i>

**Figure 7.** Methods for assessing GHG reductions. *Scope 3 Standard* (p. 107).

Feedback from respondents:

Feedback concerning the project-based method was provided by five respondents to the scope 3 survey. A few cautioned that the project-based method may be being used by some suppliers to quantify emissions which are being provided to clients to use in their scope 3 inventories.

Recommendations from respondents:

1. One respondent recommended considering integrating guidance for the project-based method to quantify supply chain emissions in the *Scope 3 Standard*.
2. One respondent recommended developing an equivalent stand-alone protocol for quantifying scope 3 emissions reduction, including to track value chain reductions.

## **F.5. Estimating downstream emissions**

Background:

Calculating emissions from category 10 and category 11 typically requires technical product details and relies on several assumptions about how consumers use products (e.g., product use profiles and assumed product lifetimes and number of uses). Companies are required to report a description of the methodologies and assumptions used to calculate emissions for *Scope 3 Standard* conformance. Regarding uncertainties, Appendix B provides guidance on uncertainty in scope 3 emissions (*Scope 3 Standard*, p. 128-131) (refer to [J.2 here](#) for more on uncertainty).

In some cases, the eventual end use of sold intermediate products may be unknown. If a company sells a large selection of products, or if the use phase of multiple products is similar, it may choose to group said products and use average product use statistics. In some cases, reporting companies may disclose and justify the exclusion of downstream emissions from categories 9, 10, 11, and 12 (but should not selectively exclude a subset of these categories) (*Scope 3 Standard*, p. 61).

An “agreement should be reached by a sector (e.g., industry associations and trade bodies) on common rules for use-phase assumptions. These assumptions can then be verified by an independent third party to improve consistency and comparability” (*Technical Guidance*, p. 120).

Feedback from respondents:

Some respondents raised concerns regarding the assumptions-driven nature of estimating downstream emissions. Several respondents requested more parameter or assumptions guidance for estimating emissions associated products. Some respondents asserted that some companies are manipulating assumptions, such as the expected lifetime or number of uses of sold product(s), to distort or minimize projected emissions thereof for several downstream categories. Some respondents asserted that estimates relying on assumptions and secondary data, cannot be validated with either limited or reasonable levels of assurance. They asserted that only primary cradle-to-gate emissions data can be assured. Some recommend standardizing best practice modeling rules and/or developing separate requirements for the verification of upstream vs. downstream emissions.

Recommendations from respondents:

1. Streamline the requirements for preparing downstream emissions estimates modeling guidance. It is particularly challenging for companies that sell hundreds or thousands of products with many potential uses, exhibiting wide-ranging consumer use profiles, across multiple regions. Some companies may be unable to develop meaningful projections.
2. Standardize modeling best practice for projecting downstream emissions, in particular, the use of sold products, to ensure that companies don’t understate or overstate emissions. Some respondents pointed to disclosure requirements for pro forma financial statements.
3. Standardize forward-year emission factor schedules for grid electricity that accounts for expected or projected grid, regional, and/or national decarbonization rates. Companies are heavily reliant on forward-year emission factor schedules to project both direct and indirect use-phase emissions of sold products (category 10 and category 11), and projected emissions from financed projects (category 15). Forward-year assumptions for grid decarbonization heavily influences inventory results.
4. Standardize lifespan ranges for sold product types (category 10 and category 11), asset types (category 2), including infrastructure, and other projects (category 15).
5. Consider developing best practice or category rules, like the product category rules (PCRs) for environmental product declarations (EPDs) developed by EPD International. Parameter assumptions to consider include: product lifespan, durability, repair and maintenance, end user consumption habits, forward-looking electricity emission factors, and allocation methods. Develop modeling or projection “Approach Matrices” for assessing lifespan emissions for various business activities, product types, and/or categories.

## **F.6. Non-physical products (e.g., services, digital, cloud, SaaS)**

Background:

The term, product, is defined as “any good or service” (*Scope 3 Standard*, p. 140). Where the standard uses the term “product” it refers to both “goods and services.”

Feedback from respondents:

Some respondents noted that there was limited or no guidance for quantifying emissions attributable to services or systems, including software, software-as-a-service (SaaS), product-as-a-service (PaaS), hardware-as-a-service (HaaS), data storage, digital services or assets (e.g., blockchain, crypto, NFTs), logistical services, trading services, financial services, and other consulting services. Some respondents noted that it was challenging to allocate emissions caused by activities associated with or indirectly attributable to non-physical products (e.g., software, services, or systems).

Support requests from respondents:

1. Provide more guidance for freight brokering services and travel services.
2. Provide guidance for various business models, including SaaS, PaaS, HaaS, IaaS, out-sourcing, sub-contracting, transaction services, trading services, and investment advisors.

### **F.7. Intermediaries (intermediary parties and activities)**

Feedback from respondents:

Several respondents expressed difficulty identifying boundaries and assessing emissions attributable to intermediary party activities (also termed "middlemen" entities). For the energy sector specifically, a few respondents requested that the GHG Protocol standardize rules aimed at directing how midstream oil and gas companies (that buy, sell, and trade intermediate or final fossil fuel products) can navigate calculating and disclosing their scope 3 emissions while managing double counting. A few respondents asserted that some coal mining or oil and gas extracting companies may be excluding emissions associated with product use (i.e., downstream combustion-related emissions) and some may only be accounting for the processing of intermediate products by direct clients (e.g., refining companies, midstream distributors, etc.).

Recommendations from respondents:

1. Do not require that intermediary companies report downstream emissions associated with processing (category 10) or use of sold products (category 11) or develop industry-specific exceptions for wholesalers, retailers, and e-commerce platforms. Some respondents argued that such companies have effectively no influence over product design.
2. Develop calculation methods to assess emissions attributable to third-party goods and services transacted via subscription or rental including product rental, food delivery, grocery delivery, and subscription-basis services. Provide guidance on reliable methods to quantify emissions from e-commerce platforms, marketplace companies, and commodities traders.

Category-specific feedback from respondents:

3. Category 1 (Purchased goods and services): Provide guidance on reliable methods for retailers and wholesaler to collect data and/or to approximate the product carbon footprint of hundreds of thousands of sold products absent supplier-specific emissions data.
4. Category 3 (Fuel- and energy-related activities not included in scope 1 or scope 2): Split category 3 to make it account for fuel products that are "undifferentiated", commingled, unbranded, or of which the well-to-tank origin can't be traced — separately from branded fuel products. Fuel products produced by energy sector companies that are improving operating efficiency to increase the energy return on energy invested, or that are decarbonizing other

activities, may be commingled with “status quo” fuel products from companies that are making no effort to decarbonize activities.

5. Standardize the data and information that energy sector companies must report. This could minimize misrepresentation. A few respondents advised that the GHG Protocol have corporate lawyers review the final language for interpretability and defensibility.

## F.8. Infrastructure

### Background:

Capital goods are “final products” with extended lifespans used to “manufacture a product, provide a service, or sell, store, and deliver merchandise” and include “equipment, machinery, buildings, facilities, and vehicles” (*Scope 3 Standard*, p. 39). The minimum boundary for category 2 includes “all upstream (i.e., cradle-to-gate) emissions from the production of capital goods purchased or acquired by the reporting company in the reporting year” (*Scope 3 Standard*, p. 39).

The minimum boundaries of category 1 and category 3 likewise include cradle-to-gate emissions. The minimum boundaries of category 4, category 5, category 6, category 7, category 8, category 9, category 13, category 14, and category 15 do not include cradle-to-gate emissions associated with the manufacture or construction of equipment or infrastructure (e.g., roads, tracks, ports, gas stations, airports) (Table 5.4, *Scope 3 Standard*, p. 34-37; and Table I, *Technical Guidance*, p. 7-10).

### Feedback from respondents:

Some respondents expressed confusion regarding whether and how downstream emissions associated with operating a building should be accounted for and classified by various parties. Specify whether all parties involved during and after construction should account for downstream emissions from operation. Parties may include construction managers, developers, equity holders, debt financiers, and operating property managers.

Some respondents expressed confusion accounting for goods and services (e.g., steel, concrete, sub-contractors, labor, etc.) purchased or paid for by a construction manager during construction, and whether such activities should be accounted for as purchased goods and services (category 1) from the perspective of the construction manager or as capital goods (category 2) or financed projects (category 15) from the perspective of the property owners or equity holders.

### Recommendations from respondents:

1. For grid infrastructure, electrification, etc., consider requiring the disclosure of modeling parameters (assumptions), including expected lifespan of use and the forward-year schedule for grid electricity emission factors (refer to recommended parameter guidance [here](#) in F.5).
2. Provide guidance on amortizing both embedded (contained) carbon and cradle-to-gate emissions attributable to buildings over their expected lifespan (refer to [G.5 here](#) for more).
3. Develop a decision tree regarding operational boundaries to classify scope 3 business activities for construction projects that involve various parties (refer to [C.4 here](#)).

Support requests from respondents:

4. Provide guidance regarding boundary setting and emissions inclusion or exclusion between multiple parties involved over the lifespan of a project. Parties involved pre-completion include construction managers, general managers, contractors, suppliers, insurers, project managers, developers, banks, financial services providers, etc. Parties involved post-completion includes property managers, suppliers, lessees, sub-tenants, and asset owners. Refer also to issues concerning [C.1 here](#) and temporal boundaries in [C.6 here](#).
5. Provide category classification guidance for projects during construction, concerning purchased goods and services (category 1) and capital goods (category 2).
6. Provide category classification guidance for the use of sold products post-construction.
7. Provide guidance accounting for EOL treatment and landfilling in the construction industry, including both embedded (contained) carbon in materials and cradle-to-gate emissions.

## F.9. Investments

Background:

The *Scope 3 Standard* provides requirements and guidance for investments (category 15) on p. 51-54. This includes three types of investments that are required (Table 5.9, p. 53) and optional investments (Table 5.10, p. 55). Calculation methods are itemized in the *Scope 3 Technical Guidance* (p. 136-152) and summarized in Appendix D (p. 162-182), including the investment-specific method (p. 142), average-data method (p. 144, 150), and project-specific method (p. 148).

Feedback from respondents:

Accounting for emissions associated with investments was raised by many respondents. Integrating recent PCAF *Financed Emissions* (Part A) guidance, including the investment types and “attribution ratios” (using PCAF terminology) for assigning investee inventory emissions to financial institutions, was recommended by many respondents. Few specified whether or how to integrate both PCAF *Facilitated Emissions* (Part B) and *Insurance-Associated Emissions* (Part C) guidance on metrics.<sup>1</sup> A few respondents requested that the GHG Protocol not adopt or integrate the PCAF standard or guidance, as written, to supplement the GHG Protocol, including because they disagree with PCAF’s EVIC-dependent attribution ratio. Some respondents requested that various investment-related and/or funding-related activities be explicitly required next to scope 3 reporting and pointed to PCAF for guidance.

Recommendations from respondents:

1. Calculation formula 15.4 (p. 152) of the *Scope 3 Technical Guidance*, which is for projected total lifespan emissions from a project (financing), should be itemized as formula 15.5 to distinguish it from 15.4 (p. 150) of the *Scope 3 Technical Guidance*, which estimates emissions associated with the construction of a project (investee).
2. Required the inclusion of retirement and/or pension funds, including 401(k) and 403(b) plans, in the minimum boundary and provide calculation guidance thereof. Refer to managed investments and client services (Table 5.10, *Scope 3 Standard*, p. 55).
3. Specify calculation methods to account for the emissions attributable to all other types of investments (*Scope 3 Standard*, Table 5.9, p. 53). Other types of investments mentioned

---

<sup>1</sup> Importantly, PCAF in Part B articulates that “facilitated emissions differ from financed emissions” and “views facilitation as a separate but important metric”, explaining that they are off “balance sheet (representing services rather than financing)” and “temporary” (p. 8).

include cash holdings or deposits, endowments, treasury bonds, privately traded, publicly traded securities and listed holdings, including over-the-counter (OTC) securities, and OTC derivatives.

4. Many respondents requested that the GHG Protocol refer to PCAF and its quantification and allocation (“attribution”) rules. A few cautioned against using PCAF’s allocation formulas (refer to [C.5 here](#) for more).
5. Some respondents did not recommend using PCAF’s “attribution ratios” (PCAF terminology) for listed equity and corporate bonds arguing that, for common stock, it could result in short-term volatility that would distort an investor’s financed emissions. Specifically, the EVIC denominator could fluctuate significantly with share price and possibly be manipulated by deploying CC&E for share buybacks.<sup>1</sup>

## F.10. Other case-specific calculation guidance

Support requests from respondents:

1. Clarify whether employees utilizing taxis, including for commuting, going to events, and/or for other business travel associated with travel and entertainment should be accounted for in category 6 or category 7. Clarify whether employee meals should be included.
2. Develop guidance to account for electricity used by employees to commute via electric vehicles (EVs), including via private and public transportation. Include classification guidance for employee’s renewable electricity use.
3. Provide more guidance to calculate emissions from hotel stays during business travel.<sup>2</sup>
4. Provide more guidance on assessing and accounting for emissions attributable to events.
5. Provide more guidance on assessing and classifying employee benefits like food, housing, cars, etc., including if these benefits are provided or paid for via reimbursements.
6. Provide more guidance on assessing and accounting for free products, gifts, donated goods, and pro bono services, and whether these activities should be classified in categories 1 or 11.
7. Provide more guidance on assessing and accounting for downstream refrigeration at or by wholesale and retail stores.

---

<sup>1</sup> Enterprise value including cash (EVIC) is the sum of market capitalization of ordinary shares, plus the market cap of preferred shares, plus the book value of total debt, plus minorities interest, without deducting cash and cash equivalent (CC&E) as is done for enterprise value (EV).

<sup>2</sup> Note that s per the *Scope 3 Standard* GHG inventories may “optionally include emissions from business travelers staying in hotels” (p. 46), and the *Technical Guidance* provides a distance-based method 6.1 on p. 84 (and p. 171) and a fuel-based method (p. 171).

## G. Allocation

This section outlines survey respondents' feedback concerning allocation. This includes allocating emissions to customers (i.e., supplier-specific emissions data), addressing complex supply chains, and allocating emission reductions (G.1). Refer to Chapter 8, Allocating Emissions, in the *Scope 3 Standard* (p. 86-97) and formulas in the *Technical Guidance* (Appendix D).

There was also feedback on other proposed methods, including a "stock approach", inventory aging, and an "embodied emissions" approach (G.2), allocation methods to account for product durability (G.3), accounting for reuse, recycling, and circularity (G.4), depreciation rules to allocate cradle-to-gate emissions, and rules to annualize forward-year emissions attributable to the use of sold products (G.5).

