Template for submitting proposals related to GHG Protocol's *Corporate Standard, Scope 2 Guidance, Scope 3 Standard, Scope 3 Calculation Guidance* and market-based accounting approaches

(Optional)

Proposal instructions

GHG Protocol is conducting four related surveys in reference to the following GHG Protocol standards, guidance and topics:

1. Corporate Accounting and Reporting Standard (Revised Edition, 2004) ("Corporate Standard")
2. Scope 2 Guidance (2015)
3. Corporate Value Chain (Scope 3) Accounting and Reporting Standard (2011) ("Scope 3 Standard"), and Technical Guidance for Calculating Scope 3 Emissions, version 1.0, 2013 ("Scope 3 Calculation Guidance")
4. Market-based accounting approaches

The survey is open until March 14, 2023. To fill out the survey, click here.

As part of the survey process, respondents may provide proposals for potential updates, amendments, or additional guidance to the *Corporate Standard, Scope 2 Guidance, Scope 3 Standard, or Scope 3 Calculation Guidance*, by providing the information requested in this template. You may also use this template to provide justification for maintaining a current approach on a given topic.

Submitting proposals is optional. Respondents may submit multiple proposals related to different topics.

Proposals should be as concise as possible while providing the requested information. Submissions that are outside of the template may not be considered. Proposals may be made publicly available.

To submit the proposal, please save this file and fill out the fields below. When you've completed your proposal, please upload the file via this online folder. Please name your file STANDARD_Proposal_AFFILIATION, e.g., *Scope 2_Proposal_WRI*.

Respondent information

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If proposals are made publicly available, would you like your proposal to be made publicly available? Please write either “Yes” (make publicly available) or “No” (do not make publicly available).

Yes

If your proposal is made publicly available, would you like it to be made publicly available with attribution (with your name and organization provided) or anonymous (without any name or organization provided)? Please write either “With attribution” or “Anonymous”.

With attribution

Proposal and supporting information

1. **Which standard or guidance does the proposal relate to (Corporate Standard, Scope 2 Guidance, Scope 3 Standard, Scope 3 Calculation Guidance, general/cross-cutting, market-based accounting approaches, or other)? If other, please specify.**

general/cross-cutting

2. What is the GHG accounting and reporting topic the proposal seeks to address?

This first proposal seeks to address the missing accountability of **carbon uptake and embedment** in (chemical) products by using **net-flow approach in combination with cut-off at End-of-Life** and the associated negative implications for renewable feedstock transition.

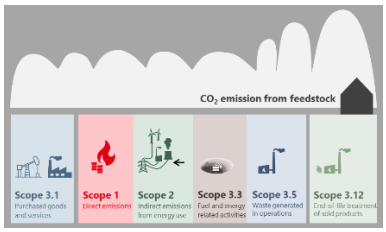
The evolution from fossil to renewable feedstocks in the chemical industry is urgently required to reach a net-zero future in line with 1.5°C targets, as 58% of the hydrocarbon uptake of the chemical industry is used as feedstock.[1][2][3]

At the given point of time with current accounting scheme of net-flow accounting in combination with recommended cut-off approach at End-of-Life, renewable carbon sources often come with higher cradle-to-gate footprint in Scope 3.1 while not showing benefits at End-of-Life in Scope 3.12. As renewable carbon sources are often associated with higher prices, there is no rationale for organizations to invest in it, as long as the well-described carbon emission benefit is not displayed in accounting.

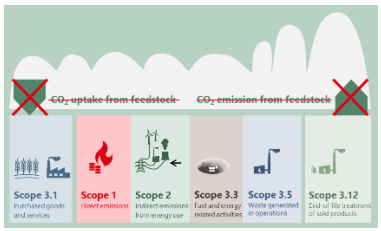
3. What is the potential problem(s) or limitation(s) of the current standard or guidance which necessitates this proposal?

Renewable carbon products made from atmospheric carbon captured either by CCU, direct air capture or photosynthesis can temporarily store CO_2 in a linear economy context or even provide an option towards circular carbon economy. The emitted CO_2 in the (final) end-of-life treatment is equal to the chemically bound CO_2 from the atmosphere. This phenomenon can be accounted for in two different ways that come with respective benefits and disadvantages.

