Insurance-Associated Emissions

The Global GHG Accounting & Reporting Standard Part C

PCAF
Partnership for
Carbon Accounting
Financials

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Important note

The Partnership for Carbon Accounting Financials (PCAF) Global GHG Accounting and Reporting Standard for the Insurance Industry ("Insurance-Associated Emissions Standard") derives from the work conducted by the PCAF's Insurance-Associated Emissions Working Group ("Working Group").

The Working Group has, at all times, sought to ensure that the accounting methodologies and reporting requirements proposed in this Standard are compatible with applicable law, including antitrust laws. The development of the methodologies and reporting requirements set out in this Standard, including associated discussions and work undertaken by the Working Group, has been undertaken in compliance with applicable laws, including antitrust laws.

The methodologies and the context provided (e.g., examples of the possible use of such methodologies) in this Standard are not to be construed as prescriptive. The adoption and use of the methodologies discussed or included in this Standard are voluntary and must be determined independently by each company.

The use of such methodologies by a company is subject to applicable laws, rules and regulations in the jurisdictions in which that company operates. In case of conflict of applicable laws, rules and regulations with the methodologies or the reporting requirements described in this Standard, the applicable laws, rules and regulations shall prevail, but any deviations from the Standard should be highlighted to protect the goal and value of the Insurance-Associated Emissions Standard.

The work leading to the adoption of this Standard included a public consultation on the proposed methodologies for measuring and reporting insurance-associated emissions. The consultation was open to all interested parties, including regulators, participants from across the re/insurance industry, brokers, policymakers, data providers, consultants, academia, non-governmental organizations (NGOs), associations of insureds, and civil society as a whole. The Working Group considered the input and feedback received during the consultation process, which were reflected in this Standard, to the extent it was feasible and implementable and compatible with applicable laws and regulations.

Acknowledgements

In September 2019, the Partnership for Carbon Accounting Financials (PCAF) was launched globally to harmonise greenhouse gas (GHG) accounting methods and to enable financial institutions to consistently measure and disclose the GHG emissions financed by their loans and investments (so-called financed emissions). In 2020, the first version of The Global GHG Accounting & Reporting Standard for the Financial Industry (the "Financed Emissions Standard") was launched.

As an industry-led partnership, PCAF is governed by a Steering Committee formed by ABN AMRO, Amalgamated Bank, ASN Bank, the Global Alliance for Banking on Values, Morgan Stanley, NMB Bank, Triodos Bank, and a representative from the United Nations (UN)-convened Net-Zero Asset Owner Alliance. At the time of publishing this document, more than 329 financial institutions, including banks, investors, asset managers, re/insurers, participate in PCAF.[1]

A new PCAF working group was initiated in October 2021 to co-create a separate global GHG accounting & reporting standard for emissions associated with re/insurance underwriting portfolios (i.e., Insurance-Associated Emissions Standard). This Standard is Part C of the overall Global GHG Accounting & Reporting Standard for the Financial Industry. The 16 members of the PCAF Insurance-Associated Emissions Working Group are depicted below:

The PCAF Secretariat and Swiss Re, as Chair of the Working Group focusing on insurance-associated emissions, facilitated the Working Group's activities by moderating their technical discussions, reviewing the content, and compiling and editing this document. The PCAF Secretariat is operated by Guidehouse, a global consultancy firm specialising in energy, sustainability, risk, and compliance for the financial industry.

Throughout the development of this Standard, PCAF has engaged with stakeholders to solicit feedback, discuss PCAF methodological approaches, and consider their comments and suggestions. PCAF published a "Scoping Document" for targeted consultation in March 2022. During July and August 2022, PCAF issued a public consultation on a "Progress Report" to facilitate a public consultation with regulators, the re/insurance industry, brokers, policymakers, data providers, consultants, academia, non-governmental organizations (NGOs), and insurance associations.

1 The full list of PCAF participants can be found at: https://carbonaccountingfinancials.com/financial-institutions-taking-action#overview-of-institutions

Executive summary

The Partnership for Carbon Accounting Financials (PCAF) is an industry-led initiative that helps financial institutions assess and disclose their indirect greenhouse gas (GHG) emissions (scope 3 emissions). GHG accounting refers to the processes required to consistently measure and report the amount of GHGs generated, avoided, or removed by an entity, allowing it to track and report these emissions over time. It enables financial institutions to disclose these emissions at a fixed point in time and in line with financial accounting periods.

Until now, there has not been a globally accepted standard for measuring and reporting emissions associated with re/insurance underwriting portfolios ("insurance-associated emissions"). Responding to increasing demand from the insurance industry and other stakeholders, PCAF developed the Global GHG Accounting and Reporting Standard for Insurance-Associated Emissions. This new Standard constitutes Part C of PCAF's Global GHG Accounting and Reporting Standard for the Financial Industry. As such, this Standard supplements the requirements of the GHG Protocol "Corporate Value Chain (Scope 3) Accounting and Reporting Standard" .

This document is the first version of the Insurance-Associated Emissions Standard. It provides detailed methodological guidance for the measurement and disclosure of GHG emissions associated with two segments:

Commercial lines

Personal motor lines

The Standard provides detailed guidance for each segment to calculate the insurance-associated emissions resulting from activities in the real economy that are re/insured. Emissions are associated with re/insurance portfolios based on robust, consistent accounting rules specific to each segment. By following the methodologies, re/insurers can measure GHG emissions for each segment and produce disclosures that are consistent, comparable, reliable, and clear.

Limited data is often the main challenge in calculating insurance-associated emissions; however, data limitations should not deter re/insurers from starting their GHG accounting journeys. The Standard provides guidance on data quality scoring per segment, facilitating data transparency and encouraging improvements to data quality in the medium and long term.

This Standard also provides recommendations and requirements for reporting. Any requirements not fulfilled must be accompanied by an explanation.

Using this Standard equips the re/insurance industry with standardised, robust methods to measure and disclose insurance-associated emissions.

FORMULAS TO CALCULATE INSURANCE-ASSOCIATED EMISSIONS

Insurance-associated emissions = $\sum_i$ **Attribution factor**$_i$ x **Emissions**$_i$ (with i = insured)

↓

Share of the emission to be associated with the re/insurer (see methodologies in Chapters 5.2 and 5.3)

GHG accounting for two segments

Commercial lines

↓

$$Attribution\ factor_i = \frac{Re/Insurance\ premium_i}{Customer\ revenue_i}$$

Personal motor lines

↓

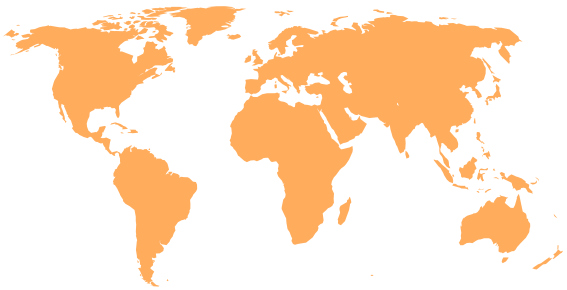
$$(Industry)\ Attribution\ factor_p = \frac{Insurance\ industry's\ total\ premium\ from\ the\ motor\ line\ of\ business}{Total\ costs\ associated\ with\ vehicle\ ownership\ of\ all\ vehicles}$$

or (for cases where risk carriers are unable to use the industry attribution factor above)

↓

$$(Individual)\ Attribution\ factor_p = \frac{Insurer\ specific\ premium\ from\ the\ motor\ line\ of\ business}{Total\ costs\ associated\ with\ vehicle\ ownership\ of\ the\ portfolio\ P\ vehicles}$$

OVER 329 FINANCIAL INSTITUTIONS, WITH OVER $ 81 TRILLION IN FINANCIAL ASSETS COMMITTED TO PCAF (NOVEMBER 2022)



PCAF Partnership for Carbon Accounting Financials

The Partnership for Carbon Accounting Financials (PCAF) is an industry-led initiative enabling financial institutions to measure and disclose greenhouse gas (GHG) emissions associated with their financial activities.

1. Introduction

THE ROLE OF THE RE/INSURANCE INDUSTRY

The re/insurance industry is one of the largest global industries and a major holder of assets under management. Total premiums written in life and non-life insurance amount to close to USD eight trillion, or 6.8% of global economic output.[2]

The re/insurance industry plays an important role in supporting the transition to a low-emission economy. As institutional investors, re/insurers can invest in zero- and low-emission technologies and engage with their investee companies on their decarbonization pathways. As professional risk managers, re/insurers can help communities understand, prevent, and reduce climate risk. As professional risk carriers, re/insurers protect businesses, households, public entities, and governments by absorbing economic shocks due to weather-related risks such as cyclones, floods, extreme heat, and droughts. For their own operations, re/insurers can set their own climate policies and influence low-emissions goods and services.

Demand from the re/insurance industry and other stakeholders for tools to measure and report greenhouse gas (GHG) emissions is increasing. As such, there is a need to develop a set of global, standardised methodologies for measuring and disclosing the GHG emissions associated with re/insurance underwriting portfolios for accounting purposes (throughout the document referred to as insurance-associated emissions).

THE ROLE OF PCAF AND GHG EMISSIONS ACCOUNTING IN REPORTING, MANAGING RISKS AND OPPORTUNITIES, AND ENSURING COMPATIBILITY OF FINANCIAL FLOWS WITH THE PARIS AGREEMENT

The Partnership for Carbon Accounting Financials (PCAF) is an industry-led initiative which was created in 2015 by 14 Dutch financial institutions. In 2018 PCAF expanded into North America and went global in September 2019. PCAF aims to standardise the way financial institutions measure and report financed emissions, facilitated emissions, and insurance-associated emissions. In addition, it aims to increase the number of financial institutions that commit to measuring and disclosing these scope 3 emissions in line with the methods it develops.

In 2020, the first edition of the "Global GHG Accounting and Reporting Standard for the Financial Industry" covering financed emissions (“Financed Emissions Standard”) was published.[3] This standard is built upon the GHG Protocol standards for corporate reporting. It has been reviewed by the GHG Protocol and is in conformance with the requirements set forth in the "Corporate Value Chain (Scope 3) Accounting and Reporting Standard" for category 15 investment activities.

Since then, banks and investors have asked to expand the standard with more methods, also covering other avtivities of the financial industry. From 2021 onwards, PCAF started the work on three parts under the umbrella of the Global GHG Accounting and Reporting Standard for the Financial Industry:

2 Sigma No 4/2022, World insurance, Swiss Re

3 PCAF (2020): The Global GHG Accounting and Reporting Standard for the Financial Industry

- **Part A:** update of the first version standard on measuring and reporting financed emissions ("Financed Emissions Standard - second version")
- **Part B:** development of a standard for measuring and reporting the GHG emissions associated to the capital market facilitation activities ("Facilitated Emissions Standard")
- **Part C:** development of a standard for measuring and reporting the GHG emissions associated to re/insurance underwriting portfolios ("Insurance-Associated Emissions Standard")

THE RE/INSURANCE INDUSTRY AND FINANCED EMISSIONS

The re/insurance industry is in a unique position with asset owner and underwriting activities on the same balance sheet. PCAF's Financed Emissions Standard[4] covers methodologies for measuring and reporting the GHG emissions associated with loans and investments, known as financed emissions. For their asset owner and management activities, re/insurers can use this existing Financed Emissions Standard subject to their existing regulatory requirements.

The core difference between financed and insurance-associated emissions is the nature of the relationship of the financial institution with the client (see Chapter 4.2 for more details). A re/insurer's Property and Casualty (P&C) lines of business (LoB) transfer risks associated with economic activity but do not finance the activity nor imply any form of ownership. A re/insurer holds no capital interest in the primary insurance customer's operations, and no financial or direct operational control is exerted.[5]

The lack of ownership or direct control over the customer's activity impacts the influence a re/insurer will have on the decisions made by the customer to reduce the associated emissions. However, even without this ownership interest, a re/insurer may influence a customer's activities. The ability of a customer to engage in its specific business activity is limited without the support of insurance. In other words, re/insurance enables a customer's business activities.

ABOUT THIS DOCUMENT: STANDARDIZING GHG EMISSIONS ACCOUNTING FOR RE/INSURANCE

This document is the first version of the "Global GHG Accounting and Reporting Standard for Insurance-Associated Emissions". Throughout this document, it will be referred to as the Insurance-Associated Emissions Standard or short Standard. This Standard constitutes Part C of the "Global GHG Accounting & Reporting Standard for the Financial Industry".[6] The purpose of this Standard is to provide re/insurers with transparent, standardised, and robust methodologies to measure and report insurance-associated emissions, as a supplement to the requirements of the GHG Protocol "Corporate Value Chain (Scope 3) Accounting and Reporting Standard".

Please note that the Insurance-Associated Emissions Standard does not address target setting nor underwriting/pricing. Nor does it determine explicitly or implicitly any strategy a company may choose to follow independently as a result of adopting such methodologies.

4 PCAF (2020): The Global GHG Accounting and Reporting Standard for the Financial Industry

5 Credit re/insurers might have comparable rights under specific constellations (e.g., default of corporate loan, which is insured by the re/insurer). That's why credit re/insurance might be considered differently (see also Table 5-1).

6 Part A is the PCAF Standard on financed emissions and Part B is the PCAF Standard on facilitated emissions.

This Standard was developed by the PCAF Insurance-Associated Emissions Working Group (i.e., the "Working Group"). This is a group of insurers and reinsurers of different sizes and from different regions, namely Allianz, Aviva, AXA, Bradesco Seguros, Generali, ICEA Lion, Liberty Mutual, Lloyd's, Munich Re, NN Group, QBE, SCOR, SOMPO Holdings, Swiss Re, Tokio Marine and Zurich.At the end of October 2021, the Working Group initiated discussions on which LoBs should be included in the scope of this Standard. The Standard covers the following LoBs/segments (primary insurance and facultative reinsurance only), which are discussed in more detail in Chapter 5:

Commercial lines

Personal motor lines

Throughout the development of this Standard, PCAF has engaged with stakeholders to solicit feedback and discuss PCAF methodological approaches and considered their comments and suggestions. PCAF published a "Scoping Document" for targeted consultation in March 2022. During July and August 2022, PCAF issued a "Progress Report" to facilitate a public consultation with regulators, the re/insurance industry, brokers, policymakers, data providers, consultants, academia, non-governmental organizations (NGOs), and insurance associations. More than 40 stakeholders provided direct feedback to the Progress Report.