These proposed allocation methods do not present new ways to quantify or calculate GHG emissions; rather, they concern how to allocate, account for, and/or report quantified GHG emissions values (refer to F [here](#)). Note that this section does not include feedback or recommendations submitted separately via scope 3 proposals, which is summarized separately (available [here](#)).

### G.1. Allocation methods

Background:

The *Scope 3 Standard* provides guidance on allocation in Chapter 8, Allocating Emissions. Allocation is "the process of partitioning GHG emissions from a single facility or other system (e.g., activity, vehicle, production line, business unit, etc.) among its various outputs" (see figure 8.1) (p. 87). When companies use primary data from suppliers or other value chain partners to calculate scope 3 emissions, companies may need to allocate emissions (see section 7.4). "When using primary data to calculate scope 3 emissions, companies should avoid or minimize allocation if possible" (p. 88). However, when allocation is necessary, there are multiple allocation methods specified in Figure 8.2 and Table 8.1 in the *Scope 3 Standard* (p. 90), including physical allocation and economic allocation.

Table 8.1 provides five sample allocation factors and formulas for physical allocation: Mass, Volume, Energy, Chemical, and Number of units. Table 8.1 provides one sample allocation factor and formula for economic allocation: Market value. Table 8.2 of the *Scope 3 Standard* (p. 92-93) details examples of primary data requiring allocation and provides allocation guidance for upstream and downstream emissions. Finally, the *Technical Guidance* provides some guidance on methodological selection, including for road transport, marine transport, air transport, and rail transport (p. 52), upstream leased assets (p. 98), use of sold products (p. 124), and downstream leased assets (p. 129).

Feedback from respondents:

Several respondents requested more guidance on choosing between allocation methods. Many respondents requested guidance on using emission factor values from LCI databases that have already performed allocations and questioned whether using emission factors from disparate databases may mix allocation methods across emissions results within a reporting company's GHG inventory. Refer to E.2 [here](#) for more on emission factors.

Regarding allocating supplier-specific emissions to customers, some recommended developing templates for data transfer that itemize the metadata needed (e.g., gases, GWP values, emission factors, calculation methods, allocations) (refer to recommendation 1 in E.7 [here](#) for more). Some

respondents highlighted complex upstream activities that make supplier-specific emissions allocation difficult, for example, by third-party manufacturers that co-manufacture various products for multiple clients (refer to category 1-specific feedback in [F.1 here](#) and supplier-specific feedback in [E.4 here](#)).

Some respondents raised the challenge of allocating emissions reductions from activities performed by or involving multiple parties. Several asserted that guidance on allocation is too generic and does not account for the nuances of supply chain intervention projects, the application of renewable energy credits purchased by value chain partners, and other nuances associated with assessing supplier-level emissions. Others raised this issue in the context of developing a market-based approach to account for a reporting company's value chain decarbonization activities which are funded or supported by a reporting company (refer to [G.1 here](#) for more).

#### Recommendations from respondents:

1. Revise language in the *Scope 3 Standard* that cautions reporting companies to "avoid or minimize allocation if possible". This is misleading given that most if not all companies' supplier-specific emissions data involves allocations to allocate emissions data to clients.
2. Develop more guidance for allocating upstream emissions. Some respondents are unsure how to allocate a supplier's upstream emissions to its sold services (per unit of sold service).
3. Develop more detailed guidance for allocation methods as it concerns downstream emissions. Some respondents referred to third-party standards such as CSN EN 16258<sup>1</sup> (soon to be ISO 14083<sup>2</sup>), Global Logistics Emissions Council (GLEC) Framework<sup>3</sup>, or the Pathfinder Framework<sup>4</sup> (refer to [L here](#) for more). Refer also to feedback regarding the weight-based allocation example, 11.3, in the *Technical Guidance* [here](#) in [C.4](#).
4. Develop specific calculation rules, requirements, and guidance for co-products and by-products and harmonize new guidance with the *Product Standard* (refer to [B.3 here](#) for more). In cases when multiple products run through the same production or recycling process, respondents identified a need for fair guidelines regarding emissions allocation and/or simple approaches like pro rata allocations based on the percentage weight-bases.
5. Develop allocation guidance for waste-to-energy (refer to [G.4 here](#) for more).
6. Develop a more detailed allocation methodology selection guidance consisting of hierarchies or matrices. Current guidance is generic and does not account for the nuances of supply chain intervention projects, supply sheds, and other nuances associated with supplier-level data.
7. Let companies use reductions or removals that have been credited (e.g., via insets) in their scope 3 inventories (refer to section [M here](#) for more on market-based accounting approaches).

#### Support requests from respondents:

8. Provide calculation and formula guidance regarding allocating emissions associated with cloud-based services. For more on services refer to [F.6 here](#).
9. Some respondents articulated confusion reporting on methodologies when multiple allocation methods are used (either by the reporting company, suppliers, and/or inherited via secondary emission factor datasets) which are effectively "hidden" in GHG inventory results.

---

<sup>1</sup> (European Standards, 2013): <https://www.en-standard.eu/csn-en-16258-methodology-for-calculation-and-declaration-of-energy-consumption-and-ghg-emissions-of-transport-services-freight-and-passengers/>

<sup>2</sup> (ISO, 2023): <https://www.iso.org/standard/78864.html>

<sup>3</sup> (GLEC, 2019): <https://ghgprotocol.org/blog/glec-framework-universal-method-logistics-emissions-accounting>

<sup>4</sup> WBCSD Pathfinder Framework (version 2, January 2023): <https://www.wbcsd.org/Programs/Climate-and-Energy/Climate/SOS-1.5/Resources/Pathfinder-Framework-Guidance-for-the-Accounting-and-Exchange-of-Product-Life-Cycle-Emissions>

10. Provide guidance on co-packaging allocations when products from different companies are bundled (e.g., by Amazon in the same master carton), including for last-mile distribution, freight services utilized by multiple companies (e.g., shared containers during sea-freight), and/or intermediate products received by reporting companies from suppliers.
11. Provide guidance on co-product allocations (economic versus physical) in value chains beyond what's available in Table 8.1 (*Scope 3 Standard*, p. 90) or Example 8.5 (*Scope 3 Standard*, p. 96-7), which a few respondents asserted was unclear or insufficient.
12. Provide more guidance on allocating emissions associated with services (refer to feedback regarding quantifying emissions associated with services in [F.6 here](#)).
13. Provide guidance on allocating embedded (contained) carbon and "embodied" emissions associated with manufacturing, constructing, and performing repair and maintenance on renewable energy generating facilities. Refer also to category 3-specific feedback to include cradle-to-gate emissions in the minimum boundary in [C.4 here](#) and refer to [G.2 here](#) regarding an "embodied emissions" approach.

Category-specific feedback from respondents:

14. Category 1 (Purchased goods and services): Provide more guidance on how to allocate emission reductions occurring in the value chain to clients. Consider whether emissions reductions achieved by a reporting company should always be allocated to customers pro rata based on the monetary value of purchased goods.
15. Category 10 (Processing of sold products) and Category 11 (Use of sold products): Clarify the application of the weight-based allocation example 11.3 in the *Scope 3 Technical Guidance* via the following recommendation [here](#) in [C.4](#).
16. Category 12 (End-of-life treatment of sold products): Provide more guidance on allocating category 12 emissions which some respondents asserted is "everyone's scope 3". Some find it difficult to determine the owner(s) of waste, for example, for building construction, between the building owner, construction manager, and/or the demolition company. Refer to [G.4 here](#) for more on allocating or "assigning" emission associated with recycled waste.
17. Category 15 (Investments): Specify whether suppliers should allocate emissions attributable to financing activities — which fund business operations — to sold products. Currently, emissions associated with investment activities, including financing activities, are classified as downstream and are thus excluded from supplier-specific (cradle-to-gate) emissions data.

## G.2. Inventory practices

Recommendations from respondents:

1. Develop a "stock approach" to recognize and account for emissions associated with the use of sold products that are currently in circulation (in a reporting year). Replace the current approach of reporting lifespan use-phase emissions on a cumulative basis with this annual approach. Respondents identified potential challenges with this method, including keeping track of products in circulation, limiting which calculation methods to use, and recalculating previous-year category 11 emissions.
2. Develop an "inventory aging" approach for (i) physical intermediate products purchased by a reporting company in a reporting year that remain unused and (ii) products manufactured by a reporting company in a reporting year that remain unsold by year-end, e.g., for multi-year construction projects, for which materials and goods are purchased, inventoried, and/or used over multi-year periods and for which payment may precede or trail the receipt of goods.

- a. Consider the implications for commodities traders, brokers, and/or services that don't physically inventory purchased goods and/or sold products.
  - b. Consider letting companies use a "bill of materials approach" to determine if and when to account for associated cradle-to-gate emissions (e.g., for construction projects).
  - c. Consider potential distortions resulting from cumulative emissions records (refer to feedback in [C.6 here](#) regarding temporal boundary distortions).
  - d. Consider whether an "inventory aging" approach requires optionality not dissimilar from cash-basis versus accrual-basis financial accounting to recognize receipt.<sup>1</sup>
3. Develop an "embodied emissions" approach to account for cradle-to-gate emissions associated with energy as a purchased *product* (either potential energy or delivered energy), specifically, emissions from manufacturing equipment and facilities (e.g., oil rigs, drilling equipment, or wind turbines). Some respondents asserted that this could be disclosed by energy companies in addition to corporate-level reporting. Excluding the life cycle emissions attributable to low-carbon (renewable) energy understates the GHG-intensity of decarbonizing fossil fuel dependent energy. Specify whether companies should account for emissions on a net calorific value (Net CV) or gross calorific value (Gross CV) basis. Refer also to category 3-specific feedback to include cradle-to-gate emissions in the minimum boundary [here](#) in [C.4](#) and consider integrating a depreciation and amortization method as outlined in [G.5 here](#).

### G.3. Durability and long-lived products

#### Background:

Box 5.8 in the *Scope 3 Standard* (p. 49) and Box 11.2 of the *Scope 3 Technical Guidance* (p. 115) both explain that: "Because the scope 3 inventory accounts for total lifetime emissions of sold products, companies that produce more durable products with longer lifetimes could appear to be penalized because, as product lifetimes increase, scope 3 emissions increase, assuming all else is constant. To reduce the potential for emissions data to be misinterpreted, companies should also report relevant information such as product lifetimes and emissions intensity metrics to demonstrate product performance over time. Relevant emissions intensity metrics may include annual emissions per product, energy efficiency per product, emissions per hour of use, emissions per kilometer driven, emissions per functional unit, etc."

Section 11.2 of the *Scope 3 Standard* states that companies should, when applicable, disclose "annual emissions from the use of sold products (i.e., emissions that occur in a single year from products sold in the reporting year" and the "lifetime/durability of sold products" (p. 124).

#### Feedback from respondents:

Many respondents provided feedback concerning product durability and long-lived products. Several asserted that accounting for forward-year, lifetime product use-phase emissions on a cumulative basis misrepresents the GHG-intensity of long-lived versus short-lived products. They cautioned that this disincentivizes the manufacture of long-lived products which may have greater cradle-to-gate emissions from manufacture and/or emissions from use, compared to less durable products. This, they asserted, plays a role in perpetuating the high-volume manufacture and sale of lower-quality products with

<sup>1</sup> Generally, cash-basis accounting recognizes income/cost when cash is received/dispensed while accrual-basis accounting records income/cost when transactions occurs (when timestamped or invoiced). Accrual-bases accounting is required to comply with General Accepted Accounting Principles (GAAP) required by the Securities and Exchange Commission (SEC) for U.S. listed companies. Both accrual-basis and cash-basis accounting are permitted by The International Financial Reporting Standards Foundation (IFRS).

shorter lifespans, despite the reality that long-lived products often are less GHG-intensive per functional use (e.g., per garment use or per tractor-kilometer driven). This distortionary effect on annual inventories is similar for durable capital goods (category 2).

Some propose that aggregating forward- and previous-year emissions makes a company's annual inventories incomparable year-over-year. This, they assert, limits the efficacy of net zero targets that rely on absolute, aggregate inventories to inform decarbonization. This distortionary effect also has implications for assessing potential emissions reductions associated with other activities, including "circular" activities (refer to [G.4 here](#) for more).

Recommendations from respondents:

1. Some respondents encouraged the GHG Protocol to either (1) develop standardized category and/or product-level performance metrics to mitigate misrepresentation and to facilitate interpretation and/or (b) mandate the disclosure of both existing transparency guidelines<sup>1</sup> and tighter, more standardized category and/or product-level performance metrics to supplement current reporting requirements. Refer also to feedback concerning depreciating, amortizing, and annualizing emissions in [G.5 here](#), feedback concerning reporting in [J.1 here](#).

#### G.4. Reuse, recycling, circular economy

The term "circular" in this document is used to refer to activities that divert products, components, and/or materials away from being permanently disposed of or discarded (as waste).

Background:

The *Scope 3 Standard* provides limited guidance on accounting for and allocating emissions attributable to recycling activities, in Box 5.6, Accounting for emissions from recycling (p. 46). The *Technical Guidance* provides guidance on recycling, including guidance on accounting for emissions associated with purchasing recycled materials (relevant for category 1 or category 2), recycled waste generated in operations (relevant for category 5), and sold products with recycled content (p. 77-80).

The *Technical Guidance* features a decision tree in Figure 5.1, Using the Recycled Content Method to account for emissions from recycling (p. 79). The *Product Standard* provides guidance on methods for allocation due to recycling (p. 71-74), including the closed loop approximation method (p. 71-73) and the recycled content method (p. 73-74), choosing between either method (p. 74-77), and collecting recycling data (p. 77).

Feedback from respondents:

Several respondents asserted that the *Scope 3 Standard* needs new or updated rules to account for emissions attributable to activities associated with "circular" production and consumption. Activities that support "circular" production and consumption include recycling activities, lifespan extension (by design, repair and maintenance, refurbishment, or second-hand sales), and other business models (e.g., product-as-a-service, hardware-as-a-service, or resource recovery). Some assert that the cut-off rules for virgin versus recycled materials are inconsistent: for virgin materials, cradle-to-gate emissions are included while for recycled materials, pre-recycling cradle-to-gate emissions are excluded. Several

---

<sup>1</sup> Transparency guidelines regarding intensity metrics and product performance are detailed in Box 5.8 Product lifetime and durability (*Scope 3 Standard*, p. 50) and Box 11.2 Product lifetime and durability (*Technical Guidance*, p. 115)

respondents asserted that the current scope 3 rules and requirements dis-incentivize the use of recycled materials between buyer(s), processor(s), and seller(s) of recycled materials.