Accounting for fossil feedstock:



Net-flow or 0/0 approach for renewable feedstock:



Gross-flow or -1/+1 approach for renewable feedstock:

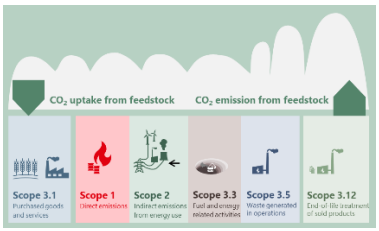


Figure 1: The accounting approaches for fossil and renewable feedstocks

The GHG protocol uses the **net-flow accounting** (Middle in figure 1), as it was designed in a linear economy context where most renewable carbon uptakes were derived by biomass utilization and applied in **short-term, linear carbon uses** such as the fuel industry. For these short-term usages of renewable materials with the pre-set end-of-life treatment **incineration**, the net-flow accounting approach is practical and eases calculation. However, the use cases of renewable feedstocks and their origin as well as end-of-life treatment expanded and will further expand considering the industries` net-zero

[1] International Energy Agency (2017)
[2] Vegelan, H., Sandström, J. (2022)
[3] Gabrielli, P.; Gazzani, M. and Mazzotti, M. (2020)

commitments. The utilization of renewable feedstocks in the chemical industry today is very different to the assumed use case in linear life cycles, as the life cycles of chemicals are vastly more complex than fuels' life cycle and the potential time of embedment is significantly longer and can even be prolonged to multiple life cycles in a circular carbon economy.
The pre-dominant **net-flow accounting** becomes even more discriminative when the current **end-of-life allocation (EoL)** is considered**.** As soon as any carbon product – be it fossil or renewable – is further used at end-of-life (e.g. recycling or incineration with energy recovery), the GHG protocol currently explicitly recommends the **cut-off approach**, leading to practically **zero emissions** in almost all scenarios at the end-of-life cycle of both, fossil carbon products as well as renewable carbon products.
If the end-of-life treatment is **mechanical recycling or incineration with energy recovery**, the GHG protocol recommends accounting only for collection and transport of the waste, leading to practically zero emissions.
Following this logic, there is no accounting difference between the usage of renewable carbon versus fossil carbon at End-of-Life as long as the product is recovered, either by recycling of a renewable carbon at end of life (circular economy) or by incineration of it (linear economy). This is neither in line with regulatory developments, nor does it reflect the physical realities.

The case study with the example of biobased carbon in Figure 2 illustrates this issue.

Case example: Supplier provides a cradle-to-gate PCF of a fossil product and its bio-based alternative:

- Cradle-to-gate emission fossil product: **10** kg CO_2e/kg (=Scope 3.1)
- Cradle-to-gate emission (=Scope 3.1) bio-based alternative:
  - **Including** biogenic carbon uptake: **8** kg CO2e/kg (-3 kg CO2e/kg + 11 kg CO2e/kg)
  - **Excluding** biogenic carbon uptake: **11** kg CO2e/kg
- End of life emissions (Scope 3.12) of product: **3** kg CO_2e/kg

Assuming the company purchases 1 kg of the product:

1) With incineration without energy recovery at the end of life of product:

a) Net-flow accounting (0/0)	Scope 3.1	Scope 3.12	**3.1+3.12**
Fossil-based material	1*10 = 10	1*3 = 3	13
Bio-based material	1*11 = 11	1*0 = 0	11

b) Gross-flow accounting (-1/+1)	Scope 3.1	Scope 3.12	**3.1+3.12**
Fossil-based material	1*10 = 10	1*3 = 3	13
Bio-based material	1*8 = 8	1*3 = 3	11

2) With recycling/incineration with energy recovery at the end of life of product:

a) Net-flow accounting (0/0)	Scope 3.1	Scope 3.12	**3.1+3.12**
Fossil-based material	1*10 = 10	1*0 = 0	10
Bio-based material	1*11 = 11	1*0 = 0	11

b) Gross-flow accounting (-1/+1)	Scope 3.1	Scope 3.12	**3.1+3.12**
Fossil-based material	1*10 = 10	1*0 = 0	10
Bio-based material	1*8 = 8	1*0 = 0	8

Figure 2: Example of net-flow accounting (0/0) vs. gross-flow accounting (-1/+1)

As shown in figure 2, net-flow accounting (0/0) leads to the same GHG emissions for bio-based materials in a scenario of incineration without energy recovery (example 1a) as with recycling at end-of-life (example 2a), as under **both scenarios zero emissions** are assumed. In contrast the GHG emissions for the fossil product **is lowered in the recycling scenario** (1a vs. 2a), as under the recycling scenario zero emissions are also assumed for the fossil product at end-of-life. Physically, the effect of recycling renewable or fossil carbon has the same benefit, as a carbon release is actively delayed or even avoided in a circular system. As the effect is the same, the accounting should reflect this positive effect between recycling and incineration in both cases. Gross-flow accounting (-1/1) enables this as shown in case 1b) and 2b) of figure 2.
This example clearly shows that in a linear economy context, the differences between net- and gross-flow accounting are rather a question of style but come with implications on steering low emission purchasing. In a circular carbon economy as envisioned by the EU Commission, to reach net-zero-

targets and to be in line with the Paris Agreement to limit global warming well below 2°C, the question of net- or gross-flow accounting becomes even more decisive.[4]

4. Describe the proposed change(s) or additional guidance.

Against this background Henkel advocates for the change from net-flow to gross-flow accounting in the GHG protocol.