BUILT ON THE GHG PROTOCOL

This work by the Working Group is based on the GHG Protocol standards for corporate reporting, such as the "GHG Protocol Corporate Accounting and Reporting Standard"[7], the "Corporate Value Chain (Scope 3) Accounting and Reporting Standard"[8], and the supplemental "Technical Guidance for Calculating Scope 3 Emissions"[9]. More specifically, this Insurance-Associated Emissions Standard will supplement the GHG Protocol "Corporate Value Chain (Scope 3) Accounting and Reporting Standard" by providing additional detailed guidance as to how re/insurance companies can report on insurance-associated emissions.

This Insurance-Associated Emissions Standard is pending official GHG Protocol review and approval.

Beyond reporting the scope 3 category 15 emissions covered by this Standard, re/insurers shall also measure and report their scope 1 and 2 emissions as well as any other relevant categories of scope 3 emissions in line with the GHG Protocol's standards.

RELATIONSHIP WITH OTHER FINANCIAL SECTOR CLIMATE INITIATIVES

Multiple climate initiatives for financial institutions have been launched, including for high-level commitments, scenario analyses, target setting protocols, and climate action and reporting guidance. Measuring insurance-associated emissions helps facilitate consistent reporting across the insurance industry for these purposes, but does not intrinsically require or demand that re/insurers take any further action (Figure 1-1).

7 More information can be found at: https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf

8 More information can be found at: https://ghgprotocol.org/sites/default/files/standards/Corporate-Value-Chain-Accounting-Reporing-Standard_041613_2.pdf

9 More information can be found at: https://ghgprotocol.org/sites/default/files/standards/Scope3_Calculation_Guidance_0.pdf

Figure 1-1. Measuring insurance-associated emissions as the foundation for other initiatives

Source: (PCAF, 2020)

The many existing climate initiatives that support financial institutions with their climate-related business goals include:

- PCAF focuses on standardizing the measurement and reporting of financed emissions, facilitated emissions, and insurance-associated emissions.
- The Task Force on Climate-Related Financial Disclosures (TCFD) provides a framework for climate-related financial disclosure.
- The Carbon Disclosure Project (CDP) provides a platform for emission reporting and rating.
- The Science Based Targets Initiative (SBTi) guides target setting through its Financial Sector Science-Based Targets Guidance.
- Other initiatives, such as the UN-convened Net Zero Insurance Alliance (NZIA) and industry-specific initiatives (e.g., Poseidon Principles for Marine Insurance), support re/insurers in defining concrete climate strategies and actions.

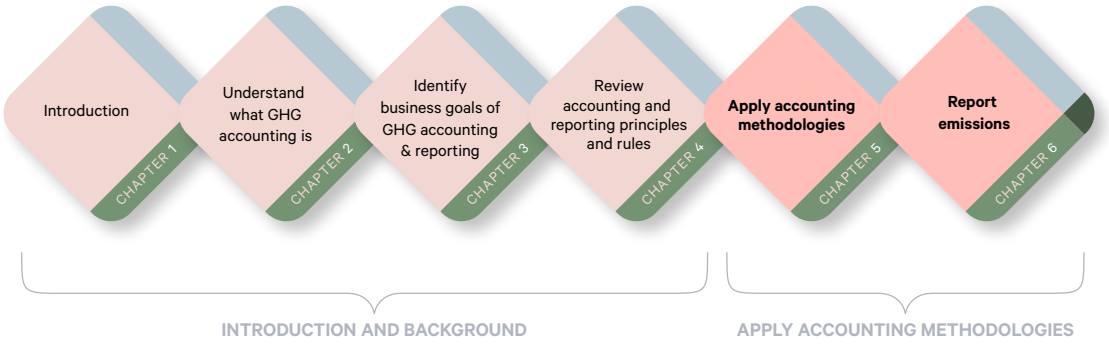
HOW TO READ THIS STANDARD

This Standard uses the following language to indicate which provisions are requirements, which are recommendations, and which are allowable options that re/insurers may choose to follow. The following terms are used throughout this Standard:

- "Shall" or "required": Indicates what is required for a GHG inventory to conform with this Standard.
- "Should": Indicates a recommendation but not a requirement.
- "May": Indicates an allowed option.
- "Needs", "can", and "cannot": Used to provide guidance on implementing a requirement or to indicate when an action is or is not possible.

Figure 1-2 provides the structure of this Standard and the steps for disclosing insurance-associated emissions.

Figure 1-2. Overview of the Standard and steps for disclosing insurance-associated emissions



2. GHG accounting in re/insurance

WHAT IS GHG ACCOUNTING?

GHG emissions accounting ("GHG accounting") refers to the processes required to consistently measure the amount of GHGs generated, avoided or removed by an entity, allowing it to track and report these emissions over time. The emissions measured are the seven gases mandated under the Kyoto Protocol and to be included in national inventories under the United Nations Framework Convention on Climate Change (UNFCCC)—carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF_6) and nitrogen trifluoride (NF_3). For ease of accounting, these gases are usually converted to and expressed as carbon dioxide equivalents (CO_2e).

GHG accounting is most commonly used by governments, corporations, and other entities to measure the direct and indirect emissions that occur throughout their value chains as a result of organizational and business activities. According to the GHG Protocol Corporate Accounting and Reporting Standard,[10] direct emissions are emissions from sources owned or controlled by the reporting company. Indirect emissions are emissions that are a consequence of the operations of the reporting company, but that occur at sources owned or controlled by another company.

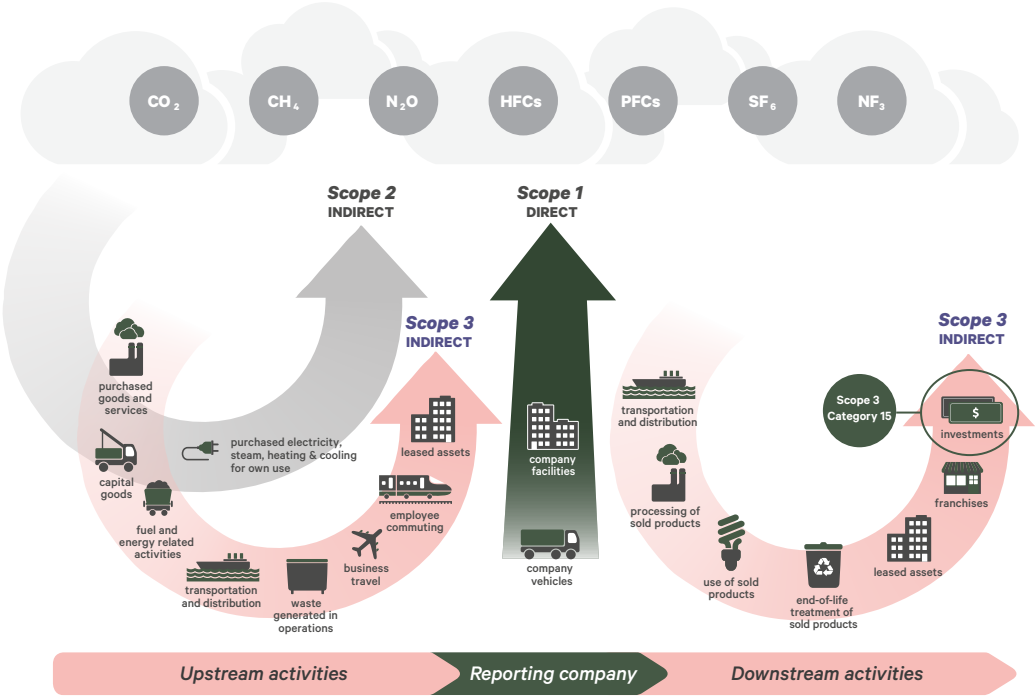
Direct and indirect emissions are further categorised by scope and distinguished according to the source of the emissions and where in an organization's value chain the emissions occur. The three scopes defined by the GHG Protocol—scope 1, scope 2 and scope 3—are briefly described below and are illustrated in Figure 2-1.

- **Scope 1**: Direct GHG emissions that occur from sources owned or controlled by the reporting company—i.e., emissions from combustion in owned or controlled boilers, furnaces, vehicles, etc.
- **Scope 2**: Indirect GHG emissions from the generation of purchased or acquired electricity, steam, heating, or cooling consumed by the reporting company. Scope 2 emissions physically occur at the facility where the electricity, steam, heating, or cooling is generated.
- **Scope 3**: All other indirect GHG emissions (not included in scope 2) that occur in the value chain of the reporting company. Scope 3 can be broken down into upstream emissions that occur in the supply chain (for example, from production or extraction of purchased materials) and downstream emissions that occur as a consequence of using the organization's products or services.

The GHG Protocol "Corporate Value Chain (Scope 3) Accounting and Reporting Standard"[11] categorises scope 3 emissions into 15 categories, as shown in Figure 2-1. According to the GHG Protocol, accounting and reporting on emissions associated with a reporting company's insurance underwriting activities are optional under scope 3 category 15 (Investments, *other investments or financial services*). The Working Group proposes that insurance-associated emissions are reported as a supplementary accounting note within the re/insurers' scope 3 category 15 (Investments). Please see Chapter 6 for more details on reporting recommendations.

10 (WRI and WBCSD, 2004)
11 (WRI and WBCSD, 2011)

Figure 2-1. Overview of GHG Protocol scopes and emissions across the value chain



Source: (WRI and WBCSD, 2011) adapted by PCAF, 2022

THE IMPORTANCE OF GHG ACCOUNTING OF UNDERWRITING BY THE RE/INSURANCE INDUSTRY

To limit global warming and achieve the goals of the Paris Agreement, global GHG emissions must be cut drastically. GHG accounting is a necessary step for organisations to better understand and manage their emissions. For a re/insurer, scope 3 category 15 emissions – financed emissions and insurance-associated emissions – are the most significant part of its indirect GHG emissions inventory. Special consideration must therefore be made to how these are measured. Measuring insurance-associated emissions is an important step a re/insurer can take to identify and assess climate-related transition risks and identify potential opportunities.

GHG ACCOUNTING HELPS MEASURE THREE TYPES OF CLIMATE IMPACT: GENERATED EMISSIONS, EMISSION REMOVALS, AND AVOIDED EMISSIONS

GHG accounting is the annual corporate accounting and disclosure of insurance-associated emissions in (parts of) the portfolio of a re/insurer at a fixed point in time and in line with financial accounting periods. Insurance-associated emissions can be measured as the amounts of GHGs generated, avoided, or removed by an insured institution.

The volume of absolute emitted GHG emissions of an insured that is subsequently associated with a re/insurance company for the purposes of GHG accounting is commonly referred to as the insured's **generated (absolute) emissions.**

Not all underwriting activities are associated with generated insurance-associated emissions. Re/insurance covers can also contribute to the deployment of emission removal solutions that absorb CO_2e from the atmosphere and store it in durable materials, terrestrial carbon sinks, or in geological reservoirs deep underground. For instance, underwriting sustainable forestry

projects is likely to increase the forest carbon stock through diversification of tree species, more underbrush, and healthier forest soils. Other examples are P&C covers for machinery that filters CO_2e directly from the atmosphere and transforms it into carbonate minerals locked inside concrete blocks. The volume of CO_2e absorbed and durably stored is considered an **emission removal** that can also be quantified and reported.

Carbon removal activities will become important to achieve global net zero, namely to net-out (balance) residual emissions. Currently, though, there are no international rules for negative emissions accounting. Final guidance by the GHG Protocol on emissions removals is expected to be published in 2023.[12] While PCAF acknowledges that emissions removals are integral to combatting climate change,[13] this Standard does not provide guidance on how to measure and report insurance-associated emissions removals. For the time being, PCAF refers to the forthcoming guidance from the GHG Protocol. Future versions of this Standard may potentially include more specific guidance on emissions removals.

Lastly, emissions accounting in the real economy sometimes compares actual emissions of a zero- or low-emission project (project emissions) to the hypothetical emissions of high-emission alternatives (baseline emissions). The difference between the two is referred to as **avoided emissions.** Insurance-associated avoided emissions could be calculated and accounted for in the same way. The working group for PCAF's financed emissions standard had also suggested specific guidance for avoided emissions accounting, limited to a particular asset class (project finance) and project type (renewable electricity).

Reporting avoided emissions is an attempt by companies to demonstrate a quantifiable positive contribution to decarbonization, albeit based on predictions of baseline emissions that are difficult to delimit and have suffered from systematic overestimation in the past.[14] A more direct way to understand a company's contribution to decarbonization follows from the trend in the generated (absolute) emissions data reported over time. Consequently, the Working Group has decided not to provide specific guidance on insurance-associated avoided emissions.

Re/insurers may report on emission removals and on avoided emissions. They shall always do so separately from the re/insurer's scope 1, 2, and 3 GHG inventories and report their methodological formula for calculating these types of emissions (i.e., emission removals and avoided emissions) in accordance with the guidance contained in Chapter 6.

EMISSIONS METRICS IN THE CONTEXT OF INSURANCE-ASSOCIATED EMISSIONS

Different emissions metrics can be used for different purposes and some key insurance-associated emissions metrics and their merits are discussed in Table 6-1 "Emission metrics for the context of insurance-associated emissions," in Chapter 6; this is not exhaustive.