Several identified the need for allocation rules that impartially account for the GHG-efficiency realized by activities that extend the use of products, specifically, the virgin cradle-to-gate emissions attributable to virgin products. This includes activities that increase product durability to make possible both reduced virgin material consumption (demand-side) and reduced waste generation (refer to [G.3 here](#) for more on durability) and that extend product lifespans by designing higher quality products, repairing/maintaining products in circulation, and/or buying/selling second-hand products. This also includes activities like recycling and reusing products and materials by upcycling<sup>1</sup>, downcycling<sup>2</sup>, repurposing, and/or waste incineration with energy recovery. Refer to recommendation 2 below for feedback on waste-to-energy.

Regarding reusing products, several respondents requested that the GHG Protocol provide more guidance for purchasers of refurbished or second-hand products, in particular, allocating emissions between a seller and buyer(s). Some respondents asserted that the cradle-to-gate emissions of a product should be shared between the original owner and the second-hand buyer(s). This would impartially account for the extended use of “embodied” or cradle-to-gate emissions and potentially also the embedded (contained) carbon, which they asserted is in closer alignment with the concept of influence (refer to [D.3 here](#) for more feedback on the term, influence).

Regarding recycling, several respondents asserted that current guidance discourages recycling by market participants. Some respondents find it challenging to account for emissions associated with waste that is recycled and used as feedstock, either internally by a waste generating company, by an intermediary recycler, or by a recycled feedstock purchaser. For companies that perform waste recycling in-house and sell feedstock therefrom, some respondents are unsure whether emissions can or should be (a) deducted from category 1, (b) accounted for in category 5 as waste, (c) or accounted for as a sold product using category 10, category 11, and category 12. Some recommend considering whether the direction of monetary exchange (sale vs. expense) associated with waste or feedstock determines the inclusion or exclusion and classification of attributable emissions. Some respondents proposed reviewing the allocation guidance for facilities that produce multiple products, including studied products and co-products, and harmonizing guidance with the *Product Standard*. Refer to [B.3 here](#) for more feedback on harmonizing with the *Product Standard*.

In the context of waste generation, a few respondents asserted that, holding constant all virgin material input factors, the GHG inventory of a company producing no (zero) scrap loss could be greater than if that same company generated scrap loss during production. For example, this could result if the emissions attributable to the use of sold products (category 11) exceeds that of the EOL treatment of the same unit weight of virgin material input (category 5). However, in this example, operating with zero waste is optimal on a product-level and potentially also on a societal basis, as it lowers the cradle-to-gate GHG-intensity per unit sold product, despite a company’s GHG inventory being greater.

Regarding existing methods to account for recycling, some respondents asserted that the Recycled Content Method (*Technical Standard*, p. 78-9) lets waste-producing companies “off the hook” by letting them “zero out” their category 5 emissions simply by diverting waste to recyclers or third-party waste-to-energy operators with limited controls. This, they cautioned, discourages or disincentivizes companies that provide recycling services because the avoided emissions “impact” or reduction achieved by their

---

<sup>1</sup> Upcycling refers to reusing discarded objects/materials to create a product of higher quality, value, and/or functionality than the original.

<sup>2</sup> Downcycling refers to reusing discarded objects/materials to create a product of lower quality, value, and/or functionality than the original.

recycling services, across an economy of producers and consumers, is not credited to them. This is the case, they asserted, because waste collection and recycling activities are often more GHG-intensive than simply discarding and landfilling the waste, if and only if the “sunk” cradle-to-gate emissions of the discarded products is ignored.

A few respondents suggested developing metrics to quantify avoided emissions from recycling.<sup>1</sup> Others recommended accounting for upstream biogenic CO<sub>2</sub> removal and downstream biogenic CO<sub>2</sub> emissions in the context of circularity and bio-based materials (refer to [D.4 here](#) for more on biogenic emissions).

#### Recommendations from respondents:

1. Revise the Recycled Content Method or create a new “lifespan extension re-allocation” method (e.g., a “Second-hand Content Method”) that re-allocates cradle-to-gate (“sunk”) emissions attributable to a physical product when it is re-used or re-purposed. For example, solid-state drives (SSDs) are typically sold with a five-year warranty, at which point data centers often retire and destroy them to protect sensitive data. However, wear-leveling, data erasure, and re-encryption can make recycled SSDs viable for another five (5) years of use. A “re-allocation rule” could share (allocated) the cradle-to-gate emissions between the first and second buyer by (i) annual straight-line depreciation (“use-basis”) or (ii) monetary, price-based rules.
2. Several respondents propose methods to allocate or attribute emissions from (i) virgin waste that is recycled and sold, (ii) recycling processes, and (iii) the use of waste as feedstock. Regarding waste-to-energy (WTE), several respondents proposed allocating emissions attributable to waste combustion to the waste originator and not the waste combustor or final energy consumer (as per the Recycled Content Method), with a possible extension to biomass combustion. This is consistent with the “polluter pays” principle, some asserted. WTE activities include both activities (a) to divert, transport, and/or process waste and (b) waste combustion. Currently, (a) emissions from diverting, transporting, and/or processing are assigned to the waste recycler and accounted for by the waste combusting entity, and (b) emissions from waste combustion is recognized by the waste combusting entity and passed on to clients for inclusion in their scope 2 inventories. Some assert that emissions from both (a) and (b) should be included in or assigned to the scope 3 inventory of, exclusively, the waste generator. Other respondents cautioned that such an allocation or cut-off rule could create inadvertent non-reporting loopholes (e.g., entities that import waste from neighboring countries as a WTE feedstock, could report zero emissions from their energy generating activities).
3. Some respondents requested that standardized methods be developed for reporting companies to receive recognition for diverting and selling recycled waste and/or co-/by-products as feedstock — that helps recycled waste (feedstock) purchasers to operate less GHG intensively.

#### Category-specific feedback from respondents:

4. Category 5 (Waste generated in operations): Rely on and integrate the underlying logic of the waste management pyramid (i.e., preventing, re-using, recycling, recovering, and disposing).
5. Category 11 (Use of sold products): Account for the embedded (contained) carbon in physical products (e.g., a wood table) in category 11 rather than in category 12, which distorts the benefit of carbon being sequestered in products (including biogenic CO<sub>2</sub> for bio-based materials).

---

<sup>1</sup> Importantly: Avoided emissions measures are performance measures and not inventory measures (refer to [H.6 Avoided emissions here](#)).

6. Category 12 (End-of-life treatment of sold products): Respondents requested guidance on boundary setting for activities associated with EOL treatment involving recycling, upcycling, or downcycling, especially for long-lived or durable products that have delayed EOL emissions.

## G.5. Depreciate, amortize, or annualize GHG results

Background:

Box 5.4 states that “companies should not depreciate, discount, or amortize the emissions from the production of capital goods over time. Instead, companies should account for the total cradle-to-gate emissions of purchased capital goods in the year of acquisition, [like] emissions from other purchased products in category 1” (*Scope 3 Standard*, p. 39).

Feedback from respondents:

Several respondents propose the development of depreciation and amortization rules and schedules to account for/report emissions attributable to tangible assets and intangible assets. Some respondents requested that the GHG Protocol standardize the depreciation of the cradle-to-gate emissions of capital goods to convey the GHG-impact of capital expenditure decisions, in the context of production. Several respondents noted that constructing grid infrastructure (e.g., power cables, energy storage, and generating facilities) and electrifying machinery will be very GHG-intensive in the short term. They asserted that accounting for construction-related emissions and downstream emissions on a cumulative basis is distortionary — which negatively affects capital allocation towards decarbonization. Some point out that projected grid decarbonization emission factors could heavily impact projected, annualized emissions from the use of sold products that rely on electricity, directly or indirectly (refer to [F.5 here](#)).

Various respondents asserted that depreciating, amortizing, and/or annualizing emissions results could be applicable for multiple categories, including category 1, category 2, category 8, category 10, category 11, category 13, category 14, and category 15. Several respondents asserted that utilizing depreciation, amortization, and/or annualization schedules would support establishing sensible baselines, year-over-year comparability, and meaningful key performance indicators (KPIs), both for companies internally and, for example, for investors, to allocate capital effectively.

Some noted that the implications differ for upstream (historical, ex-post) and downstream (often projected, ex-ante) emissions in terms of establishing “schedule-setting” rules. Several respondents identified particular significance for category 11 and category 15, both of which include forward-year lifetime emissions in their minimum boundaries (refer to [C.4 here](#)). Some respondents requested that the GHG Protocol standardize the annualization of downstream emissions associated with sold products (category 10 and category 11) and projects (category 15). Some recommend annualizing cumulative forward-looking emissions or accounting for these emissions on both a cumulative basis and an annual basis, the latter utilizing either straight-line or alternative amortizations (e.g., accelerated, escalating, or discounted). For example, if category 11 amounts to 100 metric ton CO<sub>2</sub>-equivalent (tCO<sub>2</sub>e) emissions for products sold with ten-year lifespans, this would be 10 tCO<sub>2</sub>e annualized (straight-line). Some recommend letting companies reconcile projected emissions with actual emissions, as they occur in future years, utilizing live/real-time data (refer to [F.3 here](#)) and recalculating base-year and previous-year inventories retroactively.

## Recommendations from respondents:

1. Add rules to account for business activities that utilize tangible or intangible products over an extended period via depreciation and amortization schedules. Consider utilizing an “annualized schedule” for downstream emissions attributable to sold products (refer to [G.3 here](#) for more).
2. Standardize asset lifespans by asset type, as is done by the U.S. Internal Revenue Service (IRS), to depreciate or allocate cradle-to-gate emissions attributable to capital goods.<sup>1</sup>
3. Allow or mandate that companies report projected emissions associated with the processing and use of sold products in three parts: (a) cumulative lifespan, (b) annualized, and (c) other GHG-intensity metrics (e.g., relying on functional units either prescriptively specified by product type or optionally defined and disclosed by reporting companies).
4. Several respondents propose requiring that reporting companies either: (i) exclusively annualize cumulative forward-looking emissions or (ii) provide both cumulative and annualized figures. A few requested that annualized measures to be optionally augmented or replaced with live/real-time data (as detailed in [F.3 here](#)).

## H. Target setting and performance tracking

This section outlines survey respondents' feedback concerning base year recalculations ([H.1](#)), target setting ([H.2](#)), setting internal metrics or KPIs ([H.3](#)), establishing external performance-based KPIs ([H.4](#)), accounting for and reporting offsets and credits to reduce emissions separately from the scopes ([H.5](#)), avoided emissions ([H.6](#)), and value chain reductions ([H.7](#)). These sub-sections correspond with sections in Chapter 9, Setting a GHG Reduction Target and Tracking Emission Over time, in the *Scope 3 Standard* (p. 98-112).

### H.1. Base year recalculations

#### Background:

Certain circumstances that cause significant changes to an inventory require companies to recalculate base year emissions. These changes include structural changes such as mergers and acquisitions, changes in calculation methodologies, improvements in data accuracy, discovery of significant errors, and changes in the categories or activities included in a reporting company's scope 3 inventory (*Scope 3 Standard*, p. 104). For more information on base year recalculations refer to the *Scope 3 Standard* section 9.1, Choosing a base year and determining base year emissions (p. 99-100) and section 9.3, Recalculating base year emissions (p. 104-106).

#### Feedback from respondents:

Some respondents asserted that recalculations may be misperceived by readers if annual GHG inventories published in a reporting company's corporate social responsibility report are edited or updated in future reports. This would be the case for companies that engage in mergers and acquisitions or corporate divestiture activity. A few respondents noted that recalculating emissions may have implications for interoperability with and consistency across various disclosure platforms and frameworks, including in the context of performance tracking. Refer to section D, Feedback on tracking emissions over time, in the *Detailed Summary of Responses from the Corporate Standard Stakeholder Survey* [here](#) for more feedback concerning base year recalculation.

---

<sup>1</sup> (IRS, 2022): Publication 946 (2022), “How To Depreciate Property.” U.S. Internal Revenue Service. <https://www.irs.gov/publications/p946>

#### Recommendations from respondents:

1. Develop a decision-making pathway and/or hierarchy of thresholds to determine when baselines need to be recalculated. The significance thresholds to determine whether a reporting company should recalculate base year emissions are too subjective and should be standardized. Reporting companies may be misusing this optionality.
2. Mandate that opening and closing a facility should require recalculation regardless of the impact on a reporting company's GHG inventory.

#### Support requests from respondents:

3. Provide more guidance on adjusting current and previous-year inventories (re-baselining) with mid-year asset purchases. This has implications for both category 2 and category 15.
4. Provide more guidance on adjusting base or previous year GHG inventories retroactively, including whether to update legacy inventories that relied on different calculation methods (e.g., the spend-based method). As companies integrate supplier-specific emission data over time, as primary data becomes available, re-baselining is challenging if not possible.
5. Provide more guidance on how companies should account for projects that are built to transfer, including developers of low-carbon (renewable) energy generating facilities, e.g., for asset rotation when investors fund and divest during project construction or operation.
6. Provide more guidance accounting for the retiring of fossil fuel-consuming assets. Some reporting companies, rather than decarbonizing, are selling or transferring these assets to third parties and removing associated emissions from their direct emissions inventory baselines.
7. Provide more guidance on accounting for the retiring of low-carbon (renewable) energy generating facilities. First-generation low-carbon energy generating facilities will be retired and replaced multiple times this century. This should be anticipated in the revised standards as it has implications for investors, companies, and governments managing energy decarbonization.

#### Category-specific feedback from respondents:

8. Category 3 (Fuel- and energy-related activities not included in scope 1 or scope 2): Make base year reporting mandatory or require it for scope 3 category 3. Some respondents assert that non-disclosure is misused by some companies to report artificially low emissions (e.g., by asset sale or ownership restructuring).
9. Category 13 (Downstream leased assets): Some respondents cautioned that companies may be manipulating the rules for leased assets to minimize associated emissions and inventories when re-baselining. For example, some transport companies use vehicles for a period and sell them in the before the end of a vehicle's lifetime to remove emissions from both their base year and previous year records.

## H.2. Target setting

#### Background:

Refer to section 9.2, "Setting scope 3 reduction targets" (p. 100-103) in the *Scope 3 Standard*.

#### Feedback from respondents:

Some respondents requested more examples of value chain emissions reduction strategies. Others expressed the need for more guidance on both target setting and performance tracking, including which calculations methods can and should be used reliably and accurately. Several respondents noted that inaccurate scope 3 results, or results characterized by significant uncertainty, such as calculations involving the spend-based method, have limited use for target setting and performance tracking. Respondents also noted that based year inventory rigor and completeness is necessary for reliable and effective target setting and year-over-year GHG inventory performance tracking. Finally, a few respondents asserted that the *Scope 3 Standard* does not provide clear guidance for early-stage or growth-stage companies, many of which are scaling rapidly to replace business as usual goods and services with low-carbon alternatives. Such companies often exhibit dramatic, year-over-year increases in absolute emissions, despite selling low-carbon products.