	Net-flow accounting (0/0 approach)	Gross-flow accounting (-1/+1 approach)
Approach description	As the atmospheric CO_2 removals and release of embedded renewable carbon are the same, they sum up to zero. Therefore, net-flow accounting excludes these flows. Like fossil carbon, renewable feedstocks start with zero at the beginning of the life cycle. In contrast to fossil carbon, renewable carbon does have zero CO_2-emissions at the end of the life cycle.	Atmospheric CO_2 removals and release of embedded renewable carbon are displayed in the calculations. CO_2 uptake is considered as a negative emission at the beginning of the life cycle. At the end of the life cycle, the same amount of CO_2 is released.
	From a **cradle-to-grave** perspective both accounting options result in same amount of emissions with full accounting at End-of-Life.	
Application in standards	GHG-Protocol Corporate & Product Standard, PEF	ISO 14040/44, ISO 14067, EPD
Benefits	• Conservative approach – rather overestimating impacts in case the biogenic origin is unknown • Easier calculation and display for short, linear life cycles (e.g. bio-fuels)	• Accounting of CO_2 uptake and re-emission according to physical occurrence in life cycle • Incentivization of low-emission purchasing: renewable carbon is positively awarded compared to fossil carbon in cradle-to-gate scope
Disadvantages	• Positive effect of renewable carbon feedstocks only visible at the product EoL for certain scenarios (not for incineration with energy recovery or recycling)[5] • In cradle-to-gate scope (or Scope 3.1), renewable feedstocks have often higher emissions than fossil feedstocks, due to high energy demand and inefficiencies of the carbon chains ➔ **Benefits of renewable carbon under the currently recommended and widely used end-of-life allocation and especially in a circular context are not considered at all**	• Risk of incomplete reporting of cradle-to-gate footprints with negative emissions on Scope 3.1 without included uptake related emissions at End-of-Life Scope 3.12. To minimize that risk, the reporting of Scope 3.12 should become mandatory for those who report Scope 3.1. • **Remaining issue:** Does not reflect yet the polluter pays concept at end of life (EoL) accounting: When fossil or renewable feedstock are recycled/incinerated with energy recovery, emissions are zero at 3.12 → See Challenge 2 in Proposal "Scope 3_Proposal_Henkel_2.docx"

Table 1: Summary: benefits and disadvantages of carbon uptake accounting possibilities.

[4] European Commission (2021)
[5] Cefic (2022)

5. Please explain how the proposal aligns with the GHG Protocol decision-making criteria and hierarchy (A, B, C, D below), while providing justification/evidence where possible.

A. GHG Protocol accounting and reporting approaches shall meet the GHG Protocol accounting and reporting principles (see Annex for definitions):

- Accuracy, Completeness, Consistency, Relevance, Transparency
- Additional principles for land sector activities and CO_2 removals: Conservativeness, Permanence, and Comparability if relevant

As the option of additional gross-flow accounting has been already made by GHG-Protocol itself in the Draft for Land Sector & Removal Guidance, we consider the above mentioned points as given. Furthermore, other well-known product related carbon accounting standards (e.g., ISO 14067) already use the gross-flow accounting method. From Henkel point of view the gross-flow accounting would be even more complete and transparent as current net-flow accounting, as all existing carbon flows are considered without hiding flows in a balance. Similar applies for accuracy, as companies would account for the emissions where they physically occur.

B. GHG Protocol accounting and reporting approaches shall align with the latest climate science and global climate goals (i.e., keeping global warming below 1.5°C). To support this objective (non-exhaustive list):

- Direct emissions reported in a company's inventory should correspond to emissions to the atmosphere. Reductions in direct emissions reported in a company's inventory should correspond to reductions in emissions to the atmosphere.
- Indirect emissions reported in a company's inventory should in the aggregate correspond to emissions to the atmosphere. Reductions in indirect emissions reported in a company's inventory should in the aggregate correspond to reductions in emissions to the atmosphere.