12 The GHG Protocol's 'Land Sector and Removals Guidance' is currently being developed through a multi-stakeholder development process. The draft guidance is published for both pilot testing and review in June 2022. Final publication is expected in 2023. https://ghgprotocol.org/land-sector-and-removals-guidance

13 IPCC WGIII 6th Assessment Report, 2022.

14 An EU Study (ref. N° CLIMA.B.3/SERI2013/0026r) from 2017 concluded that up to 85% of the carbon avoidance projects under the Clean Development Mechanism (CDM) have a low likelihood of ensuring that emission reductions are additional and not over-estimated. https://ec.europa.eu/clima/system/files/2017-04/clean_dev_mechanism_en.pdf

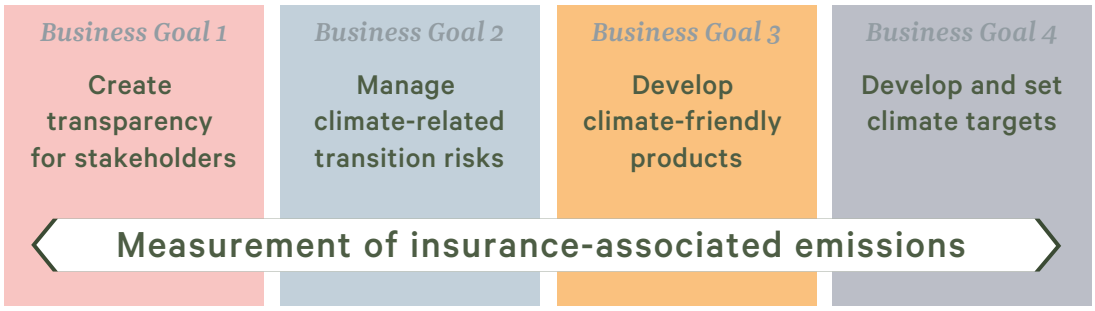
3. GHG accounting can be used as a basis to achieve business goals

The existing PCAF Financed Emissions Standard highlights four of the major business goals that financial institutions can pursue in the context of their sustainability and climate-related strategies that GHG accounting could support (see Figure 3-1). This set of business goals is voluntary in nature and by no means exhaustive.

In this chapter, these business goals are recast in terms of re/insurance. The effectiveness or ability of re/insurers to put in place such business goals may be restricted by factors such as the mandatory/compulsory nature of some LoB in certain jurisdictions, the influence of government-backed schemes across certain LoB in certain jurisdictions, regulatory requirements, credit rating concerns, and/or the business strategies of individual re/insurance companies.

Understanding the climate impact of underwriting portfolios makes good business sense for a re/insurer. GHG accounting can help re/insurers achieve multiple objectives, such as creating transparency for stakeholders, managing financial risks associated with climate policies and regulations, creating new insurance products to support decarbonization efforts, and ensuring that their own underwriting portfolios are compatible with the Paris Agreement as appropriate.

Figure 3-1. GHG accounting can help financial institutions meet multiple business goals



The level of detail in the assessment of insurance-associated emissions can inform how well the resulting GHG inventory can support the business goals pursued by the reporting re/insurer. For example, if a re/insurer wishes to use the inventory to manage risk, it may consider measuring and recording sector-level insurance-associated emissions to identify the carbon-intensive industries in its underwriting portfolios. Other re/insurers may want to structure their inventories in a way that helps them track their insurance-associated emissions reduction goals, where relevant, year over year. Ultimately, what is captured in the inventory should serve the appropriate business goals, which are determined by each re/insurer independently.

BUSINESS GOAL 1: CREATE TRANSPARENCY FOR STAKEHOLDERS

Re/insurers wishing to be more transparent about their climate impact can use GHG accounting to measure and report the insurance-associated emissions associated with their underwriting activities. In response to demand and the consensus that climate change poses a considerable threat to the global economy, the Financial Stability Board (FSB) launched the industry-led Task Force on Climate-related Financial Disclosures (TCFD) in 2015. The TCFD framework[15] has expanded since its recommendations were launched in 2017 to provide further guidance on how companies may report their climate-related risks and opportunities. At the time of the publication of this Standard, TCFD-recommended disclosures are mostly voluntary. In certain jurisdictions they have become mandatory. However, with strong backing from central banks, the Supervisors' Network for Greening the Financial System (NGFS), and the industry itself, companies will likely be faced with new regulatory requirements with respect to transparency.

For re/insurers, a key facet of TCFD disclosure relates to their underwriting activities. This is recognised by the Carbon Disclosure Project (CDP), which – in aligning with the TCFD framework – adapted its 2020 climate questionnaire for the financial sector to include a section on the reporting of scope 3 category 15 (Investment) emissions. This also includes re/insurance companies in their capacity as asset managers. As discussed in Chapter 2, insurance-associated emissions should therefore be reported as a supplementary note to scope 3 category 15 (Investment) emissions for accounting purposes. They should not be aggregated with financed emissions.

Another emerging disclosure framework is the Exposure Draft of IFRS S2 on Climate-related Disclosures (Climate Exposure Draft) of the International Sustainability Standards Board (ISSB).[16]

Creating transparency for internal stakeholders can also be a business goal pursued by re/insurers. Carrying out an assessment of insurance-associated emissions gives a re/insurer's board and senior management a better picture of their organization's impact on the climate. By measuring and disclosing insurance-associated emissions and thereby creating opportunities for climate disclosure, re/insurers can define their own role and also that of the industry more broadly in combatting climate change.

BUSINESS GOAL 2: MANAGE CLIMATE-RELATED TRANSITION RISKS

Increasingly, re/insurers are building an understanding of the exposure of their underwriting portfolios to risks posed by climate-related policies and regulations. GHG accounting helps these institutions independently identify areas of their underwriting activities that fall under carbon-intensive sectors. Such underwriting activities could be impacted in the future, for example, by the introduction of carbon prices and policies and regulations that are aimed at reducing emissions.

Re/insurers that do not report their climate-related risks could potentially face reputational risk, especially if peers are increasingly doing so. Measuring and disclosing insurance-associated emissions is a way for re/insurers to further manage their climate-related reputational risk.

15 (TCFD, 2017), Publications | Task Force on Climate-Related Financial Disclosures (fsb-tcfd.org)

16 More information can be found at: IFRS - Climate-related Disclosures

BUSINESS GOAL 3: DEVELOP CLIMATE-FRIENDLY INSURANCE PRODUCTS

The TCFD framework includes a recommendation for disclosure related to business opportunities associated with the transition to a low-emission economy.[17] According to the framework, opportunities are categorised as resource efficiency, energy source, products and services, markets, and resilience. For re/insurers, opportunities exist in each category, especially relating to sustainable insurance products.

With the transition to a low-emission economy, re/insurers can independently develop innovative products and services that enable their clients to decarbonise their business activities. By measuring insurance-associated emissions and using the intensity metrics listed in Table 6-1, re/insurers can see which sectors and businesses in their own portfolios require the most help in their decarbonization efforts and independently determine how best to support them in their transition.

BUSINESS GOAL 4: ENSURING RE/INSURANCE UNDERWRITING PORTFOLIOS ARE COMPATIBLE WITH THE CLIMATE TARGETS

It is up to every re/insurer individually to ultimately determine, on an independent basis, what targets and transition pathways are suitable, if any, for their business strategy, taking into account jurisdictionally specific regulatory and legal requirements and other potential constraints.

To achieve any decarbonization goal with respect to their underwriting portfolios, including but not limited to alignment with the Paris Agreement, a methodology for measuring insurance-associated emissions is required. PCAF has been established to focus solely on GHG accounting of financial and underwriting portfolios. By undertaking GHG accounting, re/insurers are equipped with a metric that can help track absolute emissions year over year.

The existing PCAF Financed Emissions Standard aligns with the Science Based Targets initiative's (SBTi) framework for setting science-based emission reduction targets. Specific SBTi target-setting guidance for re/insurance underwriting is still to be developed.

17 (TCFD, 2017)

4. Principles and requirements of GHG accounting for re/insurers

Building on the GHG accounting principles from the GHG Protocol, PCAF has developed additional overarching requirements to guide accounting and reporting for insurance-associated emissions.

4.1 GHG accounting requirements derived from the GHG Protocol's principles

Like financial accounting and reporting, GHG accounting and reporting follow generally accepted principles to ensure that an organisation's disclosure represents an accurate, verifiable and fair account of its GHG emissions. The core principles of GHG accounting are set out in the "GHG Protocol Corporate Accounting and Reporting Standard"[18] and the GHG Protocol "Corporate Value Chain (Scope 3) Accounting and Reporting Standard".[19] The GHG Protocol's five core principles are completeness, consistency, relevance, accuracy, and transparency. This Standard follows these five core principles and provides five additional requirements for the application of these principles that are directly relevant for re/insurers wishing to assess their insurance-associated emissions (see Figure 4-1).

18 (WRI and WBCSD, 2004)
19 (WRI and WBCSD, 2011)

Figure 4-1. Additional PCAF requirements of GHG accounting and reporting are derived from the GHG Protocol's five principles

GHG Protocol principles for scope 3 inventories[20]	Additional PCAF requirements for insurance-associated emissions
Completeness Account for and report on all GHG emission sources and activities within the inventory boundary. Disclose and justify any specific exclusions.	**Recognition** Re/insurance companies shall account for their insurance-associated emissions separately under scope 3 category 15,[21] [22] as defined by the GHG Protocol "Corporate Value Chain (Scope 3) Accounting and Reporting Standard". Any limitations or restrictions shall be disclosed.
Consistency Use consistent methodologies to allow for meaningful performance tracking of emissions over time. Transparently document any changes to the data, inventory boundary, methods or any other relevant factors in the time series.	**Measurement** Re/insurance companies shall measure and report their insurance-associated emissions for specific insurance products and specific segments by "following the risk" and considering the PCAF methodologies and guidance provided in this Standard. If data availability and methodologies allow, avoided and removed emissions can also be measured and reported.
Relevance Ensure the GHG inventory appropriately reflects the GHG emissions of the company and serves the decision-making needs of users — both internal and external to the company. An important aspect of relevance is the selection of an appropriate inventory boundary that reflects the substance and economic reality of the company's business relationships.	**Attribution** The re/insurer's share of insurance-associated emissions of the insured risk shall be proportional to the absolute emissions of the customer or asset.
Accuracy Ensure that the quantification of GHG emissions is systematically neither over nor under actual emissions, as far as can be judged, and that uncertainties are reduced as far as practicable. Achieve sufficient accuracy to enable users to make decisions with reasonable confidence as to the integrity of the reported information.	**Data quality** Re/insurers shall use high-quality data where available for specific insurance products and the underlying assets/companies and shall improve the quality of the data over time. Where necessary or appropriate, re/insurers may use approximative key performance indicators (KPIs) which best reflect emissions.
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.	**Disclosure** Public disclosure of the results of the PCAF assessment is for external stakeholders, as well as re/insurance companies using the methodology to have a clear, comparable view on how insured risks contribute to the Paris climate goals.

20 More information can be found at: https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf, p.7

21 Category 15 of the "Technical Guidance for Calculating Scope 3 Emissions" does not explicitly refer to underwriting activities of re/insurers. It solely focuses on "investments" and providing such "financial services" and "client services". I.e., the reporting of any kind of insurance-associated emissions is considered to be a voluntary broadening of the interpretation of the Technical Guidance due to the re/insurer's own ambitions and goals.

22 As described, the reported figures in the context of insurance-associated emissions might, however, not be at all comparable with emissions being reported for the re-/insurer's own or financed emissions. Any voluntary reporting might depend on the further specifics to be defined.

4.2 Additional requirements for accounting and reporting insurance-associated emissions

This chapter describes the additional requirements for GHG accounting for re/insurers' underwriting portfolios, and how these requirements guide accounting for and reporting of insurance-associated emissions. Thereafter, Chapter 5 includes details for measuring and accounting insurance-associated emissions, and Chapter 6 includes requirements and recommendations on reporting.

RECOGNITION

Re/insurers shall account for emissions that are associated with their insurance contracts where material and where data is available. They shall be reported separately under scope 3 Category 15,[23] [24] as defined by the "GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard". They shall be measured and reported as a supplementary accounting note and shall not be aggregated with financed emissions. Any limitations or restrictions shall be explained and disclosed. However, they do have the flexibility to decide where they want to start with measuring and disclosing their insurance-associated emissions—for instance, at a specific line of business level or by sector.

The core difference between financed and insurance-associated emissions is the nature of the relationship of the financial institution with the client.[25] For additional information on the relationship between insurers and the insured, please see Box 4-1.

Re/insurance customers have a vital need for re/insurance for their businesses, and this creates leverage for re/insurance companies in discussing GHG emissions with such customers. The lack of ownership or direct control over the client activity is a key differentiation that impacts the approaches that an individual re/insurer may take when engaging clients and supporting their actions to reduce emissions.

The differences between insurance-associated emissions and financed emissions require distinct methodologies for accounting them, and thus also separate reporting.

23 Category 15 of the "Technical Guidance for Calculating Scope 3 Emissions" does not explicitly refer to underwriting activities of re/insurers. It solely focuses on "investments" and providing such "financial services" and "client services". I.e., the reporting of any kind of insurance-associated emissions is considered to be a voluntary broadening of the interpretation of the Technical Guidance due to the re/insurer's own ambitions and goals.

24 As described, the reported figures in the context of insurance-associated emissions might, however, not be at all comparable with emissions being reported for the re-/insurer's own or financed emissions. Any voluntary reporting might depend on the further specifics to be defined.

25 Credit re/insurers might have comparable rights under specific constellations (e.g., default of corporate loan, which is insured by the re/insurer). That's why credit re/insurance might be considered differently (see also Table 5-1).

Box 4-1. The relationship between re/insurers and the insureds

Living life and running businesses involves risks. To mitigate these risks, individuals and companies buy insurance. They transfer a portion of the risk they face to insurers and pay a premium. When the insured event occurs, the insurer pays out as defined in the terms and conditions of the insurance policy. Insurers then too buy insurance (reinsurance) to transfer part of the risks on their balance sheet to reinsurers.

Several characteristics differentiate the relationship between re/insurers and their insurance clients from the relationship between investors/banks and their clients, including the following:

- Claims payments can be characterised as a money flow. However, re/insurance proceeds are not an investment or loan, as the right to proceeds is contingent on the occurrence of a re/insured event. While a re/insurance policy can and does support economic expansion and growth, the specific claims payments (the money) are intended for recovery, and not expansion or enrichment.
- The re/insurance contract relationship creates no ownership or transfer of equity/loan and results in no financial or direct operational control. Re/insurance contracts represent an expression of commitment and trust – that is, the re/insurer will provide the agreed coverage should the terms of the re/insurance contract be fulfilled. While this coverage is often financial, it may also include services such as legal, security, and claims remediation in the case of, for example, environmental and cyber claims.
- A re/insurer/insured relationship is also formed differently than the relationship between an investor/investee. That is, investors choose the client in which to make an investment. The client ultimately chooses the re/insurer, often introduced through an intermediary such as a broker/agent.
- The length of the contractual relationship for most P&C re/insurance lines is usually one year.