#### Recommendations from respondents:

1. Integrate the SBTi FLAG and SBTi Net-Zero target requirements into Chapter 9 regarding target setting and tracking performance. Some requested that the GHG Protocol ensure that its standards and guidance are interoperable with the SBTi (refer to [L here](#) for more).
2. Clarify which methods can and should be used to track performance. Consider coupling this with a proposed calculation Method Quality Hierarchy (detailed in [F.1 here](#)).

#### Support requests from respondents:

3. Provide more guidance for showing or assessing progress when actions to decarbonize business activities have been performed, including for growth-stage companies which exhibit absolute increases in aggregate GHG inventories as they sell more low-carbon products.
4. Provide more guidance on supply-chain emission reduction strategies. Note that [Appendix A here](#) indexes several external, third-party guidance documents that support assessing and strategizing scope 3 emissions reduction.

### H.3. Internal metrics and KPIs

#### Background:

Section 11.2 of the *Scope 3 Standard* states that companies should, when applicable, report: “A description of performance measured against internal and external benchmarks” (p. 124).

#### Feedback from respondents:

Given the limited influence many companies have over energy sources and emissions from energy sources, and the reliance on the spend-based method by many companies early in their GHG management journeys, some respondents noted that the only way to reduce emissions for these companies is by spending less. Respondents also noted that reliance on the spend-based and average-data methods yields different levels of accuracy and reliability, and companies may not understand the implications for KPI-setting and tracking. Several respondents noted that the spend-based method is useful, primarily, to establish benchmarks and not KPIs (refer to [F.2 here](#) for more).

Support requests from respondents:

1. Provide more guidance on the implications of data quality and calculation methods on future internal and external KPIs and benchmarking capabilities.
2. Provide more guidance on updating legacy, secondary emission factors and calculations. Some assert that emission factors are not being updated regularly or frequently enough to account for the pace of decarbonization (refer to [E.2 here](#) for more).
3. Provide more guidance on establishing reliable indicators and benchmarks for upstream vs. downstream and category-specific results. Mixing upstream and downstream emissions results may distort company- and product-level metrics (refer to [C.6 here](#) regarding temporal boundaries) absent adjustments (refer to [G.5 here](#) for more).
4. Provide more guidance on setting, tracking, and accounting for target reductions for rapidly scaling businesses. Provide more examples of using GHG inventory results to set targets and track performance for businesses with large upfront investments.

#### H.4. External performance-based KPIs

Feedback from respondents:

Some respondents cautioned that product-level performance (GHG-efficiency or GHG-intensity) metrics are often overlooked by stakeholders who take aggregate inventory results at face value. Some believe that PCFs are better signals of a company's performance decarbonizing, especially for fast-growing companies replacing conventional, carbon-intensive products. Some respondents recommend that tools and methods be developed to track emissions as they travel at the product-level. This could be coupled with data exchange templates for data management (refer to [E.7 here](#) for more).

Many respondents noted that the optionality available to reporting companies using the *Scope 3 Standard* makes it challenging to develop reliable KPIs for or between companies. The same is true of industry- or market-level benchmarks used to contextualize a company's internal KPIs (refer to [J.3 here](#) for more). Several respondents noted that it can be difficult to ascertain which calculation methods, allocation methods, or data inputs a reporting company used to generate inventory results. This has implications for disclosure frameworks which often reference the GHG Protocol standards and guidance for conformance without differentiating data quality.<sup>1</sup>

Some respondents pointed out that the non-disclosure of required or optional information makes it impossible for readers to compare inventories between companies. Absent comparability and interpretation guidance, they asserted that disclosed inventories are either not informative or not actionable. Some asserted that this is increasingly important for target-setting and carbon neutrality claims, to provide visibility over how emissions are tracked and reduced over time.

Recommendations from respondents:

1. The GHG Protocol should stipulate what information and disclosures are necessary to ensure relevant, consistent, accurate, and complete accounting and reporting of a company's inventory results and performance. This could support disclosure frameworks and strengthen controls of legislators and enforcers beginning to mandate disclosure.

---

<sup>1</sup> (TCFD, 2021): [https://assets.bbhub.io/company/sites/60/2021/07/2021-TCFD-Implementing\\_Guidance.pdf](https://assets.bbhub.io/company/sites/60/2021/07/2021-TCFD-Implementing_Guidance.pdf)

2. Develop a database of industry-specific benchmarks. This relates to feedback concerning developing a consolidated emission factor repository (refer to [E.2 here](#)).
3. Develop and make available product-level, company-level, industry-specific, and region-specific benchmarks for reporting companies to use alongside internal KPIs, external KPIs, and claims (refer to [J.4 here](#)). Consider requiring the separate reporting of product-level downstream emissions for a limited set of products (e.g., "hero" products).
4. Develop standardized indicators and disclosures for value chain activity data and supplier-specific emission factor data to ensure comparability. This relates to feedback in [E.4 here](#) concerning standardizing value chain data collection.

## H.5. Offsets and credits

### Background:

While offsets and credits may be used by companies to meet targets, companies “shall publicly report” their scope 3 inventories, independent of any GHG trades, including the purchases, sales, or transfers of offsets or allowances (*Scope 3 Standard*, p. 121). The *Scope 3 Standard* provides guidance on the use of offsets or credits for target setting (p. 102-103), including that: “A GHG target can be met entirely from internal reductions at sources included in the target boundary or can be met through additionally using offsets that are generated from GHG reduction projects that reduce emissions (or enhance sinks) at sources external to the target boundary. Companies should strive to achieve reduction targets entirely from internal reductions from within the target boundary” (p. 102).

### Feedback from respondents:

Several respondents recommended maintaining the requirement that offsets, including from avoided emissions, carbon removal, and carbon capture with storage, be reported separately from a company’s scope 1, scope 2, and scope 3 inventories. Some respondents requested scope classification guidance and clear guidelines for reporting on carbon assets (including nature-based projects or carbon removal projects) to ensure the constructive growth of this market. Some respondents requested that the GHG Protocol develop and integrate rules and guidance for carbon removal in the *Scope 3 Standard*.

### Recommendations from respondents:

1. Remove the use of offsets from p. 103 of the *Scope 3 Standard*.
2. Allow the use of offsets associated with avoided emissions or removals in a GHG inventory.
3. Allow the use of offsets exclusively for sequestered carbon (net negative GHG emissions) that exhibit permanence (e.g., 1,000-year storage capacity) in a company’s GHG inventory.
4. Allow the use of recycled materials offsets (e.g., recycled plastic offsets<sup>1</sup>) in scope 3 inventories.
5. Add a detailed checklist and criteria for reviewing, selecting, and disclosing quality offset certificates. Include guidance on frameworks, projects, brokers, etc. and the necessary information, characteristics, and performance criteria for assessing high- versus low-quality certificates. Provide guidance on the declaration and use of offsets and credits, including verification, validation, and standards supported by or aligned with the GHG Protocol.
6. Consider the implications of potential legislation that may prohibit performance claims made using carbon offsets as proposed by the EU’s Empowering Consumers Directive.

<sup>1</sup> Examples of plastic recycling and potential offsets therefrom include: rePurpose Global (<https://repurpose.global/>), Plastic Bank (<https://plasticbank.com/>), Plastic Collective (<https://www.plasticcollective.co/>), or Plastics for Change (<https://www.plasticsforchange.org/offset>).

## H.6. Avoided emissions

### Background:

The *Scope 3 Standard* does not “address the quantification of avoided emissions or GHG reductions from actions taken to compensate or offset emissions” (p. 7). This is because the *Scope 3 Standard* is designed to support quantifying and reporting scope 3 reductions determined by comparing year-over-year changes in companies’ scope 3 category emissions, relative to a base year.

Section 9.5 in the *Scope 3 Standard* provides guidance on accounting for avoided emissions. Box 9.4 states that accounting for GHG reductions requires the “project-based accounting methodology” specified by the GHG Protocol in the *Project Protocol* (*Scope 3 Standard*, p. 107-109). Further, the *Scope 3 Standard* states that “claims of avoided emissions related to a company’s sold products must be reported separately from the company’s scope 1, scope 2, and scope 3 inventories” (p. 114).

The GHG Protocol provides guidance on avoided emissions in other standards, protocols, and guidance documents. The *Technical Guidance* provides guidance regarding reporting negative or avoided emissions from recycling (p. 78) and emissions from incineration with energy recovery (p. 80). The *Product Standard*, like the *Scope 3 Standard*, states that avoided emissions “shall not be deducted from [a] product’s total inventory results, but may be reported separately” (p. 89). The *Project Protocol* ([here](#)) by the GHG Protocol provides guidance on assessing avoided or reduced emissions relative to baseline scenarios (Figure 2.1, p. 13) (refer to [F.4 here](#) for more). Refer to the following “Inventory and Project Accounting: A Comparative Review” by the GHG Protocol ([here](#)). World Resources Institute published the following paper: *Estimating and Reporting the Comparative Emissions Impacts of Products* (WRI, 2019) regarding attributional versus consequential GHG assessments.<sup>1</sup>

### Feedback from respondents:

Some respondents requested that the GHG Protocol make clear that avoided emissions are not inventory values and therefore can only meaningfully be reported separately from the scopes. Some cautioned against falling into the “Scope 4 trap”, asserting that “there is no such thing as ‘avoided emissions’”, which are “hypothetical ‘what if’ scenarios”, and that “what counts are the actual molecules of GHGs going into the atmosphere (or being removed from there)”. Several respondents recommended maintaining the requirement that project-based emissions reduction(s) and avoided emissions be reported separately from scope 1, scope 2, and scope 3 emissions. Avoided emissions are most often calculated using the consequential approach and reductions are often quantified using offsets or claims of carbon neutrality — both of which reflect a different type of measure versus inventory results.

In contrast, some respondents cautioned that, while reporting companies spend a lot of time reporting avoided emissions separately from the scopes however, these avoided emissions measures are not given the same level of recognition as scope 1, 2, or 3 inventory emissions. This is a concern given that avoided emissions measures may be critical for performance tracking or to understand a reporting company’s progress towards decarbonization. In response to this observation, some respondents asserted that the GHG Protocol should develop standardized guidance around performance-based

---

<sup>1</sup> (WRI, 2019): <https://ghgprotocol.org/estimating-and-reporting-avoided-emissions>. This document speaks to the distinction between attributional comparative assessments and consequential LCA.

emissions accounting and reporting, like specifying performance metrics<sup>1</sup> and calculating production-based performance standards<sup>2</sup>, for more comparable and decision-useful disclosures. Respondents highlighted the importance of a consistent approach to quantifying GHG reductions that occur separately from the scopes or outside of traditional operational boundaries, including standardized measures for facilitated reductions, avoided emissions, and potential GHG reductions.

Many respondents requested that the GHG Protocol develop a market-based accounting approach in the *Scope 3 Standard*, for scope 3 GHG inventories, including next to and separately from scope 3 inventories — for companies to record avoided emissions traded via certificates or instruments in the scopes (refer to [M here](#)). Finally, a few respondents asserted that intervention-based approaches (where avoided emissions are quantified relative to a counterfactual baseline scenario) should sit with another third-party organization. Regarding feedback concerning accounting for and reporting emissions reductions from value chains partners, refer to [H.7 here](#).

#### Recommendations from respondents:

1. Do not change the current requirement to quantify and report avoided emissions and project-based GHG reductions separately from scope 1, scope 2, and scope 3 emissions.
2. Develop standardized guidance for performance-based emissions accounting and reporting such as standardizing performance metrics and product-based performance standards.

#### Support requests from respondents:

3. Provide more guidance on accounting for avoided emissions and what differentiates these emissions measures from scope 1, scope 2, and scope 3 inventory emissions.
4. Provide more guidance on whether downstream avoided emissions associated with sold capital equipment, repairs, maintenance services, and/or retrofits should be accounted for as reductions or avoided emissions. Specify how reporting companies should account for avoided emissions associated with retrofits that reduce the lifespan emissions of assets.
5. Provide guidance on assessing avoided emissions associated with recycling processes.
6. Provide guidance on assessing avoided emissions enabled by various products and services, including “sustainable” products and long-lived or more durable products.

---

<sup>1</sup> (*Project Protocol*, p. 132): A performance metric is a “rate that relates the level of consumption of relevant inputs to the level of production for different baseline candidates, or that relates GHG emissions to the size or capacity of different baseline candidates. Performance metrics are used in developing performance standards.”

<sup>2</sup> (*Project Protocol*, p. 132): A performance standard is a “GHG emission rate used to determine baseline emissions for a particular type of project activity. A performance standard may be used to estimate baseline emissions for any number of similar project activities in the same geographic area.” A production-based performance standard is a “performance standard defined as a rate of GHG emissions per unit of a product or service produced by all identified baseline candidates. This type of performance standard will generally apply to energy efficiency, energy generation, and industrial process project activities.”

## H.7. Value chain reductions

### Background:

Table 9.7 in the *Scope 3 Standard* lists examples of actions that companies can take to reduce scope 3 emissions, itemized by category (p. 111-112).

### Feedback from respondents:

Several respondents requested more guidance on supply-chain emissions reduction strategies and encouraged the GHG Protocol to highlight more mitigation and reduction opportunities. Some respondents said that identifying low-carbon suppliers to achieve value chain reductions is difficult because results are not cross-comparable (refer to [J.3 here](#) for more). Many respondents, in connection with metrics and KPIs, asked for clearer guidance on which calculation methods and data sources are reliable for quantifying value chain reductions. Several requested guidance on accounting for emissions reductions if suppliers purchase offsets and report zero emissions. Some feedback concerning the challenge of achieving value chain reductions consisted of requests to allow reporting companies to recognize other instruments used by suppliers, in a reporting company's scope 3 inventory. For more feedback concerning using instruments (including offsets and renewable energy credits) to offset, neutralize, or compensate for value chain emissions, refer to [M here](#).

### Recommendations from respondents:

1. Clarify, define, and standardize criteria for claiming or taking credit for reductions.
2. Accounting for reduction efforts should only be recognized if a company uses accurate, primary data to assess inventory emissions. Absent clear data quality restrictions, the GHG Protocol should provide clear legal disclaimer language (refer to [J.4 here](#)).
3. Update the value chain emissions mitigation actions in Table 9.7. They too closely resemble scope 1 and scope 2, despite scope 3 mitigation opportunities and funding being very distinct.
4. Develop and include unambiguous language concerning whether and how EACs used by suppliers for their scope 2 emissions, or offsets used to "neutralize" or "compensate" a supplier's emissions, can be included in a reporting company's cradle-to-gate scope 3 inventory.
5. Develop guidance on allocating value chain emissions reductions to multiple clients (this recommendation is expanded upon [here](#) in [G.1](#)).