The direct & indirect emissions reported in a company's inventory would in the aggregate (especially of Scope 3.1 & 3.12 and Scope 1 & 3.3 in this case) correspond to emissions to the atmosphere. Same applies for reductions.

C. GHG Protocol accounting frameworks should support ambitious climate goals and actions in the private and public sector.

- Would this proposal enable organizations to pursue more effective GHG mitigation/decarbonization efforts as compared to the existing standards and guidance? If so, how?
- Would this proposal better inform decision making by reporting organizations and their stakeholders (e.g. related to climate-related financial risks and other relevant information associated with GHG emissions reporting)?

This proposal would enable organizations to implement de-fossilization efforts in the supply chain more successfully compared to the existing standards and guidance.

Since 58% of the energy uptake of the chemical industry is used as feedstock, alternative carbon sources are crucial to reach a net-zero chemical industry.[6][7][8] At the given point of time with current accounting scheme, renewable carbon sources often come with higher cradle-to-gate footprint in Scope 3.1 while not showing benefits at End-of-Life in Scope 3.12. As renewable carbon sources are often associated with higher prices, there is no rationale for organizations to invest in it, as long as the well-described carbon emission benefit is not displayed in accounting.

In contrast to that, the inclusion of gross-flow accounting incentivizes actively low-emission purchasing: renewable carbon is positively awarded compared to fossil carbon in cradle-to-gate scope.

D. GHG Protocol accounting frameworks which meet the above criteria should be feasible. (For aspects of accounting frameworks that meet the above criteria but are difficult to implement, GHG Protocol should provide additional guidance and tools to support implementation.)

- What specific information, data or calculation methods are required to implement this proposal (e.g., in the case of scope 2, data granularity, grid data, consumption data, emission information, etc.)? Would new data/methods be needed? Are current data/methods available? How would this be implemented in practice?
- Would this proposal accommodate and be accessible to all organizations globally who seek to account for and report their GHG emissions? Are there potential challenges which would need to be further addressed to implement this proposal globally? What would be the potential solutions?

From Henkel's point of view the only required additional information organizations need for the implementation of gross-flow accounting is the carbon content of their products. As this is a material related property, we don't see a risk of missing information. As the process of gross-flow accounting is also already introduced in the Draft for Land Sector & Removal Guidance by GHG-Protocol, we would consider the already existing guidelines there as sufficient (although they should be streamlined and phrased easier for non-expert users). Furthermore the scheme of gross-flow accounting is already used in several product standards and thus should not be completely new for organizations. Nevertheless gross-flow accounting comes with additional reporting effort for companies that didn't consider carbon flows yet.

Nevertheless, additional guidance on modelling the product fate at End-of-Life might be needed for companies in the supply chain that are far away from the final end-consumer product. For them the

[6] International Energy Agency (2017)
[7] Vegelan, H., Sandström, J. (2022)
[8] Gabrielli, P.; Gazzani, M. and Mazzotti, M. (2020)

actual product use at the end of the supply chain might be hard to track – thus options for fact-based reliable estimations need to be provided. See point below.

6. Consistent with the hierarchy provided above, are there potential drawbacks or challenges to adopting this proposal? If so, what are they?

Yes, we identified the potential challenge that companies could potentially only report on Scope 3.1 emissions without including 3.12 emissions. This would a) lead to an open carbon balance and b) neglect the emissions of embedded carbon release at End-of-Life. In total this could lead to a total negative carbon footprint of an organization without actually having a negative balance.

This issue can be easily solved by connecting the accounting of Scope 3.1 & Scope 3.12 closer and making Scope 3.12 mandatory when reporting Scope 3.1. Additional guidance needs for that are described in the answer above.

7. Would the proposal improve alignment with other climate disclosure rules, programs and initiatives or lead to lack of alignment? Please describe.

Current carbon taxation schemes tend to be focused on End-of-Life emissions and aligned with the linear economy. While the proposal is more aligned with the circular economy.

8. Please attach or reference supporting evidence, research, analysis, or other information to support the proposal, including any active research or ongoing evaluations. If relevant, please also explain how the effectiveness of the proposal can be evaluated and tracked over time.

Vegelan, H., Sandström, J. (2022): Towards a Net-Zero Chemical Industry: A Global Policy Landscape for Low-Carbon Emitting Technologies, World Economic Forum/Accenture, 2022.

International Energy Agency (2017): Tracking Clean Energy Progress 2017, Paris, 2017.

Agora Energiewende und Wuppertal Institut (2019): Klimaneutrale Industrie: Schlüsseltechnologien und Politikoptionen für Stahl, Chemie und Zement. Berlin, November 2019.