Re/insurers are enablers in the sense that they have the opportunity to directly or indirectly influence or support another actor's capacity to operate/perform/own/dispose of a certain economic activity or product/good or service. The actions that a re/insurer may take to possibly influence or support another actor, are subject to different variants specific to each situation/transaction, including, but not limited to, business and legal considerations. For example, if the provision of insurance for certain LoB is mandatory in a given jurisdiction, an insurer may only be able to engage with a client but not change anything about the provision of cover which is set by law. In this case, the actions a re/insurer can take are relatively limited.

Moreover, several private companies and government activities can be characterised as enablers. For example, in the motor vehicle value chain enabling actors could be the following: the state agencies, motor vehicles manufacturers, lending institutions, re/insurance companies, dealers, maintenance services, gas stations, or repairers. All are players in the motor value chain. Also, within the insurance industry, several actors can potentially have influence, depending on their involvement in each situation/transaction, including primary insurers, reinsurers and brokers.

MEASUREMENT

A key tenet for GHG accounting of financial assets is the “follow the money” principle. It means that the money should be followed as far as possible to understand and account for the climate impact that financial assets have in the real economy. Due to the different nature of the relationship with the client in re/insurance underwriting (see section on “Recognition”), PCAF refers to the “follow the risk” rather than “follow the money” principle in the case of insurance-associated emissions.

The “follow the risk” principle implies looking at the insured whose risk is transferred to the re/insurance industry. The “follow the risk” principle looks at the risk transfer, while the “follow the money” principle applicable to financed emissions looks at money flows. In case of “follow the risk”, the entity whose emissions are in focus typically is the insured. The insured party is not necessarily the one receiving the insurance payout. In the case of third-party liability, for instance, the insurance recoverable ultimately serves to indemnify the third party that has been damaged by the policyholder.

Re/insurers that intend to conform to this Standard shall measure and report their insurance-associated emissions using the methodologies set out in this Standard, covering the seven GHGs required under the Kyoto Protocol. As a minimum, absolute GHG insurance-associated emissions resulting from underwriting activities (scope 3 category 15 emissions) in the reporting year shall be measured and reported as a supplementary accounting note and shall not be aggregated with financed emissions. In addition, and when relevant, emission removals and avoided emissions may be measured and shall be reported separately. Absent specific guidance in the first version of this Standard on both emission removals and avoided emissions, re/insurers shall disclose separately the methodological formula adopted in calculating emissions removed or avoided in accordance with the guidance in Chapter 6.

As a basis for reporting emissions, re/insurers shall choose a fixed point in time to determine their underwriting positions and calculate an attribution factor. This point in time could be, for instance, the last day of their fiscal year (e.g., June 30 or December 31). The GHG accounting period shall align with the financial accounting period.

ATTRIBUTION

Assessing the attribution for financed emissions of commercial clients is relatively straightforward because the total capital of a company is known from the liability side of company’s balance sheet. Conversely, this is more difficult for the re/insurance industry when assessing the attribution of GHG emissions of both firms and households/individual customers.

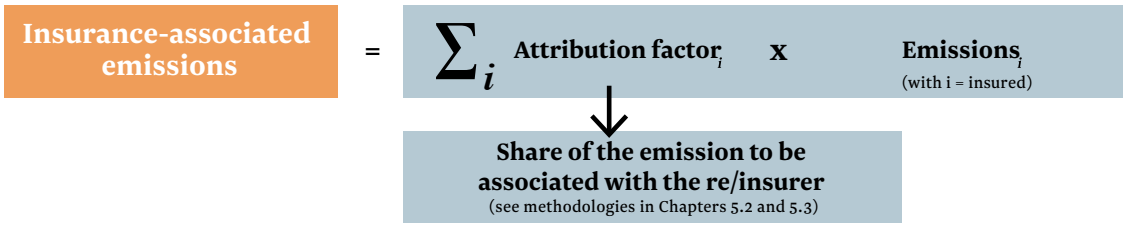
The "GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard" provides guidance for GHG emissions from loans and investments. They should be allocated to the reporting financial institutions based on the proportional share of lending or investment in the borrower or investee.[26] A similar logic should be applied to insurance-associated emissions, amended to reflect the distinct relationship between a re/insurer and their customer.

26 (WRI and WBCSD, 2011)

The methodologies presented in this Standard apply the same general logic across in-scope LoBs (Figure 4-2):

- Insurance-associated emissions are always calculated by multiplying an attribution factor (specific to the respective re/insurance LoB/segment) by the absolute GHG scope 1 and 2 emissions of the re/insured client or asset (and scope 3 emissions, where significant and where data allows in accordance with the guidance in Chapter 5).
- The attribution factor serves to determine the share of the absolute emissions of the insured customer or asset associated with the re/insurance underwriting portfolio.
  In addition, the Working Group has defined five guiding principles for an adequate methodology for insurance-associated emissions: robustness and high level of independence, proportionality, comparability, feasibility and reasonableness, and materiality (see Annex 4).

Figure 4-2. The general approach to calculate insurance-associated emissions



Attribution is based on annual GHG emissions of the primary re/insurance clients. As a result, GHG insurance-associated emissions are reported on an annual basis at least. Additional insurance segments-specific information on attribution can be found in Chapter 5.

Box 4-2. Insurance-associated emissions and double counting

Double counting, which occurs when GHG emissions are counted more than once in the inventory of insurance-associated emissions of one or more insurance companies, should be avoided as much as possible. Double counting of insurance-associated emissions can occur due to several reasons:

- **Double counting between insurance and asset management activities**
  Insurance companies perform both underwriting and asset management activities. Both insurance-associated and financed emissions are a form of virtual accounting for real economy GHG emissions. They offer a different view on the cube of "real" GHG emissions (see Figure 5-1). When investing in and insuring the same company, the emissions of this company are double counted by the insurance company. This can be avoided by separately reporting financed emissions for investments and insurance-associated emissions for insurance underwriting
- **Double counting across emission scopes**
  Insurers may offer cover to several companies along a value chain. This can lead to double counting of the insured's emissions within the insurance-associated emissions. This effect can be limited by reporting insured' scope 3 emissions separately from scope 1 and 2 emissions of insured clients as required by this Standard. However, there may still be double counting with respect to scope 1 and 2 of insured clients when insuring both power-generating companies and their clients.
- **Double counting between different insurers of the same client or between the primary insurers and reinsurers**
  As certain risks are too large to be borne by an individual re/insurer, these risks can be spread in a complex risk-sharing system comprising many players, including insurance, reinsurance ("insurance of an insurance policy/portfolio"), and retrocession ("reinsurance of a reinsurance policy/portfolio"). The consequent risk of double counting of emissions between those players could be addressed by reporting net insurance-associated emissions (i.e., calculated based on net re/insurance premium).

Double counting is a frequent and inherent aspect of GHG accounting. It does not need to be seen problematic, if:

- double counting does not interfere with stated decarbonization goals of getting a clear view on where portfolios are connected to their customer's and investee's emissions; and
- methodologies and limitations are stated transparently as part of the disclosure.

PCAF's objective will not be to eradicate double counting and to create a global balance sheet of absolute GHG emissions. The ambition will be, to minimise double counting concerns where they impact stated principles and the delivery of a transparent and consistent approach to track and report insurance-associated emissions and their changes over time. Re/insurance companies using the methodologies of this Standard will be subject to the same exposure to double counting and will not be more significantly affected than others.

Figure 4-3. Illustrative view of GHG emissions

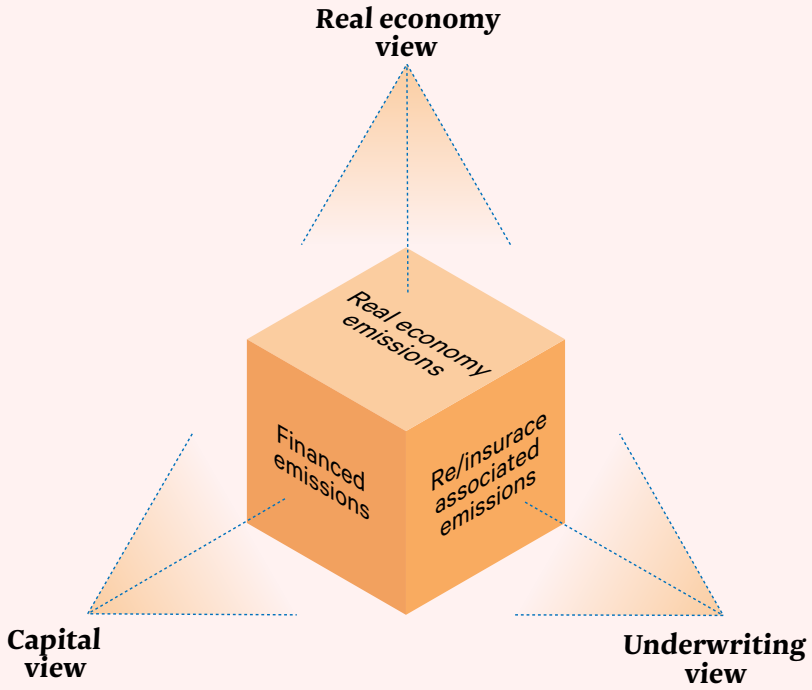


Illustration not drawn to scale

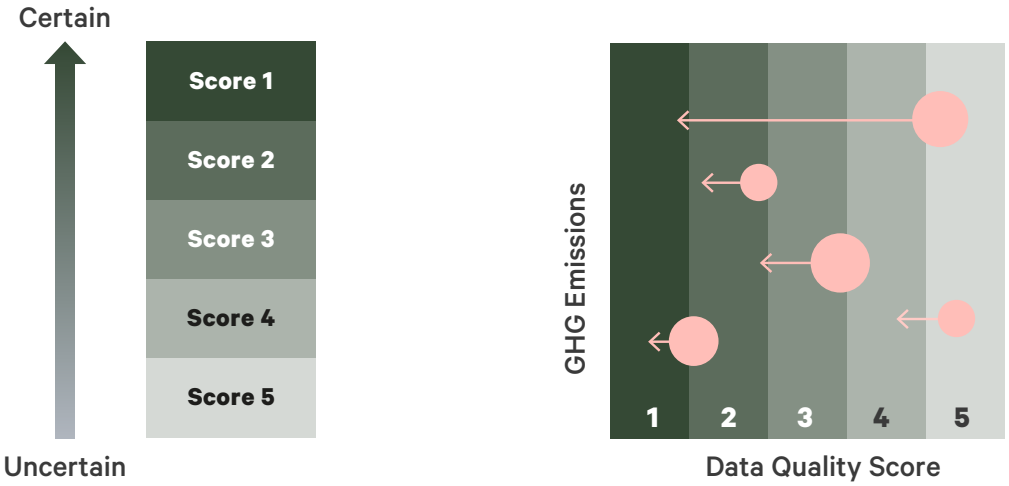
DATA QUALITY

Re/insurers shall ensure their GHG accounting appropriately reflects the GHG emissions associated with their underwriting portfolios. To safeguard these outcomes, re/insurers shall use the highest-quality data that is reasonably available for each LoB for calculations, and, where relevant, improve the quality of the data over time. PCAF recognises that high-quality data can be difficult to obtain when calculating insurance-associated emissions, particularly for certain insureds, LoB or insured activities. However, data limitations should not deter re/insurers from taking the first steps toward preparing their inventories. Even estimated or proxy data can help them identify GHG-intensive hotspots in their portfolios, which in turn can help to determine their climate strategies. Where data quality is low, re/insurers can design approaches to improve it over time.

For measuring insurance-associated emissions in each line of business, various data inputs are needed to calculate the re/insurer's attribution factor and the client's total emissions. The data needed to calculate an attribution factor can typically come from the re/insurer and its clients, although the data required to calculate the client's emissions might not be readily available and must be sought out by the re/insurer. For emissions associated with commercial lines portfolios, a simple template has been created for the purpose of capturing at source the core data required by re/insurers for calculating emissions associated with commercial lines portfolios (see Appendix 5). The quality of this data can vary depending on assumptions relating to its assuredness, specificity, and other variables.

High-quality data is often not available to the re/insurer for all insureds, LoB and coverage types. In these instances, the re/insurer should use the best available data reasonably available in accordance with the data hierarchy shown in Figure 4-4.

Figure 4-4. General data quality scorecard



PCAF recognises that there is often a lag between financial reporting and required data becoming available, such as emissions data for an insured client. In these instances, re/insurers should use the most recent data available, even if it represents different years. For example, it would be expected and appropriate that a re/insurer's reporting in 2022 for its 2021 financial year would use 2021 financial data alongside 2020 (or other most recent) emissions data.

Also where an insurer has entered joint ventures with other entities in which it does not have a controlling stake, it might be not possible to acquire sufficiently granular customer information. Insurers should strive to also account for their share of joint venture business. However, where their stake is less than 50% and they are not able to access the required information to calculate attribution factors, they are also not able nor required to report emissions.

Data quality is specific to each line of business. More information on issues related to data quality and how to employ the hierarchy for each line of business can be found in Chapter 5 and in Annex 2.

DISCLOSURE

The public disclosure of aggregated absolute insurance-associated emissions is important for external stakeholders and re/insurers using the methodology to have an analogous view of the climate impact of re/insurers. To this end, re/insurers that intend to conform to the Standard shall report aggregated absolute insurance-associated emissions. To support their disclosures, re/insurers shall follow the requirements and recommendations listed in Chapter 6 on how to report information relating to methodology, calculations, timeframes and data quality (as scored using the hierarchies provided in Chapter 5).