### Support requests from respondents:

6. Compile industry best-practice developed since the standard and guidance publication.
7. Provide more guidance on the reliability of specific data sources and calculation methods (e.g., the spend-based method) to guide or inform reductions.
8. Provide more guidance on accounting for and reporting potential reductions from real actions taken when primary data is unavailable.

## I. Assurance

This section outlines survey respondents' feedback concerning the requirements for assurance ([I.1](#)) and checklists for third-party verification ([I.2](#)). Refer to Chapter 10, Assurance, of the *Scope 3 Standard* (p. 113-119). Refer to section E, Feedback on verification and assurance, in the *Detailed Summary of Responses from the Corporate Standard Stakeholder Survey* ([here](#)) for more feedback on assurance and verification, including of scope 1, scope 2, and scope 3 inventories.

### I.1. Requirements for assurance and verification

Background:

The *Scope 3 Standard* provides guidance on assurance in Chapter 10. Assurance is not required for conformance with the *Scope 3 Standard* (Chapter 10, p. 114).

Feedback from respondents:

Most respondents highlighted the need for clarity concerning the requirements for assurance. Several respondents recommended strengthening the requirements. Some asserted that reporting companies that prepare high-quality scope 3 inventories need to be able to differentiate their results from companies that prepare low-quality scope 3 inventories. In this context, a few asserted that only companies that rely on, primarily, primary data should be granted the ability to verify or assure compliance. Several respondents expressed that verification should be achieved by quantitative and qualitative measures to grade GHG inventory reliability, accuracy, completeness, and consistency. Some recommended a different assurance grading matrix for upstream vs. downstream emissions.

Several respondents requested guidance for underwriting inventories, and some recommended audit checklists with different levels of assurance (beyond reasonable vs. limited assurance). Respondents mentioned that assurers and external frameworks, regulatory agencies, and enforcers need to be able to reference and utilize the GHG Protocol standards to hold companies accountable. Some requested more guidance on the information necessary for minimum levels of verification. Some respondents indicated that scope 3 reporting should align with the ISSB and the Task Force on Climate-Related Financial Disclosures (TCFD) to ease the task of preparing audit-ready results.

Other respondents cautioned that third-party verification is not possible for reporting companies that rely on suppliers from multiple regions globally, including because verification may necessitate third-party assurers to review energy bills and other data deep in the value chain. Some respondents indicated that scope 3 reporting should not require the development of audit-quality data, given the inherent uncertainty and use of estimates.

Recommendations from respondents:

1. Develop an Assurance Level Hierarchy (beyond limited and reasonable assurance) based on data quality and calculation methodology. Consider coordinating this with other hierarchy developments recommended by respondents.<sup>1</sup>
2. Limit allowable methodologies or only allow third-party review and verification if companies that use predominantly data (refer to [E.5 here](#)).

---

<sup>1</sup> Consider coordinating this with recommendations to develop a Data Quality Hierarchy ([E.5 here](#)) Method Quality Hierarchy ([F.1 here](#)), and/or the Disclosure Hierarchy ([J.1 here](#)). This relates to feedback regarding aggregating supplier data [here](#) in [E.4](#).

3. Reference and consider integrating or aligning with assurance guidance language from ISO 14064-3:2019<sup>1</sup> and ISAE<sup>2</sup>.
4. Review and integrate guidance on lifecycle databases and emission factor selection provided in Box 8.5 of the *Product Standard* (p. 53) (refer to [B.3 here](#) for more on this recommendation).
5. Require that third-party assurers provide a statement or assessment of the completeness of scope 1, scope 2, and scope 3 GHG inventory results.
6. Review the legal interpretation of all standards, including for compliance and liability implications, given that the GHG Protocol's standards are being used in mandatory disclosures and legislation. The language of the standard needs to withstand enforcement in court, e.g., if a company has been found to have intentionally prepared and/or reported inaccurate or misleading figures, including by manipulating data inputs, calculation methods, allocation methods, etc., to under or overstate emissions.

Support requests from respondents:

7. Provide clear requirements that external frameworks, regulators, and enforcers can reference the corporate suite to hold companies accountable for GHG emissions and removals (refer to similar feedback [here](#) in [L](#) and [I.2](#) below).
8. Provide more guidance on the implications for assurance when companies rely on secondary emission factors that often pack multiple methodological assumptions and qualities (refer to [E.2 here](#)). Further, many LCI datasets are proprietary and have explicit licensing restrictions when it comes to sharing information about the emission factor values or other metadata.
9. Provide more guidance on overcoming non-disclosure agreements, confidentiality agreements, proprietary information, etc., when it comes to verifying supplier-specific emissions.

## I.2. Checklist

Feedback from respondents:

Several respondents recommend creating a checklist for GHG inventory assurance to facilitate preparing legally defensible disclosures. Other respondents requested that the GHG protocol focus on streamlining, simplifying, and clarifying the requirements for compliance in section [A.2 here](#).

Recommendations from respondents:

1. Develop a checklist for auditors, verifiers, and enforcers to review the standard-compliance and completeness of an inventory that itemizes assurance steps for (i) a corporate prospectus, (ii) outward-facing corporate sustainability disclosures, (iii) reporting to governments or regulators, and (iv) allocating company-specific cradle-to-gate emissions to clients and customers.<sup>3</sup> Auditors should be able to use this to determine standard-conformance for reporting and data exchange.
2. Create a standardized template for disclosing standard-compliant GHG inventory results that satisfy multiple standards, disclosure frameworks, programs, etc., to reduce duplication and redundancy for supply-chain vendors and reporting companies.

<sup>1</sup> (ISO, 2019): ISO 14064-3:2019: *Greenhouse gases — Part 3: Specification with guidance for the verification and validation of greenhouse gas statements* by the International Organization for Standardization. <https://www.iso.org/standard/66455.html>

<sup>2</sup> (ISAE, 2012): International Standard on Assurance Engagements (ISAE) 3410, *Assurance Engagements On Greenhouse Gas Statements by The International Auditing and Assurance Standards Board*. <https://www.iaasb.org/publications/glance-international-standard-assurance-engagements-isa-3410-assurance-engagements-greenhouse-gas>

<sup>3</sup> (*Scope 3 Standard*, p. 123): Note that *Scope 3 Standard* conformance does not require that “every circulated report... contain all information... but a link or reference needs to be made to a... full report where all information is available to be in conformance.”

## J. Reporting

This section outlines survey respondents' feedback concerning reporting requirements, including information which reporting companies "shall" versus "should" disclose (J.1), assessing uncertainty (J.2), year-over-year comparison and the comparability of inventories between companies (J.3), and making claims (J.4). Refer to Chapter 11, Reporting, in the *Scope 3 Standard* (120-124).

### J.1. Reporting requirements

Background:

Chapter 11, Reporting, in the *Scope 3 Standard* provides reporting requirements for standard conformance. Section 11.1 of the *Scope 3 Standard* states that reporting companies "shall" publicly report scope 3 emissions "separately by scope 3 category" and for each category a description of the types and sources of data, emission factors, GWP values, methodologies, allocation methods, and assumptions relied upon, and "the percentage of emissions calculated using [primary] data obtained from suppliers or other value chain partners" (p. 121).

Section 11.2 states that reporting companies "should" when applicable, include relevant information like: performance indicators and intensity ratios, supplier/partner performance, product performance, intensity metrics (e.g., average GHG-intensity of sold products, average energy efficiency of sold products, average emission per hour of use, GHG-intensity of sold fuels, average emissions per functional unit), product lifetime/durability, and performance measured against internal and external benchmarks (p. 122-124). Conformance does not require that "every circulated report... contain all information... but a link or reference needs to be made to a... full report" (p. 123).

Feedback from respondents:

Many respondents requested that the reporting requirements in the *Scope 3 Standard* be streamlined. Some respondents pointed to the need for the tighter enforcement of both required and optional information. A few asserted that this would necessitate making scope 3 disclosure mandatory for *Corporate Standard* conforming corporate-level results. Section D.1 summarizes feedback regarding the mandatory disclosure of scope 3 inventory results for corporate-level reporting conformance [here](#).

Respondents identified two approaches to updating the reporting requirements: either maintain existing calculation optionality but tighten the reporting requirements or tighten the calculation and accounting rules and maintain existing reporting optionality. If calculation optionality is left as is (which some asserted is necessary for adoption) then the reporting requirements need to be tightened so that stakeholders can reliably filter and interpret disclosed inventory results. Alternatively, if the calculation and accounting rules are tightened, this could make feasible fewer changes to the current reporting requirements. Either approach could have implications for comparability (refer to J.3 [here](#)).

Apart from tighter reporting requirements and accounting rules, some respondents asserted that the GHG Protocol needs to communicate more caution that scope 3 inventory results may be unreliable and incomparable, irrespective of standard-conformance. Some respondents requested that the GHG Protocol explain that only sub-total or category-specific inventory results convey meaningful or relevant information. Some respondents proposed other relevant information for disclosure, beyond category-specific information itemized in Chapter 11 (p. 121-124), including invoices, annual spend, shipment records, investment data, joint ventures, types of sold products, region of sale, and sector.

A few respondents pointed out that some companies are choosing to not account for capital goods (category 2) because they are distortionary. Such a reporting gap could suppress capital allocation towards decarbonization. Some pointed to the lifespan emissions of financed projects (category 15) being reported separately as possibly creating an exclusion loophole for companies that utilize JVs or structure ownership through autonomous legal entities.

#### Recommendations from respondents:

1. Mandate the reporting of required disclosures for standard conformance and coordinate with disclosure frameworks and climate programs to enforce this requirement. Respondents highlighted that the GHG Protocol is being referenced in current and upcoming legislation with clauses pointing to conformance with the GHG Protocol (refer to [D.1 here](#) for more).
2. Numerically itemize the currently required information that companies “shall publicly report”, rather than using bullet points, and make this checklist available to download.
3. Develop and mandate the disclosure of standardized product-level intensity metrics and parameter inputs (this recommendation is reiterated in [G.3 here](#)).<sup>1</sup>
4. Disclosing the percentage of inventory emissions calculated using primary vs. secondary data is onerous and should not be required for *Scope 3 Standard* conformance.
5. Require the separate disclosure of emissions measures that differ from inventory emissions (scope 1, scope 2, and scope 3). Other measures may include avoided emissions and other performance measures (refer to [H.6 here](#) for more feedback concerning avoided emissions).
6. Develop a Disclosure Hierarchy or framework for corporate GHG inventory reporting to support stakeholders and readers to interpret results effectively. Consider coordinating this with the various other hierarchy recommendations.<sup>2</sup>
7. Require that companies warrant and represent that their GHG emissions inventory results are standard-compliant and provide a disclosure statement template(s).
8. Specify that reporting companies can provide delayed disclosures to accommodate various fiscal year reporting practices. Some respondents requested that a one-year lag be permitted for annual inventory accounting, to aggregate investee-specific estimates.

#### Support requests from respondents:

1. Develop checklists with thresholds that a company/auditor can use to determine boundaries, completeness, and standard conformance, for both internal reporting, prospectuses, outward-facing sustainability pages, and reporting to suppliers, government(s), and/or regulator(s).
2. Develop and make available sample disclosure statements (concerning results, influence, uncertainty, assurance, non-liability, etc.) that companies can utilize alongside their inventory disclosure, including communication guidance for shareholders and investors. The language needs to resemble that of financial disclosure statements for publicly listed companies, including different requirements for large-caps versus SMEs.
3. Develop template disclosure statements for restatements and adjustments to previous-year GHG inventory disclosures, and necessarily exhibit material to document corrections. Refer the amendment submission policy currently in place at CDP detailed in [H.1 here](#).

---

<sup>1</sup> Transparency guidelines regarding intensity metrics and product performance are detailed in Box 5.8 Product lifetime and durability (*Scope 3 Standard*, p. 50) and Box 11.2 Product lifetime and durability (*Technical Guidance*, p. 115)

<sup>2</sup> Other hierarchies recommended by respondents include a Data Quality Hierarchy ([E.5 here](#)), Method Quality Hierarchy ([F.1 here](#)), and Assurance Level Hierarchy ([I.1 here](#)).

## J.2. Uncertainty

### Background:

Appendix B in the *Scope 3 Standard* (Uncertainty in Scope 3 Emissions) provides guidance on parameter uncertainty (p. 129), scenario uncertainty (p. 130), modeling uncertainty (p. 131), and reporting uncertainty (p. 131). Uncertainty is relevant to improving data quality over time (p. 84) and assurance (p. 118).

### Feedback from respondents:

Generally, some respondents asserted that users of the *Scope 3 Standard* need more prescriptive guidelines to reduce uncertainty and to fill in data gaps. This includes optionality ([D.2 here](#)), emission factor uniformity (refer to [E.2 here](#)), parameter selection ([E.4 here](#) and [F.5 here](#)), and data quality ([E.5 here](#)), all of which make normative uncertainty measures difficult if not impossible. Some asserted that the GHG Protocol should focus on improving disclosure designations for companies to set or determine uncertainty thresholds. Others assert that uncertainty thresholds should distinguish upstream versus downstream estimates as each generally has different levels of uncertainty and/or “risk profiles”. Some asserted that upstream and downstream estimation uncertainty can’t and shouldn’t be conflated. A few asserted that uncertainty levels for downstream emissions (pre-combustion) versus upstream (cradle-to-gate) category 3 emissions should be differentiated, with the latter often exhibiting more variability (refer to “undifferentiated” fossil fuel products [here](#) in [F.7](#)). Many respondents asserted that the GHG Protocol should provide programmatic tools to assess the robustness and/or uncertainty of reported scope 3 emissions, especially with rapid adoption and as data quality improves.

### Recommendations from respondents:

1. Develop an Uncertainty Matrix to support quantifying uncertainty measures for various data qualities, calculation methodologies, etc., by category, and ratios to quantify uncertainty levels, including for supplier data. Coordinate this with other potential hierarchies.<sup>1</sup>
2. Develop an uncertainty analysis chapter and tighten the requirements, including conceptual text, in the body proper of the *Scope 3 Standard* (out of the appendix).
3. Develop guidance for evaluating uncertainty, by category.

## J.3. Comparability

### Background:

The *Scope 3 Standard* “is intended to enable comparisons of a company’s GHG emissions over time” and not “comparisons between companies” (p. 7). Further, “differences in inventory methodology... company size or structure... [and] data used to calculate the inventory” may result in “differences in reported emissions” (p. 7). Section 1.9, Sector guidance, explains that the “development of sector-specific implementation guidance and tools can drive more consistent corporate GHG measurement, reporting, and performance tracking practices for a particular sector” and that comparability “can be provided through GHG reporting programs or sector-specific guidance” (p. 9). Section 1.1, references the guideline, *Measuring to Manage: A Guide to Designing GHG Accounting and Reporting Programs*

---

<sup>1</sup> Consider coordinating this potential hierarchy development with the recommendations to develop a Data Quality Hierarchy ([E.5 here](#)), Method Quality Hierarchy ([F.1 here](#)), Assurance Level Hierarchy ([I.1 here](#)), and/or the Disclosure Hierarchy ([J.1 here](#)).