Gabrielli, P.; Gazzani, M. and Mazzotti, M. (2020): The Role of Carbon Capture and Utilization, Carbon Capture and Storage, and Biomass to Enable a Net-Zero-CO2 Emissions Chemical Industry, Industrial & Engineering Chemistry Research 2020 59 (15), 7033-7045, DOI: 10.1021/acs.iecr.9b06579

European Commission (2021): Communication from the Commission to the European Parliament and the Council, Sustainable Carbon Cycles

Tan, C. & Vegelan, H. (2022): The chemical industry can wean itself off fossil raw materials. Here's how,WEF, 2022 https://www.weforum.org/agenda/2022/11/chemical-industry-fossil-fuels-decarbonization/

McKinsey & Company (2021): Net-Zero Deutschland – Chancen und Herausforderungen auf dem Weg zur Klimaneutralität bis 2045.

Cefic (2022): Restoring sustainable carbon cycles, Position paper, May 2022 (https://cefic.org/app/uploads/2022/05/Cefic-position-on-Restoring-sustainable-carbon-cycles.pdf)

9. If applicable, describe the process or stakeholders/groups consulted as part of developing this proposal.

Reflected & discussed our proposal with various value chain partners and in industry initiatives.

10. If applicable, provide any additional information not covered in the questions above.

N/A

Proposal Annex

GHG Protocol Decision-Making Criteria and Hierarchy

A. First, GHG Protocol accounting and reporting approaches shall meet the GHG Protocol accounting and reporting principles:

- Accuracy, Completeness, Consistency, Relevance, Transparency
- Additional principles for land sector activities and CO_2 removals: Conservativeness, Permanence, and Comparability if relevant
- (See table below for definitions)

B. Second, GHG Protocol accounting and reporting approaches shall align with the latest climate science and global climate goals (i.e., keeping global warming below 1.5°C). To support this objective (non-exhaustive list):

- Direct emissions reported in a company's inventory should correspond to emissions to the atmosphere. Reductions in direct emissions reported in a company's inventory should correspond to reductions in emissions to the atmosphere.
- Indirect emissions reported in a company's inventory should in the aggregate correspond to emissions to the atmosphere. Reductions in indirect emissions reported in a company's inventory should in the aggregate correspond to reductions in emissions to the atmosphere.

C. Third, GHG Protocol accounting frameworks should support ambitious climate goals and actions in the private and public sector:

- Accounting framework/s would enable organizations to pursue more effective GHG mitigation/decarbonization efforts as compared to the existing standards and guidance
- Accounting framework/s would better inform decision making by reporting organizations and their stakeholders (e.g. related to climate-related financial risks and other relevant information associated with GHG emissions reporting)

D. Fourth, GHG Protocol accounting frameworks which meet the above criteria should be feasible to implement for the users of the frameworks.

- For aspects of accounting frameworks that meet the above criteria but are difficult to implement, GHG Protocol should provide additional guidance and tools to support implementation.

GHG Protocol Accounting and Reporting Principles

Principle	Definition
Accuracy	Ensure that the quantification of GHG emissions (and removals, if applicable) is systematically neither over nor under actual emissions (and removals, if applicable), and that uncertainties are reduced as far as practicable. Achieve sufficient accuracy to enable users to make decisions with reasonable assurance as to the integrity of the reported information.
Completeness	Account for and report on all GHG emissions (and removals, if applicable) from sources, sinks, and activities within the inventory boundary. Disclose and justify any specific exclusions.

Consistency	Use consistent methodologies to allow for meaningful performance tracking of emissions (and removals, if applicable) over time and between companies. Transparently document any changes to the data, inventory boundary, methods, or any other relevant factors in the time series.
Relevance	Ensure the GHG inventory appropriately reflects the GHG emissions (and removals, if applicable) of the company and serves the decision-making needs of users – both internal and external to the company.
Transparency	Address all relevant issues in a factual and coherent manner, based on a clear audit trail. Disclose any relevant assumptions and make appropriate references to the accounting and calculation methodologies and data sources used.
Conservativeness (Land Sector and Removals Guidance)	Use conservative assumptions, values, and procedures when uncertainty is high. Conservative values and assumptions are those that are more likely to overestimate GHG emissions and underestimate removals, rather than underestimate emissions and overestimate removals.
Permanence (Land Sector and Removals Guidance)	Ensure mechanisms are in place to monitor the continued storage of reported removals, account for reversals, and report emissions from associated carbon pools.
Comparability (optional) (Land Sector and Removals Guidance)	Apply common methodologies, data sources, assumptions, and reporting formats such that the reported GHG inventories from multiple companies can be compared.