5. Methodology to measure insurance-associated emissions

This chapter describes the methods to calculate insurance-associated emissions for two segments:

Commercial lines

Personal motor lines

Each segment has its own section covering methodology including guidance on the following elements:

- Emission scopes covered
- Attribution of emissions
- Formulas to calculate insurance-associated emissions
- Data required
- Limitations

This is an initial list of segments covered by PCAF. The initiative intends to both update the methodologies over time and add additional ones. Developing an accurate, comparable, feasible and broad-based standard covering numerous segments will be an iterative process.

5.1 General considerations

This Standard defines attribution factors that reflect an adequate share of emissions for insurance. It is calculated based on data that is readily available, such as premiums and the costs/revenues of a company or a specific insured asset. The approaches for commercial and personal motor insurance portfolios are based on a conceptually similar idea: the attribution factor is determined based on the importance of insurance as production factor for the insured asset or company. However, this does not mean the two approaches deliver comparable absolute values and hence, the emissions for commercial lines and personal motor should be reported separately. For commercial portfolios, the ratio of premiums and revenues of a company is used to determine attribution. For motor, the attribution is calculated based on the share of insurance in the total cost of ownership of running a vehicle.

There are several other approaches to define meaningful attribution factors for re/insurance which have been discussed in the Working Group (see also the Progress Report for full details).[27]

If an insurance cover is mandatory, it could be argued that all emissions of a company or an asset need to be allocated to the insurer, because a company could not operate without the insurance cover. Problems could arise, for example, in circumstances where a company needs to take out multiple mandatory insurance covers. In addition to mandatory coverage, other prerequisites for the activity often need to be fulfilled. For example, for vehicles not only insurance is required to drive the car, but also the vehicle's registration or fuel. Ultimately, there can be multiple contributors that enable the activity to take place. The adequate shares of all contributors must therefore be considered.

27 More information can be found at: https://carbonaccountingfinancials.com/files/2022-07/2207-insurancestandard-03.pdf?899cf30b3c.pdf

Another option for an adequate attribution factor could be to allocate emissions of a company or a household/individual according to the structure of its total cost of risk (i.e., measures to avoid, mitigate, retain or insure various risks). This option is not practical, particularly for households/individuals, due to lack of data. It would show that only a fraction of emissions of a company, household/individual, or an asset would be allocated to an insurance company or the whole insurance industry.

Figure 5-1: Total cost of risk of a company

Source: Swiss Re Institute sigma No 05/2012

Another option is that a company's balance sheet could be expanded to include the additional equity or debt that theoretically would be required to substitute for the insurance products purchased. Based on this calculation, the insurer's share of a company's emissions could be calculated in the same way as financed emissions. The share of debt and equity holder's financed emissions would be reduced respectively, while the insurer will take its fraction of the company's financed emissions. While this approach would be consistent with the approach for financed emissions it is not feasible to implement.

Most of these theoretical reflections, though not feasible to be implemented, show that it is adequate that only a fraction of total emissions are allocated to the insurance sector. This is also reflected by the approaches defined. For example, as global commercial insurance premiums account for an estimated 0.5% of global gross revenues of all economic sectors,[28] this share of emissions would roughly be allocated to the insurance sector. However, the importance of personal motor insurance versus the total cost of ownership for a vehicle is higher, in the range of 10% to 26% globally.[29]

28 Based on Swiss Re sigma and Oxford Economics data.
29 Based on PCAF research.

SCOPE OF THIS STANDARD

The re/insurance industry can be classified by the LoB that provide coverage for the different risks a customer faces and needs to seek protection against.

The focus is on commercial lines insurance (i.e., all types of insurance purchased by companies) and personal motor insurance (the insurance of vehicles purchased by private individuals or households).

Insurance contracts purchased by public entities (e.g., government agencies, municipalities, etc.) are not in scope for this version of the Standard. While the products purchased by those entities are broadly identical to products available to business entities, defining the boundaries for the emissions to be associated for public entities requires additional methodological work. These will be covered in future versions of the Standard, potentially leveraging ongoing work for financed emissions from sovereign bonds.

For the time being, this Standard does not consider other personal lines (e.g., homeowner insurance), any life or health insurance (including corporate life and pensions) and personal accident. The approach for commercial insurance portfolios shall be applied to facultative reinsurance. However, this Standard does not cover treaty reinsurance and other treaty-like reinsurance programs in commercial lines and personal motor (e.g., facultative-obligatory treaties, facultative facilities), mostly due to data availability constraints, but the box below presents initial thoughts.

Box 5-1. Why is treaty reinsurance excluded from the first version of the Standard?

Facultative reinsurance contracts typically cover a single risk or block of risks of one insured entity or company. Facultative covers therefore have similar characteristics as direct insurance policies and hence fall into the scope of this Standard. This does not apply to reinsurance treaties. These can take many forms and structures, but typically provide cover for contractually defined risks associated with a portfolio of business within a specific class of insurance assumed by insurers and ceded to reinsurers in bulk. For reinsurance treaties which follow a per-risk approach (the risk typically being the original insured asset or company rather than a specific peril), a bottom-up calculation of the attribution factor is (theoretically) still feasible. However, the required data to calculate insurance-associated emissions is in practice not available to the reinsurer. The situation is even more complex for event or aggregate-cover treaties, where a bottom-up calculation is not possible, not even theoretically.

The second version of the Standard aims to address the issue of data availability and consistency across the entire re/insurance value chain, and define an attribution methodology for reinsurance associated with treaty reinsurance aligned with PCAF principles.

A sub-working group continuing the work on this important topic has already been established.

Table 5-1 provides a more detailed list of the types of insurance covered. Chapters 5.2 and 5.3 present the methodologies for commercial lines and personal motor insurance.

Table 5-1. Business segments and lines of business covered by this Standard. This list may look different for each re/insurance company.

Segment	LoB	Covered in
Commercial insurance (directly insured and facultative reinsurance covers)	• **Property** (e.g., fire, multi-peril)	5.2 Emissions associated with commercial lines portfolios
	• **Liability/Casualty** (e.g., General Liability, Product Liability, Product Recall, Environmental Liability)	5.2 Emissions associated with commercial lines portfolios
	Commercial motor (all lines)	5.2 Emissions associated with commercial lines portfolios
	Marine (liability and hull)	5.2 Emissions associated with commercial lines portfolios
	Aviation (liability and hull)	5.2 Emissions associated with commercial lines portfolios
	Agriculture (excluding government schemes, arrangements)	5.2 Emissions associated with commercial lines portfolios
	Trade credit (insurance of credit risk for sold goods) **and political risk –** primary insurance only[30]	5.2 Emissions associated with commercial lines portfolios
	Structured trade credit (insurance of credit risk for bank loans, mortgages, or other financial instruments)	Out of scope of current version of the Standard[31]
	Surety	Out of scope of current version of the Standard[32]
	Engineering lines: Construction all-risk, erection all-risk only	Out of scope of current version of the Standard[33]
	All other engineering lines (e.g., machinery breakdown and electronic equipment)	5.2 Emissions associated with commercial lines portfolios

to be continued on next page >

30 For the facultative reinsurer, look-through information on the original insured usually not available.

31 Out of scope of current version of the Standard, due to direct link to products covered under Financed Emissions Standard. As outlined in Chapter 4.2 credit re/insurers might have comparable rights to financing institutions under specific constellations. That's why credit & surety re/insurance might be considered differently.

32 Out of scope of current version of the Standard, as 3-way relationship is materially different to other P&C products covered. As outlined in Chapter 4.2 credit re/insurers might have comparable rights to financing institutions under specific constellations. That's why credit & surety re/insurance might be considered differently.

33 Out of scope of current version of the Standard. Reasoning includes that those covers are very project-specific. They cover projects which emit GHG emissions over their entire life-cycle. Data on these life-cycle emissions are most of the time not available. In addition, construction covers may be characterized by a non-linear development of the exposures over the years that further complicate the relevant allocation of emissions. Additional guidance can be expected in future versions of this Standard.

Segment	LoB	Covered in
Commercial insurance (directly insured and facultative reinsurance covers)	**Corporate life and pensions, personal accident**	Out of scope of current version of the Standard
	Other/Special lines (e.g., Financial Lines [e.g., Professional Indemnity, D&O], workers compensation)	5.2 Emissions associated with commercial lines portfolios
Statutory lines of business		5.2 Emissions associated with commercial lines portfolios
Public entities	**Insurance contracts purchased by public entities** (e.g., government agencies, municipalities, etc.)	Out of scope of current version of the Standard
Personal lines	**Motor** (all lines)	5.3 Emissions associated with personal motor portfolios
	Liability	Out of scope of current version of the Standard
	Property	Out of scope of current version of the Standard
	Other/Special lines (e.g., Travel assistance, legal assistance, pet)	Out of scope of current version of the Standard
	Life and Health	Out of scope of current version of the Standard
Treaty reinsurance (incl. treaty-like facultative reinsurance structures)	**All LoBs**	Out of scope of current version of the Standard

5.2 Emissions associated with commercial lines portfolios

Please refer to the Important Note on page 3, especially with respect to solicitation of commentary and that the use of the proposed methodology is subject to the laws, rules and regulations applicable to each reporting re/insurance company.

EMISSION SCOPES COVERED

While the ability for a customer to engage in a specific business activity is limited without risk protection cover, PCAF acknowledges that re/insurers are not in a position to directly influence their customers' emissions. However, re/insurers may be able to engage with customers to better understand their plans to reduce their scope 1, 2, and 3 emissions and overall GHG intensities over time, in line with applicable government policies as per jurisdiction.

Re/insurers shall take into account customers' absolute scope 1 and scope 2 emissions across all sectors, and should also take into account absolute scope 3 emissions to the extent that such numbers are available and represent reasonable and verifiable estimates.

If re/insurers do not report customers' scope 3 emissions, PCAF recommends that they explain why.

Further recommendations on how customers' scope 1, 2, and 3 emissions should be reported within insurance-associated emissions are provided in Chapter 6.

Box 5-2. PCAF acknowledges significant limitations around scope 3 emissions

PCAF acknowledges that, to date, there are significant limitations around the provision of data. In particular, the comparability, coverage, transparency, and reliability of scope 3 data varies greatly per sector and data source. Furthermore, scope 3 data will be collected by a mixture of sources that vary per re/insurer. The basis of collating, processing and publishing these figures will also vary by re/insurer, and methodologies must be developed in a way that best suits the internal capabilities of each re/insurer. PCAF also recognises that each re/insurer needs to independently determine a timetable by which to appropriately consider their customers' scope 3 emissions across different sectors within insurance-associated emissions, in accordance with guiding principles, applicable legislation, and reporting standards.

PCAF also recognises that re/insurers have different compositions of customers and LoBs within their underwriting portfolios and that they may provide coverage across the value chain. Therefore, by recommending the inclusion of customers' scope 3 emissions at this time, PCAF may inadvertently intensify the issue of double-counting emissions. Equally mono-line insurers are unlikely to be in a position to influence a reduction directly or indirectly in customers' scope 3 emissions.

PCAF recognises that the task of reporting all customers' emissions represents a long-term challenge which is reliant on increasing customer engagements and disclosure. This task is intended to support the development by each individual re/insurer of a set of meaningful and appropriate strategies which will support the measurement of insurance-associated

emissions over time. Such measurements and reductions should in turn reflect the best-quality data available. The expectation is that with improved data capture and comparability, the measurements too will improve over time.

PCAF supports efforts by re/insurers to improve the levels of data capture and integrity of customers' emissions over time, with the objective of increasing the level of consistency, quality and comparability throughout the industry. In alignment with the GHG Protocol, PCAF does not set a threshold above which scope 3 emissions should be included. Instead, reporting companies should develop and disclose their own significance scope 3 threshold based on their business goals. Environmentally extended input-output (EEIO) data can be used to quickly estimate the relative size of scope 3 emissions compared to scope 1 and scope 2 emissions for any sector.

ATTRIBUTION OF EMISSIONS

For commercial portfolios, the re/insurer accounts for a portion of the annual emissions of the customer. This portion is determined by the ratio between re/insurance premium for that customer (numerator) and revenues generated by the customer (denominator). This ratio is called the attribution factor.

Insurance products may offer cover for specific activities, locations or projects. Often these account for just a part of a company's emissions, not the overall climate impact of the insured.[34]

For commercial lines, asset based data granularity shall not be used for any accounting and reporting under this version of the Standard. Instead, data at the entity level (parent or subsidiary) shall be used. This requirement is based on major asset specific LoBs (e.g., construction all risk & erection all risk) being out of scope of the current version of the Standard, the chosen commercial attribution factor and the lack of an insurance industry wide definition of the term asset in the context of asset based insurance coverage. These topics will need to be addressed in a future version of the Standard.

In cases where policies cover specific subsidiaries of a company, the insurance-associated emissions can be calculated to account solely for these. However, this may only be done if the relevant revenue and emission data are available at an adequate level of granularity. Data can be available on a reported or estimated basis. The use of estimated data will impact the quality score of the resulting attributed emissions. A mismatch of the organizational scope in the attribution factor and the emissions side of the equation must be avoided. See Table 5-2 on the next page for examples.

34 This is particularly relevant for project-specific insurance such as cover for the construction of a specific asset. For instance, if insuring the construction of a solar power plant by a diversified energy company that also owns fossil generating plants, emissions from those fossil plants would factor into the attribution as well, even though they are not covered by the insurance policy.

Table 5-2. Example of parent and subsidiary companies level coverages

Company	Revenues (USD)	Emissions (t)
Parent A	900m	400m
Subsidiary A1	250m	50m
Subsidiary A2	300m	170m
Subsidiary A3	100m	N/A
Subsidiary A4	N/A	N/A

Examples:

- When insuring Subsidiary A1 and A2 – use reported revenue and emissions data for Subsidiary A1 and A2 respectively.
- When insuring Subsidiary A3 or A4 where subsidiary-specific revenue and emission data is not fully available – use parent-level information for revenue and emissions, or proceed with an estimation of subsidiary emissions to use alongside reported subsidiary revenue. The use of parent-level data and/or estimated emissions data should be properly reflected in the data quality score of the resulting attributed emissions.