(2007), which can be used by program developers designing and implementing effective GHG programs based on accepted standards and methodologies (p. 4).

Companies can and may disclose information through stand-alone corporate sustainability reports, mandatory government registries, industry groups, or through stakeholder-led reporting programs. Mandatory and voluntary reporting programs may and often do provide support in setting targets, developing or accessing industry-specific benchmarking information and provide other information on activities, industries, and/or sectors to specific stakeholder audiences (*Scope 3 Standard*, p. 15).

Feedback from respondents:

Many respondents asserted that optionality hampers potential cross-comparability. This is meaningful to guide investment decisions and capital allocation for decarbonization. These respondents believe that the GHG Protocol should prominently consider comparability during the updates process. Some respondents identified the need for inventory “normalization” methods and assurance to account for differing consolidation approaches, input types, data quality, calculations methods, etc., as has been summarized throughout this detailed summary. Refer to feedback concerning limiting optionality and/or expanding reporting requirements in [J.1 here](#). Some respondents asserted that cumulative lifespan emissions measures compromise year-over-year comparability (refer to [F.5 here](#) and [G.5 here](#)). Other respondents asserted that downstream estimates and forward-year projections are not comparable between companies absent each companies’ disclosure of their assumptions and methodologies or absent standardized rules for estimating downstream emissions (refer to feedback in [H.4 here](#) for more on external performance metrics).

Recommendations from respondents:

1. Focus on improving comparability during the updates process.
2. Develop methods by which to cross-compare reporting companies’ GHG inventories.
3. Provide guidance explaining that optionality can lead to non-comparable scope 3 inventory results to avoid misuse and misinterpretation by stakeholders.

#### J.4. Claims

Feedback from respondents:

Some respondents requested that the GHG Protocol distinguish itself from disclosure frameworks that establish requirements for corporate-level or product-level claims. They asserted that the objectives and associated rules of performance claims should not be conflated with GHG inventory accounting and reporting, which are performance-agnostic. Some respondents asserted that misleading to represent or market a scope 3 inventory as being an exact account of actual value chain emissions. A few pointed to the fact that the *Scope 3 Standard* was not designed to support comparison between companies. Rather, they asserted that it was published to support businesses in assessing the scale of potentially influenceable value chain emissions, and not for benchmarking or comparing companies’ indirect emissions. A few respondents recommended that the GHG Protocol update its standards to facilitate comparability between companies. Finally, some respondents requested that the GHG Protocol clarify the difference between inventory measures vs. reductions or avoided emissions measures in the context of marketing company-level and product-level performance claims (refer to [H.6 here](#) for more feedback on avoided emissions).

## Recommendations from respondents:

1. Develop template disclaimer clauses and language for marketing claims. Refer to a more exhaustive list of disclosure feedback itemized [here](#) in J.1.
2. Develop standardized claims that address reliability, completeness, and comparability (that factor in data sources, calculation methods, allocations) including for corporate-level performance indicators (CPIs) and product-level performance indicators (PPIs).

## Support requests from respondents:

3. Provide more guidance on the implications of using secondary or proxy data for inventories and for companies to advertise and/or market performance claims. Consider whether secondary data, EEIO emission factors, and/or the spend-based method is misleading. Some respondents pointed to “sustainability” claims being banned by consumer protection councils due to greenwashing concerns and the potential ban of offset claims proposed by the EU’s Empowering Consumers Directive (refer to [E.5 here](#)). This may have implications for compliance with the U.S. FTC Act Section 5, the Green Claims Code set by the U.K. CMA, the Green Claims Directive proposed by the European Commission.
4. Provide guidance on making reliable GHG inventory reduction claims when companies utilize alternative fuels (including biomass, hydrogen, waste, etc.).<sup>1</sup>

---

<sup>1</sup> Note that the term “carbon pollution-free” means that technologies cause no direct combustion-related emissions to generate energy (scope 1). However, all commercial low-carbon (renewable) energy generating technologies available today rely on materials, manufacturing processes, construction, repair and maintenance, or end-of-life treatment activities that cause GHG emissions.

## K. Tools & support

This section outlines survey respondents' feedback concerning various requests for and recommendations to develop tools and support.

Background:

The GHG Protocol website provides guidance and tools, including [guidance](#) and [tools](#) developed by the GHG Protocol, external calculation tools that are in conformance with GHG Protocol (Tools Built on GHG Protocol [here](#)), external guidance documents developed in collaboration with the GHG Protocol (Guidance Built on GHG Protocol [here](#)), other calculations tools and guidance [here](#), and third party lifecycle databases [here](#).

Feedback from respondents:

Generally, most respondents requested that the GHG Protocol develop, curate, and review and certify external tools and guidance to facilitate the rapid adoption and integration of robust and reliable accounting and reporting practices globally. Some respondents identified the general lack of tools to manage activity data. Some recommended that the GHG Protocol implement a policy to require that any tools referred to on the GHG Protocol website be regularly updated or removed. Other respondents recommended that the GHG Protocol promote and expand the Built on GHG Protocol mark. Note that feedback concerning interoperability with external standards, guidance, frameworks, and programs is listed in section [L here](#). Some respondents believe that the GHG Protocol should not reference external sources or tools to remain independent as a standard setter (distinguished from regulators, enforcers, tools providers, etc.). Some cautioned that many tools do not conform with the GHG Protocol.

Guidance on external tools:

1. Provide guidance on criteria for selecting tools and emission factors.
2. Itemize acceptable emission factor databases (refer to [E.2 here](#) and [E.4 here](#) for more).
3. Update the LCA databases, resources, websites, and tools on the GHG Protocol website, including free and paywalled LCI datasets.
4. Assess the reliability and standard-compliance of software solutions in the market and provide guidance on which tools perform functions better or worse.
5. Provide more guidance on third-party tools for assessing GHG emissions.

Tools development, general:

6. Consider developing specific, day-to-day workflow guidance.
7. Develop Excel templates for assessing GHG inventories and reduction opportunities.
8. Develop screening tools to prioritize data collection (like TCFD and SBTi).
9. Restore the Scope 3 Evaluator or "Quantis tool" (this was retired in August 2023). Some respondents recommend partnering with organizations to update the Scope 3 Evaluator.
10. Develop a free emission factor database with APIs to convey updated values.
11. Develop enterprise resource planning (ERP) software add-ins or APIs. Companies need tools to integrate with ERP software (e.g., SAP, Oracle, NetSuite, Microsoft Dynamics GP, Epicor).
12. Develop tools to assess circularity, including re-sold, reused, and recycled products.
13. Develop a tool to index company disclosures and goals.
14. Develop an API tool to match portfolio investees with Net Zero goals, etc.

15. Develop a tool to project emissions reductions.
16. Provide more resources for SMEs and family-owned businesses.

#### Tools development, category-specific:

17. Develop tools to better model emissions from purchased goods and services (category 1) that rely on primary data rather than industry-level, EEIO, or spend-based emission factors.
18. Develop calculation tools for capital goods (category 2) and services (category 1).
19. Develop tools for assessing alternative fuel emission factors (category 3).
20. Develop tools for assessing upstream fossil fuel emission factors (category 3).
21. Develop tools and guidance for waste management (category 5 and category 12) and other service providers that allow reuse, recycling, repurposing (circularity).
22. Develop tools for business travel (category 6) (e.g., emissions per passenger-km by class, emissions per hotel-night, etc.).
23. Develop a "PCAF calculator" for investments (category 15).

#### Tools development, industry-specific:

24. Provide more example of calculations across industries for intermediate products (category 1).
25. Provide more detailed industry guidance and examples to show when/where transportation and distribution occurs and should be accounted for (category 4 and category 9).

#### Education:

26. Revise and update the scope 3 coursework by GHG Protocol (available online).
27. Do not charge for online scope 3 accounting or reporting lessons.
28. Develop more training and coursework.

#### Other support:

29. Create a public forum for Q&A.
30. Develop an extensive FAQ section.
31. Develop services to facilitate agile/rapid prototyping and deployment.

## L. Interoperability (with external standards, guidance, frameworks, and programs)

This section outlines survey respondents' feedback concerning interoperability with external standards, guidance, frameworks, and programs. Refer to [Appendix A here](#) for a consolidated list of external standards and guidance documents referenced by survey respondents.

### Background:

The “Built on GHG Protocol” review service ([here](#)) was designed to recognize products, including sector-specific standards and guidelines, developed in conformance with a GHG Protocol standard. This service is currently being reviewed by the GHG Protocol. Independent, sector-specific working groups, organizations developing industry-specific guidelines, and networks of companies and/or experts developing supplementary guidelines for the *Scope 3 Standard*, including for each category or for specific business activities (e.g., durability in the context of category 11 or licensing in the context of category 14, etc.) or other exploratory guidelines, should contact the GHG Protocol scope 3 team.

### Feedback from respondents:

Some respondents expressed being overwhelmed by the number of external standards and programs that have been launched in recent years. Concerning interoperability, many respondents referenced two programs: the Science-Based Targets initiative (SBTi) and the Partnership for Carbon Accounting Financials (PCAF). Some respondents recommended that GHG Protocol prioritize interoperability with third-party standards and clarify its compatibility with other frameworks and standards bodies (e.g., GRI, SASB, ISO, TCFD, ISSB). Both the SBTi and GLEC were referenced a few times regarding aligning WTT and TTW guidance therein with category 3 guidance in the *Scope 3 Standard* (refer to [C.4 here](#)). There were requests for interoperability with, or simply reference to, relevant third-party technical guidance documents, including for sectors and industries. External frameworks or standards mentioned by a few respondents include: CDP, GRI, ISSB, TCFD (now part of ISSB), ISO, BSI, and the Partnership for Carbon Transparency (PACT).

### Recommendations from respondents:

1. Develop a Framework Alignment Matrix showing which external standards, guidance, frameworks, and programs align with the GHG Protocol standards and guidance.
2. Create and publish a clear a pathway and structure for frameworks (e.g., PCAF, SBTi) and legislation, for example, Senate Bill 253 (SB 253) in California or the EU Corporate Sustainability Reporting Directive (CSRD) to reference requirements from GHG Protocol in draft regulation to facilitate enforcement.<sup>1</sup> Include guidance on how to handle the relevance test, materiality, and justifications for inclusion and exclusion (refer to [J.1 here](#) for more on reporting requirements).
3. Develop a grading of or guidance on external net-zero claims and target setting programs (e.g., SBTi, Carbon Neutrality, Certifications, and offset standards or brokers, etc.) and whether they comply with the GHG Protocol.
4. Science-based Targets initiative (SBTi):
  - a. Align closely with the SBTi in terms of boundary definitions and optionality.
  - b. Harmonize with the SBTi regarding minimum boundaries. Ensure interoperability with the SBTi's Net-Zero Standard. Refer to [D.1 here](#) regarding downstream emissions by energy sector and to [C.4 here](#).

---

<sup>1</sup> Current and proposed regulations include (a) disclosure (e.g., CSRD, EU-EFRAG, EU Taxonomy, SEC Climate-Related Disclosures, California Bills SB 253/261) and (b) taxes (e.g., fuel taxes, ETSS, and the EU Carbon Budget Adjustment Mechanism (CBAM)).

- c. Align with or map interoperability with the SBTi's *Forest, Land and Agriculture* (FLAG) *Science-Based Target-Setting Guidance* including for target setting (refer to [D.4 here](#) and [H.2 here](#) for more). A few respondents recommended harmonizing with the SBTi's sectoral decarbonization approaches (SDAs) (refer to [C.3 here](#) for more).
- 5. Partnership for Carbon Accounting Financials (PCAF):
  - a. Refer to feedback regarding financed, facilitated, and insurance-associated emissions guidance developed by PCAF in [C.5 here](#) and [F.9 here](#).
- 6. Other frameworks:
  - a. CDP: Improve interoperability with CDP to reduce the time spent reporting. Provide support and make methodologies accessible for SMEs. The *Scope 3 Standard* needs to be updated given that CDP recommends GHG Protocol for disclosure compliance.
  - b. ISSB: Update and revise the corporate suite to facilitate cross-comparability, which is a stated goal of both the ISSB and TCFD. Align with the ISSB in terms of both minimum boundaries and consolidation approaches and consider alignment with IFRS16.
  - c. Financial statements: Interoperability with financial statements may facilitate the adoption of GHG accounting and reporting. For example, some respondents asserted that the rules to account for operating leases have not been updated by the GHG Protocol to align with changes to the Generally Accepted Accounting Principles (GAAP) or International Financial Reporting Standards Foundation (IFRS). Incorporate inventory assurances with financial audit requirements (refer to feedback in [E.5 here](#) and [J here](#)).
- 7. Regulation and legislation:
  - a. Specify how the GHG Protocol standards can be codified and legislated. Note that some respondents noted the benefits of optionality and not prescriptiveness, including in the context of complying with various regulations. Facilitate integration with legislators and enforcers (e.g., the SEC, California Bills, CSRD, EU Taxonomy, SFDR, XRB) of regulate mandatory disclosures and/or taxes (refer to [D.2 here](#) and [J.1 here](#) for more).
- 8. Other guidance:
  - a. Align category 3 guidance with WTT and radiative forcing guidance in the SBTi and GLEC (refer to [E.3 here](#)). In addition to the Built on GHG Protocol mark, review GLEC guidance for assessing emissions from biofuels and biofuel blends.
  - b. Align with the Clean Energy Buyers Institute (CEBI) to develop data registries to track and trade clean energy units and/or low-carbon fuel use. Refer to *Next Generation Carbon-Free Electricity Procurement Activation Guide*<sup>1</sup>, *Navigating and Scaling Clean Hydrogen Voluntary Markets*<sup>2</sup>, and *Guide to Sourcing Marginal Emissions Factor Data*<sup>3</sup> when considering a market-based accounting approach.
  - c. Provide guidance assessing the emission intensity of fuels using LCA emission factors and consider utilizing the Greenhouse gases, Regulated Emissions, and Energy use in Technologies (GREET) Model framework for this.<sup>4</sup> Provide guidance using LCA emission factors and mapping them to scopes/categories. The GREET Model framework is used for U.S. federal tax credits (e.g., fuel tax credits<sup>5</sup>), the Renewable Fuel Standard (RFS)<sup>6</sup>, and state-level Low-Carbon Fuel Standards (CFS)<sup>7</sup>.
  - d. Align with *The Product Carbon Footprint Guideline for the Chemical Industry, Specification for product Carbon Footprint and Corporate Scope 3.1 Emission Accounting*

<sup>1</sup> (CEBI, 2022a): [https://cebi.org/wp-content/uploads/2022/10/Community-Guide\\_Oct31st\\_v1.pdf](https://cebi.org/wp-content/uploads/2022/10/Community-Guide_Oct31st_v1.pdf)

<sup>2</sup> (CEBI, 2023): [CEBI Navigating-and-Scaling-Clean-Hydrogen-Voluntary-Markets Guidelines-and-Insights](#)

<sup>3</sup> (CEBI, 2022b): <https://cebi.org/wp-content/uploads/2022/11/Guide-to-Sourcing-Marginal-Emissions-Factor-Data.pdf>

<sup>4</sup> GHG, Regulated Emissions, and Energy use in Transportation model (GREET): <https://greet.es.anl.gov/>

<sup>5</sup> Fuel Tax Credits (Internal Revenue Service): <https://www.irs.gov/businesses/small-businesses-self-employed/fuel-tax-credits>

<sup>6</sup> U.S. Environmental Protection Agency (EPA): <https://www.epa.gov/renewable-fuel-standard-program>

<sup>7</sup> Center for Climate and Energy Solutions (C2ES): <https://www.c2es.org/content/state-climate-policy/>

*and Reporting, Version 2.0* (TfS, November 2022) by Together for Sustainability for purchased goods and services (category 1).<sup>1</sup>

- e. Review guidance from ISO, International Electrotechnical Commission (IEC), International Telecommunication Union (ITU), the EU PEF methodology, the International Petroleum Industry Environmental Conservation Associate (IPIECA), the International Association of Oil & Gas Producers (IOGP) for oil and gas, the Glasgow Financial Alliance for Net Zero (GFANZ) for investors, the International Council on Mining and Metals (ICMM), the forthcoming *Estimating petroleum industry value chain (Scope 3) greenhouse gas emissions, Overview of methodologies* published by Ipieca.<sup>2</sup>
- f. Review interoperability with and consider integrating the World Business Council for Sustainable Development (WBCSD) landfill decomposition guidance with either the *Scope 3 Standard* and/or the *Land Sector and Removals Guidance* [here](#).
- g. Review PACT regarding a Built on GHGP Mark. Align with the Pathfinder Framework guidance and embed the new GHG Protocol into their methodology.<sup>3</sup> Consider the Pathfinder Framework guidance to develop product-level allocation methodologies.<sup>4</sup>
- h. Consider interoperability with the Value Change Initiative (VCI) guidance.<sup>5</sup>
- i. Develop a LCA approach for investments for the Portfolio Carbon Initiative (PCI).
- j. Review the “correspondence table” in ISO 14069 and ISO 50009 regarding structuring a unified energy management system (that transcends corporate boundaries). Map the scope 3 categories and the ISO 14064:1 3-6 categories to one another.
- k. Develop guidance on double counting emissions between multiple parties that face taxes (e.g., quotas, rationing, and carbon tax implications), including consolidation approaches in the context of trading (refer to [C.1 here](#)).

<sup>1</sup> (TfS, November 2022): [https://www.tfs-initiative.com/app/uploads/2023/04/TfS\\_PCF\\_guidelines\\_2022\\_English.pdf](https://www.tfs-initiative.com/app/uploads/2023/04/TfS_PCF_guidelines_2022_English.pdf)

<sup>2</sup> (Ipieca, 2016): [Estimating petroleum industry value chain \(Scope 3\) greenhouse gas emissions. Overview of methodologies](#)

<sup>3</sup> WBCSD Pathfinder Framework: <https://www.wbcds.org/Programs/Climate-and-Energy/Climate/SOS-1.5/Resources/Pathfinder-Framework-Guidance-for-the-Accounting-and-Exchange-of-Product-Life-Cycle-Emissions>

<sup>4</sup> WBCSD Pathfinder Framework: <https://www.wbcds.org/Programs/Climate-and-Energy/Climate/SOS-1.5/Resources/Pathfinder-Framework-Guidance-for-the-Accounting-and-Exchange-of-Product-Life-Cycle-Emissions>

<sup>5</sup> Value Change Initiative (VCI): <https://valuechangeinitiative.com/resources/>

## M. Market-based accounting approaches

This section summarizes market-based accounting-related feedback provided by survey respondents to the *Scope 3 Standard* and *Technical Guidance Survey*. Note that a forthcoming publication by the GHG Protocol, *Detailed Summary of Survey Responses for Market-based Accounting*, will be released in the coming months to summarize feedback concerning the development of a market-based accounting approach. Further, feedback concerning the current scope 2 market-based method is covered in the *Detailed Summary of Survey Responses on Scope 2 Guidance* [here](#) and the *Summary of Proposal Submissions Related to Scope 2 Guidance* [here](#).

Note that the term 'market-based accounting approach' is used here generally to refer to both the existing market-based method used exclusively in the scope 2 inventory, as specified in the *Scope 2 Guidance*, and various currently undefined or proposed methods to account for and report on instruments used by a reporting company or its value chain partners. The term 'market-based method' is used here exclusively to refer to the scope 2 market-based method specified by the GHG Protocol. The term 'instrument' refers broadly to all existing and non-existing instruments, including project-based credits (e.g., offsets and insets), value chain interventions (e.g., supply shed), and chain of custody models (e.g., mass balance and book-and-claim).

### M.1. Using scope 2 market-based emissions data in a scope 3 inventory

Background:

At present, no guidance exists in the *Scope 3 Standard* (2011) or the *Technical Guidance* (2013) concerning market-based accounting, including using value chain partners' emissions data calculated using the scope 2 market-based method in a scope 3 inventory.

The *Scope 2 Guidance* introduced an approach to account for emissions from the generation of purchased or acquired electricity, steam, heating, or cooling consumed by a reporting company (i.e., scope 2 emissions), using two allocation methods: the location-based method and the market-based method. The location-based method reflects the average emissions intensity of grids on which energy consumption occurs (using mostly grid-average emission factor data). The market-based method reflects emissions from electricity that companies have purposefully chosen. The scope 2 market-based method uses emission factors from contractual instruments between two parties, for energy bundled with attributes about the energy generation or for unbundled attribute claims which are separate, and may be traded separately, from the underlying energy produced.

Further, the *Scope 2 Guidance* provides the following guidance on reporting scope 3 category 3 emissions: "A reporting entity should identify which methodology has been used to calculate and report scope 3 category 3" emissions (p. 61). However, while "companies should disclose which calculation method they are using to calculate and report T&D losses in scope 3 category 3... [they] do not need to 'dual report'" (*Scope 2 Guidance*, p. 96). Further (p. 96): "Scope 2 emissions from different value chain partners form the basis of almost all fifteen scope 3 categories. Therefore, companies obtaining energy emissions data from their suppliers to be used in scope 3 calculation should ask which scope 2 method was used to calculate the results. In turn, companies should be transparent about which scope 2 method total they share with others in their value chain."

Feedback from respondents:

Many respondents are uncertain about using supplier-specific scope 2 emissions data calculated using the market-based method in a reporting entity's scope 3 inventory. Some respondents requested that the GHG Protocol make clear in the *Scope 3 Standard* whether scope 2 emissions data calculated using the market-based method is allowed. Some respondents requested that the GHG Protocol allow the use of supplier-specific scope 2 emissions data, calculated using the scope 2 market-based method, in their scope 3 inventory. Further, some respondents urged the GHG Protocol to allow reporting entities to report lower scope 3 emissions with the procurement of EACs to cover value chain partners' electricity consumption. In this context, some respondents referenced the U.S. EPA's technical guidance, *Renewable Electricity Procurement on Behalf of Others: A Corporate Reporting Guide* (EPA, 2022)<sup>1</sup> and the CRS' Clean Energy Accounting Project (CEAP)<sup>2</sup>, including the guidance documents *Scope 3 GHG Accounting for Upstream Clean Electricity Use* (CRS, 2023a)<sup>3</sup> and *Guidance for Supplier Clean Electricity Procurement* (CRS, 2023b)<sup>4</sup>.

Some respondents cautioned and asserted that the logic behind specifying the market-based method for scope 2 emissions was predicated on regulated markets for issuing, trading, and applying or using energy attribute certificates (EACs) like state-mandated Renewable Portfolio Standards (RPS) for compliance renewable energy certificates (RECs) in the U.S. These respondents advised against expanding the concept of the market-based method, as defined in the *Scope 2 Standard*, for scope 1 and scope 3 inventories without well-defined instruments, limitations, or constraints on the use of permitted instruments, quality controls, internal and external audit procedures, and guidance for regulators and enforcers to conform with requirements of a market-based accounting approach (if developed). Some respondents asserted that the GHG Protocol should consider the perceived drawbacks and lessons learned from market-wide implementation of the scope 2 market-based method and associated EACs, citing overlapping voluntary and compliance markets, challenges using residual emission factors, and general data availability gaps.

#### Recommendations from respondents:

1. Some respondents requested that the *Scope 3 Standard* explicitly allow companies to use supplier-specific emissions data calculated using the scope 2 market-based method in their scope 3 inventory.
  - a. Some respondents cautioned that this may necessitate dual reporting, as is the requirement for scope 2 emissions.
  - b. Some respondents requested specific rules for EACs purchased by value chain partners, EACs purchased for value chain partners by a reporting company, whether EACs must be tied to a value chain partner's or energy-user's grid, or whether EACs can be 'disconnected' from the grid or region of a user's or purchaser's operations. This was proposed to overcome market gaps in countries that lack functioning markets for EACs and/or choices for low-carbon electricity supply.
  - c. Some respondents requested guidance to account for emissions consistently across scope 2 and scope 3 inventories, both inter- and intra-company.

---

<sup>1</sup> (EPA, 2022): [https://www.epa.gov/system/files/documents/2022-05/renewable\\_electricity\\_procurement.pdf](https://www.epa.gov/system/files/documents/2022-05/renewable_electricity_procurement.pdf)

<sup>2</sup> Center for Resource Solutions (CRS): <https://resource-solutions.org/programs/ceap/resources/>

<sup>3</sup> (CRS, 2023a), Upstream electricity use: <https://resource-solutions.org/document/08112302/>

<sup>4</sup> (CRS, 2023b), Supplier procurement: <https://resource-solutions.org/document/08112301/>

## M.2. Other market-based accounting approaches

### Background:

No guidance exists in the *Scope 3 Standard* (2011) or the *Technical Guidance* (2013) concerning market-based accounting. For background on the scope 2 market-based method, refer to [M.1](#).

### Feedback from respondents:

Nearly all respondents who raised the topic of scope 3-related market-based accounting did so to suggest integrating a market-based accounting approach in the *Scope 3 Standard* for a variety of instruments. Some suggested standardizing the use of instruments via a market-based accounting approach, in a manner that is unambiguously clear both for companies developing, selling, and buying instruments and for regulators and programs that develop and implement frameworks or legislation relying on the GHG Protocol standards and guidance.

Regarding developing a market-based accounting approach, some respondents recommended reviewing any existing market-based accounting approaches under development, as well as instruments in use and under development, to explore possible standardization in the GHG Protocol standards and guidance. Other respondents recommended developing a market-based accounting approach for, exclusively, upstream value chain activities. Some respondents proposed the development of guidance tailored for specific types of instruments. Some respondents argued that because indirect activities causing emissions cannot be directly influenced by reporting companies and that allowing the use of purchased instruments in scope 3 inventories would encourage companies to take action, like investing in products, projects, and services that decarbonize their value chains.

Some respondents urged the GHG Protocol to not integrate or allow a market-based accounting approach in the *Scope 3 Standard*. Further, some requested that this be stated explicitly to prevent misinterpretation regarding using or accounting for emissions reduction activities, which are traded via instruments.

### Recommendations from respondents:

1. Create a market-based accounting approach in scope 3:
  - a. Some respondents asserted that if a market-based accounting approach is created for the *Scope 3 Standard*, either for some or all categories, then any emissions, removals, reductions, avoided emissions, and/or sequestration 'events' or activities purchased or traded via instruments should be reported separately from a company's GHG inventory.
  - b. Some respondents requested that a market-based accounting approach be developed in the *Scope 3 Standard* for instruments associated with value chain reductions or removals achieved by value chain partners.
  - c. Some respondents requested that a market-based accounting approach be developed in the *Scope 3 Standard* for instruments associated reductions or removals achieved by third-parties that are *not* in a company's value chain.
2. Specify traceability methods and requirements:
  - a. Some respondents requested that any market-based accounting approach developed should require full physical traceability.
  - b. Some respondents requested that any market-based accounting approach developed should not require physical traceability, arguing that requiring traceability is too onerous

- and therefore would hamper or prevent significant capital flows towards valuable decarbonization projects.
- c. Some respondents requested that a market-based accounting approach be developed that lets companies rely on the book-and-claim method — which is a chain-of-custody model that separates or decouples specific environmental or performance attributes from physical products and transfers them separately to another party via certificates — to account for purchased fuels, investments in assets with carbon removal potential, and other GHG emissions measures or values.
3. Specify upstream, downstream, and/or category-specific boundaries:
- a. Specify the use of instruments for only upstream scope 3 emissions, only downstream scope 3 emissions, or both upstream and downstream scope 3 emissions. Regarding downstream electricity-related scope 3 emissions by value chain partners, some respondents requested that the GHG Protocol allow reporting companies to purchase EACs and/or PPAs on behalf of downstream clients and prospective users of a reporting company's sold products that use energy directly or indirectly for processing or use (category 10 or category 11) (refer to [F.3 here](#) regarding a usage-data method).
  - b. Specify the use of instruments on a category-by-category basis. A few respondents requested that the GHG Protocol permit the use of instruments associated with alternative energy and/or purchased goods and services (category 1). A few respondents requested that the GHG Protocol permit the use of instruments for transport-related categories (i.e., category 4, category 6, category 7, and possibly category 9).