Formula to calculate insurance-associated emissions

$$\text{Insurance-associated emissions} = \text{Attribution factor}_i \times \text{Emissions}_i$$

$$Attribution\ factor_i = \frac{Re/Insurance\ premium_i}{Customer\ revenue_i}$$

Definitions:

1. **Re/Insurance premium$_i$ (numerator):** For the purpose of this standard, re/insurance premium is defined as gross written premium (the total amount to be paid by the insured to the re/insurer for the policy written in the period) minus external acquisition costs (e.g., external brokerage fees). For multi-year contracts, an annualised premium value shall be used. Gross premium shall be also used for Fronting Policies.
2. **Customer revenue$_i$ (denominator):** Total amount of income generated by the customer through the sale of goods or services.

Customer revenues are automatically captured as part of the submission process for some LoBs. However, this is not the case for all LoBs, and insurers will need to develop processes to capture this data where missing. As with emissions, using company reported revenue data directly from the client or via a third-party data provider is the preferred approach. However, where clients do not report revenue or it is not reasonable to get access to that data, estimated revenue data based on proxy data such as industry and country or number of employees can also be used. Such estimations can use internally-developed models. Many third-party data providers also offer estimated revenues for a wide range of global companies.

Special considerations are required for statutory products if insurers do not have the option to decline customers (e.g., in some countries this may include compulsory-third party motor/ mandatory third-party liability, workers compensation, environmental liability, and government-based insurance schemes in certain countries). While the attribution factor is applicable to this line as well, it may be reported separately.

Aggregation approach

When insuring commercial clients, insurers are likely to write more than one LoB, or participate on several layers of an insured's re/insurance program. To get to an overall customer view of attributed emissions, the premiums from each contract can be easily aggregated, as outlined in Box 5-3:

Box 5-3. Example for calculating the customer attribution factor in a situation where one re/insurer writes more than one LoB with the same insured

Customer with multiple LoBs[35]

LoB	Re/insurance premium	Revenue	Insurance-associated emissions attribution factor
Third-party liability	50		0.005
Property	100		0.01
Total	**150**	**10,000**	**0.015**

$$Customer\ attribution\ factor = \frac{\frac{Re}{insurance}\,premium_1 + \cdots + \frac{Re}{insurance}\,premium_n}{Revenue}$$

$$= \frac{50\ + 100}{10{,}000}$$

OPTIONS TO CALCULATE INSURANCE-ASSOCIATED EMISSIONS

The insurance-associated emissions from commercial lines portfolios can be calculated in different ways, depending on the availability of the insured's financial and emissions data. Overall, PCAF distinguishes – in line with the financed emissions from listed equity and bonds – three different calculation options depending on the emissions data used:

- **Option 1: reported emissions,** where verified[36] or unverified[37] emissions are collected by the reporting re/insurer from the insured company directly (e.g., company sustainability report) or indirectly via verified third-party data providers (e.g., CDP). These emissions are then allocated to the reporting re/insurer using the attribution factor.
- **Option 2: physical activity-based emissions,** where emissions are estimated by the reporting re/insurer based on primary physical activity data collected from the insured company (e.g., megawatt-hours of natural gas consumed or tons of steel produced). These

35 The figures presented in this example are not representative of an actual attribution factor. The factor can be much smaller as a proportion of revenue.

36 This refers to reported emissions being calculated in line with the GHG Protocol and verified by a third-party auditor.

37 This refers to reported emissions being calculated in line with the GHG Protocol without verification by a third-party auditor.

emissions are then allocated to the reporting re/insurer using the attribution factor. The emissions data should be estimated using an appropriate calculation methodology or tool with verified emission factors expressed per physical activity (e.g., tCO_2e/MWh or tCO_2e/t of steel) issued or approved by a credible independent body.

- **Option 3: economic activity-based emissions,** where emissions are estimated by the reporting re/insurer based on economic activity data collected from the insured company (e.g., euro of revenues or euro of assets). These emissions are then allocated to the reporting re/insurer using the attribution factor. The emissions data should be estimated using official statistical data or acknowledged environmentally extended input-output (EEIO) tables providing region- or sector-specific average emission factors expressed per economic activity[38] (e.g., tCO_2e/€ of revenue or tCO_2e/€ of asset).

DATA REQUIRED

PCAF distinguishes three options to calculate the insurance-associated emissions for commercial lines portfolios, depending on the emissions data used:

- **Option 1:** reported emissions
- **Option 2:** physical activity-based emissions
- **Option 3:** economic activity-based emissions

Options 1 and 2 are based on company-specific reported emissions or primary physical activity data provided by the customer or third-party data providers. Option 3 is based on region- or sector-specific average emissions or financial data, using statistics or data from public sources or third-party providers.

Options 1 and 2 are preferred over Option 3 from a data quality perspective, because they provide more accurate results of insurance-associated emissions. Due to data limitations, re/insurers might use Options 1 or 2 for certain companies and Option 3 for others. The data quality mix shall be reflected in the average data quality score, as Chapter 6 illustrates.

Table 5-3 provides data quality scores for each of the described options and sub-options (if applicable) that can be used to calculate the insurance-associated emissions for commercial lines portfolios.

38 Sampling tests based on actual data on the company level extrapolated to the portfolio level can help to test the accuracy of calculations based on this data from statistics or EEIO tables. This may also be used to refine the data for specific sectors or regions if the reporting financial institution has a strong presence in and specific knowledge of the respective sector or region. National agencies and regional data providers or statistical offices in individual regions may assist reporting re/insurers in various regions in finding regional and more relevant financial or emissions data information.

Table 5-3. General description of the data quality score table for commercial lines insurance (score 1 = highest data quality; score 5 = lowest data quality)

<table>
<tr><th rowspan="3">Data quality</th><th colspan="2" rowspan="3">Options to estimate insurance-associated emissions</th><th colspan="3">When to use each option (what data should be available)</th></tr>
<tr><th rowspan="2">Attribution factor</th><th colspan="2">Emissions</th></tr>
<tr><th>Scope 1</th><th>Scope 2</th></tr>
<tr><td>Score 1</td><td rowspan="3">Option 1: Reported Emissions</td><td>1a</td><td rowspan="4">Re/insurance Premium/Customer Revenue</td><td>Reported - Verified</td><td>Reported Market Based - Verified</td></tr>
<tr><td rowspan="2">Score 2</td><td>1b</td><td>Reported - Unverified</td><td>Reported Market Based - Unverified
Reported Location Based - Unverified
Reported Location Based - Verified</td></tr>
<tr><td rowspan="2">Option 2: Reported or physical activity-based emissions</td><td>2a</td><td colspan="2">Energy Consumption x EF (Intensity per MWh of Electricity)</td></tr>
<tr><td>Score 3</td><td>2b</td><td colspan="2">Production Output x EF (Average Sector Emission Intensity per t of Production [output])</td></tr>
<tr><td>Score 4</td><td rowspan="2">Option 3: Economic-activity based emissions</td><td>3a</td><td>Re/Insurance Premium/Customer Revenue not aligned with insured entities</td><td colspan="2">Reported Emissions/Energy Consumption/ Production Output Data not aligned with insured entities</td></tr>
<tr><td>Score 5</td><td>3b</td><td>Re/insurance Premium/Average Sector Revenue</td><td colspan="2">Average Sector Revenue x EF (Average Sector Emission Intensity per Revenue)</td></tr>
</table>

A detailed summary of the data quality score table, including data needs and formulas to calculate insurance-associated emissions, is provided in Annex 2 (Table 10-1). Data for all three options in Table 5-3 can be derived from different data sources.

Reported emissions (Option 1)

Where available, PCAF recommends Option 1, using emissions data reported by companies in official filings and environmental reports. The most recent available data should be used with mention of data source, reporting period or publication date. PCAF acknowledges that commercial insurance portfolios include listed and non-listed companies, and that availability of reported data can be limited, especially for non-listed clients. PCAF also recognises that emissions data may not be publicly reported at an entity level.

Data providers (Option 1)

For Option 1 (reported emissions), PCAF recommends either collecting emissions from the customer directly (e.g., company sustainability report) or using third-party data providers, including but not limited to CDP, Bloomberg, MSCI, Sustainalytics, S&P/Trucost, and ISS ESG. Data providers typically make scope 1 and 2 emissions data available for larger commercial companies. Scope 3 data may be available through these data providers, but perhaps not for all 15 categories of scope 3 emissions.

Third-party data providers collect emissions data as reported by the companies themselves, either through a standardised framework such as CDP or through a company's own disclosures in official filings and environmental reports. They often have their own methodologies to estimate/calculate companies' emissions, especially if this data is not reported or does not reflect 100% of the emissions boundaries. In cases where data providers estimate emissions themselves, the calculation would be in line with Options 2 or 3, conditional to the methodology used being in line with the GHG Protocol. Re/insurers should ask data providers to be transparent, disclose the calculation method they use, and confirm alignment with the GHG Protocol. This will enable re/insurers to apply the appropriate data quality score to the estimate. PCAF also encourages data providers to apply the PCAF data quality scoring method to their own data, which would allow them to share the data quality scores directly with their clients.

PCAF does not recommend a preferred data provider, but it recommends using data providers that use the standardised CDP framework. PCAF has observed inconsistencies across data providers for company reported scope 1 and 2 emissions. For re/insurers using data providers, PCAF therefore encourages using the same provider for all insured clients, where possible, and using the most recently available data. PCAF also encourages re/insurers to mention the data source, reporting period or publication date of data.

A list of questions to provide guidance when engaging with data providers around methodology and calculation methods is available in Annex 1.

Estimation models (Option 2 and 3)

Not all companies disclose their emissions data in official filings or through data providers. Reporting in emerging markets often lags that of developed markets. To maximise the coverage of emissions data, the remaining gaps are often filled with estimates.

If no data is available, estimation models consistent with the emissions from the primary business activity may be used. Emission factors from production-based models (i.e., emission intensity per physical activity) are preferred over those from revenue-based models (i.e., emission intensity per revenue) because they are less sensitive to exchange rate or commodity price fluctuations. Emission factors from production-based models in line with Option 2 are especially useful for GHG-intensive industries like utilities, materials, energy and industrials. Emission factors from revenue-based models in line with Option 3 (e.g., intensity-based or environmental input-output models) have the advantage of requiring less detailed data from the re/insurer.

For Option 2 (physical activity-based emissions), PCAF recommends using actual energy consumption (e.g., megawatt-hours of natural gas consumed) or production (e.g., tons of steel produced) data reported by companies, given that the data fully covers the company's emissions-generating activities. The emission factors expressed per physical activity used should be based on appropriate and verified calculation methodologies or tools issued or approved by a credible independent institution. Example data sources for retrieving emission factors include but are not

limited to ecoinvent,[39] Defra,[40] the Intergovernmental Panel on Climate Change (IPCC),[41] GEMIS (Global Emissions Model for integrated Systems),[42] and the Food and Agriculture Organization of the United Nations (FAO).[43] Again, the most recently available data should be used, including a mention of the data source, reporting period or publication date.

For Option 3 (economic activity-based emissions), PCAF recommends using official statistical data or acknowledged EEIO tables providing region- or sector-specific average emission factors expressed per economic activity (e.g., tCO_2e/€ of revenue or tCO_2e/€ of asset). Re/insurers should use emission factors as consistently as possible with the primary business activity, in so far as this is known,[44] but in a way that remains feasible given the large size of commercial lines portfolios covering multiple (granular) business activities. For example, for an insurance policy to a paddy rice farmer, the re/insurer should seek to find and use a sector-specific average emission factor for the paddy rice sector, not a general emission factor for the agricultural sector overall. Examples of EEIO databases that can be used to obtain such emission factors are EXIOBASE,[45] the Global Trade Analysis Project (GTAP),[46] or the World Input-Output Database (WIOD).[47] Sector-specific emission factors can also be replaced with values from linear regression models from databases containing company revenue and emissions, by sector and geographical region.

PCAF's web-based emission factor database provides a large set of emission factors for Options 2 and 3. This can help re/insurers get started with estimating the insurance-associated emissions of their commercial lines portfolios.

PCAF expects that the insurance-associated emissions for most commercial lines portfolios can be derived through either reported emissions (Option 1), physical activity data (Option 2), or economic activity data (Option 3). However, it allows the use of alternative options to calculate emissions if none of the three can be used or in the case that new options are developed. The reporting re/insurer shall always explain the reasons for using an alternative option if it deviates from the three options defined above.

Data granularity

PCAF recognises that it can be more challenging to source project-level, asset-level or subsidiary level data compared to parent-company-level data. For Commercial Lines, asset based data granularity shall not be used for any accounting and reporting under this version of the Standard. Instead, data at the entity level shall be used. Emission and revenue data shall always by on the same level (i.e., company or subsidiary level). This requirement is based on major asset specific LoBs, like construction all risk & erection all risk, being out of scope of current version of the Standard, the chosen commercial attribution factor and the lack of an insurance industry wide

39 More information can be found at: https://www.ecoinvent.org
40 More information can be found at: https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2022
41 More information can be found at: https://www.ipcc-nggip.iges.or.jp/EFDB/find_ef.php
42 More information can be found at: https://iinas.org/en/
43 More information can be found at: http://www.fao.org/partnerships/leap/database/ghg-crops/en
44 For business written through a managing general agent, exact splits of sectoral information may not be available. In cases where the sectoral split is not available, re/insurers could resort to proxies such as market averages.
45 More information can be found at: https://www.exiobase.eu
46 More information can be found at: https://www.gtap.agecon.purdue.edu/
47 More information can be found at: http://www.wiod.org

definition of the term asset in the context of asset based insurance coverage. These topics will need to be addressed in a future version of the Standard.

PCAF acknowledges that using data at an entity level (parent or subsidiary) to measure the insurance-associated emissions of specific insured activities, locations, or projects may lead to a less accurate or specific measurement of emissions. In order to reflect this, whenever using parent-company-level data or data related to a higher entity relative to the insured project, asset or subsidiary, the resulting insurance-associated emissions will be assigned a lower quality score. An example of this is using parent company-reported verified emissions data and revenue in order to estimate emissions associated with an insured project or asset: this will be awarded score 4 instead of score 1. Similarly, if company verified emissions and production output is known and used to estimate the emissions associated with the insured asset or project, this will be awarded score 4 instead of score 3.