## Appendix A: External References (cited by survey respondents)

*Please be aware that the GHG Protocol is making no indication of the validity or quality of these sources by listing them here; they are listed here because respondents to the Scope 3 Survey provided them.*

External references	Type	Source	Link
Accounting Standards Codification 820 (ASC 820)	Standard	ASC 820	<a href="#">Link</a>
Advanced and Indirect Mitigation (AIM) Platform	Website	AIM	<a href="#">Link</a>
Allocation in the LCA of meat products: is agreement possible?	Document	(Wilfart, et al., 2021)	<a href="#">Link</a>
Analysis of quantification methodologies of greenhouse gas emissions for electrical and electronic products and systems (IEC TR 62725)	Document	IEC	<a href="#">Link</a>
Audit and Protocol Assessment Process, tracking for 24/7 clean grids	Website	EnergyTag	<a href="#">Link</a>
Carbon and Energy-Based Tax Initiative (CEBTI)	Other	CEBTI	N/A
Carbon Carrier - integrated concept for innovative interior structures (by Bertrandt and SGL)	Document	Bertrandt/SGL	<a href="#">Link</a>
Carbon Disclosure Project (CDP)	Disclosure framework	CDP	<a href="#">Link</a>
Carbon Impact Analytics (CIA) methodology	Document	Carbon4Finance	<a href="#">Link</a>
Center for Climate Leadership's Scopes 1 and 2 guidance documents	Document	U.S. EPA	<a href="#">Link</a>
Center for Corporate Climate Leadership's Scope 3 guidance	Document	U.S. EPA	<a href="#">Link</a>
Center for Sustainability Studies of Fundação Getulio Vargas (FGV)	Website	FGV	<a href="#">Link</a>
Clean Energy Emission Reduction (CLEER) Protocol	Document	CLEER	<a href="#">Link</a>
Construction CO <sub>2</sub> e Measurement Protocol (by European Network of Construction Companies for R&D, ENCORD)	Document	ENCORD	<a href="#">Link</a>
Developing Company Emissions Reduction Targets Based on Science and Reflections on SBTi	Document	EPRI	<a href="#">Link</a>
Draft LCA guidelines for calculating carbon sequestration in cattle production systems	Document	C-Sequ	<a href="#">Link</a>
Edison Electric Institute (EEI) Electric Company Carbon Emissions	Document(s)	EEI	<a href="#">Link</a>
Edison Electric Institute (EEI) Natural Gas Sustainability Initiative (NGSI) (version 1.0)	Document(s)	EEI	<a href="#">Link</a>
Environmental Product Declaration (EPD)	Disclosure framework	EPD	<a href="#">Link</a>
Environmental Product Declarations (EPD)	Website	EPD	<a href="#">Link</a>
Environmental Reporting Guidelines: Including streamlined energy and carbon reporting (SECR) guidance	Document	U.K., HM Government	<a href="#">Link</a>
Environmental standardization of electrical and electronic products and systems (IEC 63372 ED1)	Sector Guidance	IEC	<a href="#">Link</a>

External references	Type	Source	Link
EPRI GHG Accounting, Markets, and Offsets (various)	Document	EPRI	<a href="#">Link</a>
Estimating petroleum industry value chain (Scope 3) greenhouse gas emissions (Overview of methodologies)	Document	Ipieca	<a href="#">Link</a>
FIL/IDF Bulletin 445/2010: A common carbon footprint approach for the dairy sector	Document	FIL/IDF	<a href="#">Link</a>
Generally Accepted Accounting Principles (GAAP)	Standard	GAAP	<a href="#">Link</a>
GFANZ, Measuring Portfolio Alignment: Driving Enhancement, Convergence and Adoption	Document	GFANZ	<a href="#">Link</a>
GHG Emissions Accounting for Electric Companies: A Compendium of Technical Briefing Papers	Document	EPRI	<a href="#">Link</a>
GHG Reporting Guidance for the Aerospace Industry (by International Aerospace Environmental Group, IAEG)	Sector Guidance	IAEG	<a href="#">Link</a>
GHG, Regulated Emissions, and Energy use in Transportation model (GREET)	Tool	GREET	<a href="#">Link</a>
Global corporate renewable energy initiative (RE100)	Other	RE100	<a href="#">Link</a>
Global Logistics Emissions Council (GLEC) Framework V3.0 (For logistics Emissions Accounting and Reporting)	Sector Guidance	GLEC	<a href="#">Link</a>
Global Real Estate Sustainability Benchmark (GRESB)	Other	GRESB	<a href="#">Link</a>
Global Reporting Initiative (GRI)	Disclosure framework	GRI	<a href="#">Link</a>
Granulate Certificate Scheme Standard (Version 1), tracking for 24/7 clean grids	Website	EnergyTagEnergetic	<a href="#">Link</a>
Granulate Certificate Use Case Guidelines (Version 1), tracking for 24/7 clean grids	Website	EnergyTag	<a href="#">Link</a>
Greenhouse Gas Accounting Sector Guidance for Pharmaceutical Products and Medical Devices (UK, NHS)	Sector Guidance	U.K., NHS	<a href="#">Link</a>
Guidance for the Accounting & Exchange of Product Life Cycle Emissions (WBCSD)	Other	Pathfinder	<a href="#">Link</a>
Guidance on how to measure and report your greenhouse gas emissions	Document	U.K., BEIS	<a href="#">Link</a>
Guidance on quantifying GHG emission reductions from the baseline for electrical and electronic products and systems (IEC TR 62726)	Sector Guidance	IEC	<a href="#">Link</a>
ICT Sector Guidance (by GeSI and Carbon Trust)	Sector Guidance	GeSISGeSHi/Carbon Trust	<a href="#">Link</a>
International Financial Reporting Standard 13 (IFRS 13)	Standard	IFRS 13	<a href="#">Link</a>
International Organization for Standardization (ISO)	Standard	ISO	<a href="#">Link</a>
International Standard on Assurance Engagements (ISAE)	Standard	ISAE	<a href="#">Link</a>
International Standard on Assurance Engagements 3410 (ISAE 3410)	Standard	ISAE 3410	<a href="#">Link</a>
International Sustainability Standards Board (formerly IFRS Foundation) (ISSB)	Disclosure framework	ISSB	<a href="#">Link</a>
ISO standard for energy management - Guidance for implementation, maintenance, and improvement of energy performance (ISO 50009)	Standard	ISO 50009	<a href="#">Link</a>

External references	Type	Source	Link
ISO standard for greenhouse gas accounting - Part 1 (ISO 14064-1)	Standard	ISO 14064-1	<a href="#">Link</a>
ISO standard for greenhouse gas accounting - Part 2 (ISO 14064-2)	Standard	ISO 14064-2	<a href="#">Link</a>
ISO standard for greenhouse gas accounting - Part 3 (ISO 14064-3)	Standard	ISO 14064-3	<a href="#">Link</a>
ISO standard for greenhouse gas accounting - Part 4 (ISO 14064-4)	Standard	ISO 14064-4	<a href="#">Link</a>
ISO standard for <i>Greenhouse gases — Quantification and reporting of greenhouse gas emissions arising from transport chain operations</i> (ISO 14083)	Standard	ISO 14083	<a href="#">Link</a>
ISO standard for life cycle assessment - Principles and framework (ISO 14040)	Standard	ISO 14040	<a href="#">Link</a>
Method. for calculation and declaration of energy consumption and GHG of transport services (CSN EN 16258)	Document	European Standards	<a href="#">Link</a>
Methodology for GHG Emission Avoidance Calculation (Version 2.0, November 2022)	Document	EU, Innovation Fund	<a href="#">Link</a>
Overview of GHG Emissions Accounting	Document	EPRI	<a href="#">Link</a>
Paris Agreement Capital Transition Assessment (PACTA)	Other	PACTA	<a href="#">Link</a>
Partnership for Carbon Transparency (PACT)	Other	PACT	<a href="#">Link</a>
PAS 2050:2011 Specification for the assessment of the life cycle greenhouse gas emissions of goods and services (PAS 2050) by BSI	Standard	PAS 2050	<a href="#">Link</a>
PAS 2060 Carbon Neutrality Standard and Certification (PAS 2060) (by BSI)	Standard	PAS 2060	<a href="#">Link</a>
Product Category Rules (PCR) for Concrete	Sector Guidance	Uni. of Wash.	<a href="#">Link</a>
Product category rules for life cycle assessment of electrical and electronic products and systems (BS EN IEC 63366)	Document	BSI	<a href="#">Link</a>
Protocol for the quant. of GHG emissions from waste management activities (Entreprises pour l'Environnement)	Document	EPE	<a href="#">Link</a>
Prudence and Loyalty in Selecting Plan Investments and Exercising Shareholder Rights (ESG consideration)	Document	U.S., DOL	<a href="#">Link</a>
Publicly Available Specification for Carbon Management in Infrastructure (PAS 2080)	Standard	PAS 2080	<a href="#">Link</a>
RECs and GHG Accounting	Document	EPRI	<a href="#">Link</a>
Renewable Electricity Procurement on Behalf of Others: A Corporate Reporting Guide	Document	U.S. EPA	<a href="#">Link</a>
Renewable Fuel Standard (RFS), U.S.	Standard	RFS	<a href="#">Link</a>
Science-Based Targets initiative (SBTi)	Disclosure framework	SBTi	<a href="#">Link</a>
Scope 1 & 2 GHG Inventory Guidance for U.S. Dairy Cooperatives and Processors (Innovation Center for U.S. Dairy)	Sector Guidance	Innovation Center for U.S. Dairy	<a href="#">Link</a>

External references	Type	Source	Link
Scope 2 GHG Emissions Accounting for Electric Power Companies	Sector Guidance	EPRI	<a href="#">Link</a>
Scope 3 Evaluator (the "Quantis tool") hosted by GHG Protocol through 8/2023.	Tool	Evaluator	<a href="#">Link</a>
Scope 3 GHG Inventory Guidance for U.S. Dairy Cooperatives and Processors (Innovation Center for U.S. Dairy)	Sector Guidance	Innovation Center for U.S. Dairy	<a href="#">Link</a>
Scope 3 Inventory Guidance	Website	U.S. EPA	<a href="#">Link</a>
Scope 3 Value Chain Interventions Guidance	Document	Gold Standard	<a href="#">Link</a>
Sector Supplement for Measuring and Accounting for Embodied Emissions in the Built Env. (WAP, Brightworks)	Sector Guidance	WAP/Brightworks	<a href="#">Link</a>
Small business user guide: Guidance on how to measure and report your greenhouse gas emissions	Sector Guidance	U.K., BEIS	<a href="#">Link</a>
Smart Freight Centre (SFC)/MIT Center for Transport & Logistics: Guidelines for SAF GHG Accounting and Insetting	Sector Guidance	SFC/MIT CT&L	<a href="#">Link</a>
Standard Guide for Basic Assessment and Management of Greenhouse Gases (ASTM E2725)	Document	ASTM	<a href="#">Link</a>
Standard Guide for Financial Disclosures Attributed to Climate Change (ASTM E2718)	Document	ASTM	<a href="#">Link</a>
Sustainability Accounting Standards Board (SASB)	Disclosure framework	SASB	<a href="#">Link</a>
Sustainable Aviation Buyers Alliance (SABA)	Sector Website	SABA	<a href="#">Link</a>
Task Force on Climate-related Financial Disclosures (TCFD)	Disclosure framework	TCFD	<a href="#">Link</a>
The Climate Registry (TCR) Guidance Documents	Document(s)	TCR	<a href="#">Link</a>
The Veritas Technical Protocols (for Methane emissions)	Document(s)	Veritas	<a href="#">Link</a>
Together for Sustainability (TfS): Improving and harmonizing Scope 3 Reporting (white paper)	Document	TfS	<a href="#">Link</a>
Together for Sustainability initiative (TfS)	Other	TfS	<a href="#">Link</a>
U.S. Dairy FARM Environmental Stewardship Program Version 3 Development	Sector Website	U.S. Farm	<a href="#">Link</a>
Value Chain Initiative (VCI) multi-stakeholder forum	Website	VCI	<a href="#">Link</a>
World Economic Forum (WEF): Clean Skies for Tomorrow: Sustainable Aviation Fuel Policy Toolkit	Sector Guidance	WEF	<a href="#">Link</a>
Zero Emission Maritime Buyers Alliance (ZEMBA) by Cargo Owners for Zero Emission Vessels (coZEV)	Sector Website	coZEV	<a href="#">Link</a>

## Appendix B: Emission factor sources (cited by survey respondents)

*Please be aware that the GHG Protocol is making no indication of the validity or quality of these sources by listing them here; they are listed here because respondents to the Scope 3 Survey provided them.*

Third-party database	Type	Access	Source	Link
Annual GHG emission factor for World countries from electricity and heat gen.	Database	Paywalled	IEA	<a href="#">Link</a>
Carbon Base® (ADEME)	Database	Free	French Republic	<a href="#">Link</a>
Carbon Minds, Chemicals Database	Database	Paywalled	Carbon Minds	<a href="#">Link</a>
CEMASys	Tool	Paywalled	CEMASys	<a href="#">Link</a>
Climatiq Data Explorer	Database	Free/Paywalled	climatiq	<a href="#">Link</a>
Comprehensive Environmental Data Archive (CEDA)	Database	Free	VitalMetrics Group	<a href="#">Link</a>
Ecoinvent Life Cycle Inventory (LCI) database	Database	Paywalled	Ecoinvent	<a href="#">Link</a>
Edison Electric Institute (EEI) Electricity Mix Reporting Database	Database	Free	EEI	<a href="#">Link</a>
EEA Greenhouse gas emission intensity of electricity generation in Europe	Database	Free	EEA	<a href="#">Link</a>
Energy and emissions projections 2050 (EnerOutlook)	Database	Free	Enerdata	<a href="#">Link</a>
Environmental Product Declarations (EPD)	Website	Free	EPD International	<a href="#">Link</a>
EPA's Emissions Factor Hub	Database	Free	U.S. EPA	<a href="#">Link</a>
EPA's US Environmentally Extended Input-Output (USEEIO)	Database	Free	U.S. EPA	<a href="#">Link</a>
EPA's Emissions & Generation Resource Integrated Database (eGRID)	Database	Free	U.S. EPA	<a href="#">Link</a>
EPA's Waste Reduction Model (WARM)	Database	Free	U.S. EPA	<a href="#">Link</a>
European Platform on LCA (EPLCA) ELCD dataset	Database	Free	EU Commission	<a href="#">Link</a>
EXIOBASE Environmentally Extended Input-Output Table (MR-IOT)	Database	Free	EXIOBASE	<a href="#">Link</a>
EXIOBASE Environmentally Extended Supply-Use Table (MR-SUT)	Database	Free	EXIOBASE	<a href="#">Link</a>
Government conversion factors for company reporting of GHG emissions	Database	Free	U.K., BEIS	<a href="#">Link</a>
IO-based Scope 3 emission factors by Industrial Ecology Virtual Laboratory (EIL)	Database	Free	EIL	<a href="#">Link</a>
IPCC Emission factor database (EFDB)	Database	Free	IPCC	<a href="#">Link</a>
Supply Chain GHG Emission Factors for US Industries and Commodities	Database	Free	U.S. EPA	<a href="#">Link</a>
Thailand National LCI Database for Sustainable Dev. (Nat. LCI DB for SD)	Database	Free	TIIS	<a href="#">Link</a>
The Climate Registry (TCR) Carbon Registry	Database	Free	TCR	<a href="#">Link</a>
World Food Lifecycle Databases	Database	Paywalled	Quantis	<a href="#">Link</a>