Quality scoring

PCAF distinguishes three options with six sub-options to calculate the insurance-associated emissions from commercial policies depending on the data used. If a re/insurer uses a mix of options to calculate the emissions of an insured entity (e.g., actual verified emission is known and only an average revenue/proxy is used to calculate attribution factor, which means that Option 1a and Option 3b are mixed), the data score for the lower-rated option should be assumed for this insured (i.e., score 5 from Option 3b).

As scope 1 and 2 emissions will be reported combined, data quality scoring will be applied to both scopes jointly. Data quality scoring will be applied separately to scope 3 emissions data if reported. Since scope 1 and 2 emissions can have different methods of estimation, the combined data quality score to be reported shall be the lowest of the two methods.

LIMITATIONS

Exposure to market volatility

Both re/insurance premium and customer revenue are exposed to volatility due to insurance market cycles and general macroeconomic market movements, which can be decoupled from changes in real world GHG emissions. For example, a surge in energy prices would lead to lower insurance-associated emissions, and an increase in loss activity factored into re/insurance premiums over time could lead to increased insurance-associated emissions, even if neither the insured's emissions nor the provided insurance cover has changed. This could lead to counterintuitive developments of insurance-associated emissions, requiring extra efforts for a re/insurer to understand and appropriately explain those dynamics in their reporting.

Generalised nature of Option 3

One limitation of Option 3 is the generalised nature and necessary assumptions made in applying region- or sector-specific average values, both for emissions and financial data. This makes calculations less robust and more uncertain than those based on client-specific data because the data is largely based on region/sector assumptions and approximation averages. In addition, statistical data or acknowledged EEIO tables for a given region need to be critically mapped to

the sector classification used by the reporting re/insurer, as the sectors may not map one-to-one and may cause emissions to be over- or understated.

Measurement inconsistencies

Inconsistencies can arise from measuring part of the portfolio with customer-specific emissions data (which may encompass scopes 1, 2, and 3) and from measuring another part with region- or sector-specific average emissions data (which often encompasses only scope 1 and 2 emissions). One mitigating factor is that using customer-specific emission data could improve the accuracy of the region- or sector-specific average data, provided that the re/insurer has enough client-specific data points relative to the size of the portfolio in a given sector. For example, if a majority of the clients in an insurer's textile manufacturing property portfolio provide specific emissions data, these averages could be applied (instead of industry-wide sector averages) to the other clients in the sector that do not provide specific emissions data.

5.3 Emissions associated with personal motor portfolios

Please refer to the Important Note on page 3, especially with respect to solicitation of commentary and that the use of the proposed methodology is subject to the laws, rules and regulations applicable to each reporting re/insurance company.

The term "personal motor portfolios" refers to insurance contracts made to reimburse owners of different types of personal motor vehicles in the case the owner incurs losses related to the vehicle.

Insurance companies provide financial protection from potential risks like damages, theft and vandalism, as well as from natural causes such as floods and earthquake. Insurance companies provide this protection for various types of motor vehicles. Therefore, one insurance company may offer coverage to motorcycles and passenger cars, while another may offer cover for trucks and buses.

Re/insurers shall report on all vehicle types within the segment. If specific vehicle types are excluded from reporting, an explanation should be provided. It is the responsibility of each insurer to define the vehicle types that they include in their respective inventories of insurance-associated emissions.

The following lists the vehicle types that may fall under the segment of motor vehicle insurance products. The list is not exhaustive. This segment does not cover any vehicles used for commercial purposes and covered under a commercial insurance policy. Only private-use vehicles are within scope.

- Passenger car
- Motorcycle/Motorbike/Moped
- Passenger van
- Passenger truck
- Motorhome

For assistance in identifying or clarifying this scope within a risk carrier's specific portfolio, Annex 6 provides guidance for a few markets. This shows the defined in-scope vehicle types based on the typical classification of axle number for the US and on the EU classification of vehicle types.

EMISSION SCOPES COVERED

Risk carriers shall calculate and report the insurance-associated emissions of the annual scope 1 and scope 2 emissions of the vehicles being insured:

- Scope 1: Direct emissions from fuel combustion in vehicles
- Scope 2: Indirect emissions from electricity generation consumed in plug-in hybrid vehicles and electric vehicles

ATTRIBUTION OF EMISSIONS

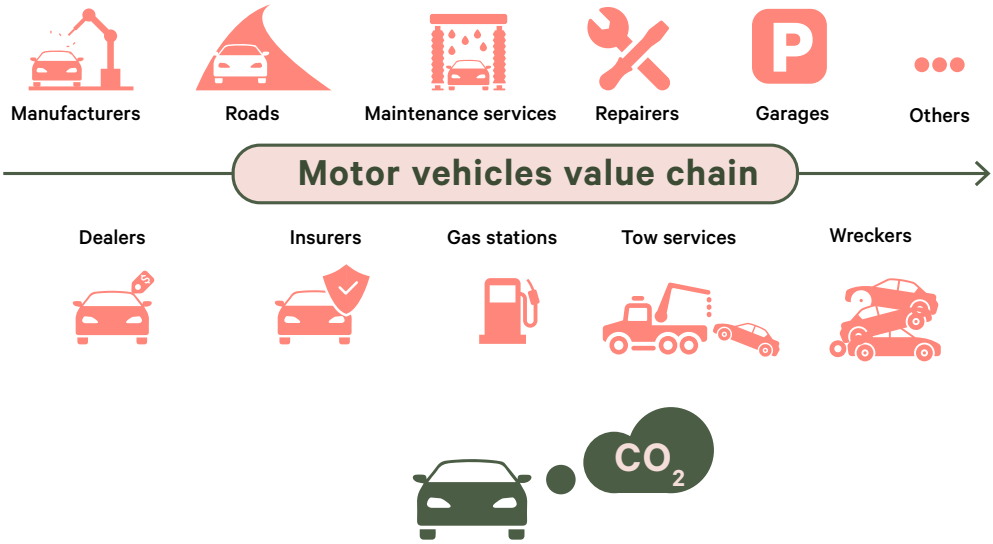
One philosophy behind calculating insurance-associated emissions for personal motor is that of an "enabler". Re/Insurers are not alone in making it possible for vehicles to be on the road, but they are a significant stakeholder. The difference in philosophy compared to financed emissions explains the difference in calculating the attribution factor. Lending institutions (with the philosophy of an "owner") will use the values of the outstanding loan amount divided by the value of the vehicle at origination to calculate the attribution factor. In cortrast, re/insurers need values that relate to the vehicle's use throughout its operational life while being insured.

The "enabler" philosophy is more encompassing than the "follow the risk" principle. By adequately abating the risks for the insured, the insured activities are also enabled—that is, the ability to operate the vehicle. There are other activities of re/insurers which enable the insured client to continue the covered activity, such as risk engineering services, claims services, etc. These are not relevant per se for personal motor and not in-scope in this Standard.

PCAF acknowledges that insurance companies are not alone in this role of enabler. Several private companies' and governments' activities either contribute to the existence and use of each motor vehicle, such as through transportation policies and infrastructure, or government subsidies. Examples of enabling actors include the following: motor vehicles manufacturers, dealers, maintenance services, gas stations and repairers. All are players within the value chain of motor vehicles.

Accounting of GHG emissions associated with insurance activities should therefore entail the usage of a proper attribution factor that associates an appropriate share to re/insurers, while also recognizing the role of the others mentioned. This is related to the economic participation of re/insurance within the entire value chain of motor vehicles (see Figure 5-2).

Figure 5-2: Motor vehicle value chain



This participation is reflected more concretely as the amount of premium paid by a vehicle owner as compared to all other costs associated with owning that vehicle. The most commonly cited elements for vehicle total cost of ownership include:

- Vehicle depreciation costs – the car owner, manufacturers and dealers may be represented by these costs
- Fuel costs – gas stations may be represented by these costs
- Maintenance – tow services, wreckers, repair shops, etc. may be represented by these costs
- Registrations/taxes – roads and government infrastructure may be represented by these costs
- Parking, tolls, etc. – more relevant in some jurisdictions versus others

The entire range of perils considered within personal motor insurance contracts may be used to calculate the emission attribution factor. Perils include compulsory perils in some jurisdictions such as MTPL (mandatory third-party liability) and non-compulsory perils such as MOD (motor own-damage), road assistance or driver accident. Using the full range of perils for defining the attribution factor simplifies and facilitates the data collection process.

A potential use of the attribution factor is to encourage actions by vehicle owners to reduce GHG emissions. There are several ways that policyholders can lower their vehicle-associated emissions, for example through choice of vehicle, driving habits (not speeding) or driving distance. An attribution factor which recognises individual policyholder actions would be ideal.[48]

48 PCAF recognises that there are other considerations beyond emissions that also influence or dictate policyholder actions, such as the availability and/or affordability of vehicles to a specific policyholder, infrastructure such as public transportation or available vehicle charging stations, and governmental policies that either support or limit vehicle choices, fuel options, etc.

Formula to calculate insurance-associated emissions

As an attribution principle, the insurance-associated emissions are determined by the ratio of the insurer's revenue received from the insured (i.e., the insurance premium) to the revenues of all other factors that are part of a vehicle's ownership. For simplification of calculation, this value is approximated by the cost of insurance related to the annual running costs of a passenger vehicle. The formula for the calculation of this method for emissions associated with personal motor portfolios is:

Insurance-associated emissions = **Attribution factor of portfolio × Emissions of insured vehicles within portfolio P**

$$(Industry)\ Attribution\ factor_p = \frac{Insurance\ industry's\ total\ premium\ from\ the\ motor\ line\ of\ business}{Total\ costs\ associated\ with\ vehicle\ ownership\ of\ all\ vehicles}$$

or (for cases where risk carriers are unable to use the industry attribution factor above)

$$(Individual)\ Attribution\ factor_p = \frac{Insurer\ specific\ premium\ from\ the\ motor\ line\ of\ business}{Total\ costs\ associated\ with\ vehicle\ ownership\ of\ the\ portfolio\ P\ vehicles}$$

Definitions

1. **(Industry) Attribution factor$_P$**: Attribution factor of portfolio P, which will be calculated and provided by PCAF using publicly available information and open-source research from markets globally.
2. **(Individual) Attribution factor$_P$**: Individual insurer's attribution factor of portfolio P.
3. **Insurance industry's total premium from the motor line of business (numerator):** represents the insurance industry's total premium from the motor line of business for all insurance covers (monetary amount).
4. **Total costs associated with vehicle ownership (denominator):** includes insurance as well as depreciation, fuel expenses, maintenance, repairs, taxes, registrations, tolls, parking expenses and potentially others (monetary amount).
5. **Emissions of insured vehicles within portfolio P:** can be calculated in a variety of ways depending on available data regarding the insured vehicles. Further details on calculating this value can be found in the sections on "Data Quality" and "Data Required".

The industry attribution factor as explained above will be calculated and provided by PCAF using publicly available information and open-source research from markets globally. PCAF will then validate and publish a value at the highest level of granularity possible, citing all sources of information. If data and research allow, the attribution factor shall be calculated at the state/provincial level or country level. Where data is unavailable, a regional and/or global value will be available for those markets where the greater level of granularity is not possible. The share of insurance cost on a global level ranges from 10% to 26% of total costs associated with vehicle ownership.[49]

49 Based on PCAF research.

The PCAF-provided value will then be used by all personal motor risk carriers in those markets, with PCAF updating the attribution factor at least once every five years. Risk carriers may present updates and/or more granular level attribution factors to PCAF for validation and inclusion in the database, to be used by all risk carriers in future reporting. Risk carriers shall use the highest level of granularity available at the time of reporting. In instances where data challenges prevent a risk carrier from reporting the highest level of granularity available, a different level may be used with explanation.

In markets where risk carriers are unable to use the PCAF provided total cost of ownership attribution factor, re/insurers are able to follow the methodology below to calculate their own attribution factor value based on the total cost of ownership approach. They will provide PCAF with details of sources used for the calculation.[50]

METHODOLOGY FOR RE/INSURER CALCULATION OF TOTAL COST OF OWNERSHIP ATTRIBUTION FACTOR

Initial research[51] into this attribution factor reveals the five main elements which make up the total cost of ownership, along with a sixth category for other items:

- Depreciation
- Fuel costs
- Insurance premiums
- Maintenance
- Registrations/taxes
- Others – parking fees, tolls, etc.

For the purpose of this standard, re/insurance premium is defined as gross written premium (the total amount to be paid by the insured to the re/insurer for the policy written in the period) minus external acquisition costs (e.g., agent fees). For multi-year contracts, an annualised premium value shall be used. Where re/insurers do not have the external acquisition costs, gross written premium may be used.

The PCAF database will provide risk carriers that perform the calculation individually with the information and/or source for each element included in the industry attribution factor provided by PCAF. When using PCAF or other full market-based information, a risk carrier will need to adjust values to represent the same portion as its own share of the market. That is, if a risk carrier has a 20% market share, the full market-based value will need to be adjusted to 20%. In instances where there is insufficient data for a risk carrier to include their individually performed calculation, the lack of inclusion of an element will be disclosed. The absence of any element category will result in a higher value for the insurance related portion of the total cost of ownership. This approach is in-line with existing precautionary principles of PCAF.

50 Please refer to the Important Note at the beginning of this document, especially with respect to solicitation of commentary and that the use of the proposed methodology is subject to regulations or governmental or supervisory practice or final judicial decision in the jurisdictions in which that company operates.

51 Countries in the initial research: USA, Australia, Germany, Japan, UK, Brazil, and South Korea.

Where risk carriers perform their own calculation, the six elements above shall be included to ensure consistency with the total cost of ownership approach being applied by other risk carriers using the Standard. For each element a clear reference shall be provided to the data and/or source used for the value. And a detailed description of the calculation performed shall be provided, to enable third-party validation.

When reporting the insurance-associated emissions, full disclosure by the risk carrier shall be provided specifying whether the PCAF provided or a risk-carrier calculated attribution factor was used. When a risk carrier calculated attribution factor is used, the disclosure shall include references to sources, any assumptions or deviations in the calculation, and the resulting attribution factor. Carrier-specific confidential or sensitive information should never be provided as part of the disclosure.

DATA QUALITY

The insurance-associated emissions from motor vehicle policies can be calculated in several ways depending on the availability of data to derive the emissions of the insured vehicle. Overall, PCAF distinguishes three options to calculate the insurance-associated emissions from motor vehicle policies:[52]

- **Option 1**: **actual vehicle-specific emissions**,[53] where emissions are calculated based on actual vehicle fuel consumption or actual vehicle distance travelled, and on the emission intensity of the actual vehicle or emission intensity derived from the vehicle's make and model.
  - **Option 1a**: Vehicle emissions are calculated based on **actual vehicle** .
  - **Option 1b**: Vehicle emissions are calculated based on the **actual vehicle's** emission intensity[54] or emission intensity derived from the vehicle's **make and model,**[55] and **actual vehicle distance** travelled.
- **Option 2: estimated vehicle-specific emissions and local distance driven averages**, where emissions are calculated based on estimated vehicle distance travelled from province/state/country-level official statistics and on the emission intensity of the actual vehicle or emission intensity derived from the vehicle's make and model.
  - **Option 2a**: Vehicle emissions are calculated based on the emission intensity of the actual vehicle or emission intensity derived from the vehicle's make and model, and **estimated distance** travelled of an average vehicle type (e.g., cars, vans, motorcycles) **from province/state/country-level statistical data.**
  - **Option 2b**: Vehicle emissions are calculated based on the emission intensity of the actual vehicle or emission intensity derived from the vehicle's make and model, and

52 For all options the attribution factor is calculated in the same way; the only thing changing is the way vehicle emissions are calculated.

53 For motor vehicle insurance to consumers, this approach seems rather unrealistic as consumers are unlikely to report their actual fuel consumption or distance travelled to a re/insurer. However, for motor vehicle insurance to businesses (in particular for insurance of company-owned staff cars), companies often collect information on actual fuel consumption or distance travelled and could share such information with re/insurers.

54 Emission intensity of a vehicle is either declared/collected from the customer or matched in a country-specific vehicle emission database using a vehicle identification number (VIN) or a country vehicle registration/ identifier.

55 Vehicle make and model refers to the name of the company that manufactures the vehicle and the product name of the vehicle. For example, Toyota Prius.

estimated distance travelled of an average vehicle **from province/state/country-level statistical data.**

- **Option 3**: **estimated vehicle-unspecific emissions and continental distance driven averages,** where emissions are calculated based on estimated vehicle distance travelled from continental-level[56] official statistics and on the emission intensity of an unspecified vehicle (emission intensity for the actual vehicle or vehicle's make and model is unknown).
  - **Option 3a**: Vehicle emissions are calculated based on the emission intensity of an average vehicle type and/or fuel type[57] (e.g., plug-in hybrid passenger car, diesel van, motorcycle) and **estimated vehicle distance travelled** from **continental-level statistical data.**
  - **Option 3b**: Vehicle emissions are calculated based on the emission intensity of an **average vehicle** (where the emission intensity for the vehicle type is unknown) and **estimated vehicle distance** travelled from **continental-level statistical data.**

Data required

Options 1b, Option 2a, and Option 2b above are dependent on the availability of emission data of the actual vehicle or derived from the make and model of the vehicle. However, the data used for vehicle distance travelled is of higher quality for Option 1b than it is for Option 2a, and it is of higher quality for Option 2a than it is for Option 2b. Hence, there are several options to calculate insurance-associated emissions but the quality of the results is not the same for each.

For this reason, PCAF gives a higher score to results obtained with higher-level data quality and a lower score to results obtained with lower data quality (score 1 = highest data quality; score 5 = lowest data quality). If a re/insurer uses a mix of options to calculate the emissions of an insured vehicle (e.g., mixing Options 1b and 3a, whereby actual distance travelled and vehicle type is known, but vehicle make and model is unknown), the data score for the lower-rated option should be assumed for this insured (i.e., score 4 from Option 3a).

Table 5-4 provides data quality scores for each of the described options that can be used to calculate the insurance-associated emissions for motor vehicle policies.

56 Statistics or proxy scope is bigger or outside the country.

57 Fuel type granularity is optional but highly recommended. Other attributes that can refine the vehicle type emission intensity such as cubic capacity / size for motorcycles, can be used to replace fuel type.

Table 5-4. General description of the data quality score table for motor vehicle insurance (score 1 = highest data quality; score 5 = lowest data quality)

Data quality	Options to estimate insurance-associated emissions		When to use each option (what data should be available)	
			Emission data / Calculation	
			Vehicle usage data	*Emission intensity*
Score 1	**Option 1: actual vehicle-specific emissions**	**1a**	**Actual fuel consumption**	Emission intensity of the **fuel type**
		1b	**Actual distance traveled**	Emission intensity of the **actual vehicle or of the vehicle's make and model**
Score 2	**Option 2: estimated vehicle-specific emissions and local distance driven averages**	**2a**	**Estimated** distance traveled of an **average vehicle type** (cars, vans, motorcycles) on the **province/state/country**	
Score 3		**2b**	**Estimated** distance traveled of an **average vehicle** on the for the **province/state/country**	
Score 4	**Option 3: estimated vehicle-unspecific emissions and continental distance driven averages**	**3a**	**Estimated** distance traveled of **an average vehicle** on **the subcontinent/continent**	Emission intensity of an **average vehicle type** (cars, vans, motorcycles) and/or **fuel type** (fossil fuel, hybrid, electric)
Score 5		**3b**		Emission intensity of an **average vehicle**

A detailed summary of the data quality score table, including data needs and formulas to calculate insurance-associated emissions, is provided in Annex 2 (Table 10-2).

Data for all three options can be derived from different data sources. Emission intensity data of a particular vehicle is usually sourced from a local (country) data provider using a vehicle identification number (VIN) or an equivalent unique key. Emission intensity derived from vehicle make and model can be sourced from official statistical data sources such as the US EPA's Federal Test Procedure[58] and the European Energy Agency's (EEA) Worldwide Harmonised

58 The US EPA's Federal Test Procedure is a series of drive cycle tests to measure the tailpipe emissions and fuel efficiency of passenger cars. Because these tests are used to verify that cars sold in the US meet EPA regulatory standards, their results reflect the road performance of passenger cars in the US. The results for more than 4,000 makes and models are publicly available on fueleconomy.gov, downloadable in .csv format.

Light Vehicles Test Procedure (WLTP).[59] To achieve better comparability, re/insurers should aim to report based on a single testing standard per geographical area, by applying conversion factor between different testing standards, whenever available. Both data sources provide vehicle emission intensity by make and model. Option 1b, Option 2a, and Option 2b require such information. If make and model are unknown to the reporting re/insurer (Option 3), vehicle emission intensity can be estimated on the vehicle type level and/or fuel type level using averages derived from the sources mentioned above, or using the International Council on Clean Transportation's (ICCT's) Transportation Roadmap, or the International Transport Forum at the Organization for Economic Co-operation and Development (ITF OECD).

If no actual distance travelled is known to the reporting re/insurer, data on vehicle distance travelled can be estimated based on data sources such as the ICCT Transportation Roadmap or the ITF OECD. Several local statistical data sources provide geography-specific vehicle distances travelled. For the US and Canada, state- or province-level distance travelled per year can be retrieved from carinsurance.com and the Canadian Office of Energy Efficiency.

PCAF's web-based emission factor database provides emission factors per vehicle type (e.g., passenger car) and per vehicle make and model for a large set of geographies. These motor vehicle emission factors are widely based on the sources mentioned above.

PCAF expects that the insurance-associated emissions for motor vehicle insurance can be derived through either actual vehicle-specific emissions (Option 1), estimated vehicle-specific emissions and local distance driven averages (Option 2), or estimated vehicle-unspecific emissions and continental distance driven averages (Option 3). However, PCAF allows the use of alternative approaches to calculate emissions if none of the specified options can be used or in the case that new approaches are developed. The reporting re/insurer shall always explain the reasons for using an alternative approach.

DATA LIMITATIONS

Data availability

Information regarding actual vehicle distance travelled may not be easily available or reliable. Actual data (fuel consumption or distance travelled) is recommended to be sourced from telematics or should be substantiated, such as through use of odometer photo/reading. Self-declared distance travelled can also be used as actual distance travelled if self-declared data is subject to fraud checks or/and used for pricing/claims purposes. Applying calibration factors may be used to make data more accurate. If actual data is unavailable, PCAF proposes using geographical averages on vehicle distance travelled by state, province, country or region. Re/insurers should explain the basis for obtaining and/or calculating relevant data.

59 The WLTP is a global, harmonised standard of drive cycle tests to determine the tailpipe emissions and fuel efficiency of passenger cars. It was developed by the United Nations Economic Commission for Europe to replace the old New European Driving Cycle (NEDC) as the European vehicle homologation procedure. The NEDC was shown to be flawed, enabling manufacturers to meet EU environmental standards during lab tests but not on the road (Dieselgate). The WLTP was conceived to rectify this. The WLTP final version was published in 2015. Hence, even though it will become a truly international standard in time, it is only used in the EU for now, and its results only reflect the performance of cars sold within the EU. These results are published by the EEA in .csv format and can be downloaded at https://www.eea.europa.eu/data-and-maps/data/co$_2$-cars-emission-21

Publicly available vehicle emission factor databases usually use the make and model of a vehicle as a proxy to derive the emissions of a particular vehicle. As there is no industry standard on naming vehicles, vehicle matching using make and model as a proxy can give rise to inconsistencies. Hence, PCAF recommends that re/insurers collect the actual vehicle make and model and other vehicle information such as engine type and efficiency to determine the exact vehicle to match in emission factor database. If the re/insurer does not track the vehicle make and model, PCAF recommends that the re/insurer falls back to a generic vehicle type (e.g., passenger car, motorcycle, light commercial truck) or to an average vehicle as a last resort (where emission intensity is determined by the weighted average vehicle efficiency in the respective geography).

Electric vehicles and electricity grid estimates

For electric vehicles, emission intensity can be derived using the electricity consumption intensity (using the same data sourcing methods as emission intensity) and the electricity grid emission factor. Exact electricity source data will not be known for each vehicle in a re/insurer's portfolio as it is not possible to ascertain how each re/insured sources their electricity. Where possible, the most common local or regional electricity grid mix emission factor for the insured's location should be used. If unavailable, the most common electricity grid mix emission factor in the respective region for the re/insurer's branch should be used (i.e., location of the re/insurer where the policy was issued). If also unavailable, country-level electricity grid mix emissions data should be used.

Dual-fuel vehicles

For dual-fuel vehicles, the percentage of usage per fuel (e.g., gasoline vs. electricity) may be unknown. If the vehicle make and model is known, PCAF recommends assuming an average usage split for the respective hybrid vehicle based on information from national agencies or the vehicle manufacturer. If such information is not available, PCAF recommends either applying an average geography-specific usage split. If that is also not available, PCAF recommends applying the conservative assumption that the combustion engine (e.g., gasoline) is used 100% of the time.

6. Reporting requirements, recommendations, and metrics

A global, standardised methodology to measure and disclose the GHG emissions associated with insurance and reinsurance underwriting portfolios is intended to create consistency and comparability in reporting.

Rather than creating a new framework, PCAF has developed these reporting requirements and recommendations to complement existing frameworks such as TCFD, Global Reporting Initiative (GRI), the Sustainability Accounting Standards Board (SASB), generally accepted accounting principles (GAAP), and the International Sustainability Standards Board (ISSB). The requirements and recommendations are supplementary to and build upon the reporting requirements set out by the "GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard".

All re/insurers that decide to adopt and use this Standard shall follow the requirements therein when publicly disclosing their insurance-associated emissions. They have the flexibility to decide where they want to start with measuring and disclosing their insurance-associated emissions—for instance, at a specific line of business level or by sector. Flexibility in reporting is allowed largely as a consequence of limitations in data availability and quality. PCAF recognises that data for many insureds may not be available to re/insurers and that insureds may not consistently disclose their emissions or emissions arising from an insured activity.

The requirements for disclosure of insurance-associated emissions describe a minimum disclosure level with flexibility for re/insurers to report more. Any requirements not fulfilled must be explained. Minimum reporting requirements are described in this chapter using the word “shall”. Where certain aspects of reporting are not required but encouraged as best practice, the word “should” is used. An allowed option is indicated using the word “may”.

The public disclosures to be made by re/insurers concerning commercial line portfolios is limited to the information included in Tables 11-1 and 11-2 in Annex 3 only. In particular, the data used in the emissions calculations, the associated workings and the relevant attribution factors will not be publicly disclosed nor disclosed amongst re/insurers.

INSURANCE-ASSOCIATED EMISSIONS VERSUS FINANCED EMISSIONS

Background

PCAF's flagship GHG Accounting and Reporting Standard covers methodologies for measuring the GHG emissions associated with loans and investments, known as financed emissions. However, there is no equivalent global standard for measuring emissions associated with insurance and reinsurance underwriting portfolios, as insurance business differs from banking and investing activities. To appropriately differentiate the GHG accounting and reporting associated with re/insurance underwriting from that of financed emissions, PCAF proposes calling these insurance-associated emissions.

PCAF explains the differences and similarities between financed emissions and insurance-associated emissions in Chapter 4. For the avoidance of doubt, insurance-associated emissions and financed emissions are not, and are not intended to be, directly comparable. Insurance-associated emissions and financed emissions shall be reported separately and not, under any circumstance, aggregated under the GHG Protocol scope 3 category 15 (Investments). Insurance-associated emissions are a supplementary accounting note to the GHG Protocol scope 3 category 15 (Investments). This is further considered in the illustrative example below in Box 6-1.

Box 6-1. Illustrative example of the incompatibility of aggregating financed emissions and insurance-associated emissions

Re/insurance companies are exposed to the emissions associated with their investment portfolios (as asset managers), and emissions associated with their re/insurance portfolios (as re/insurers).

The relationship between a re/insurer and their client is fundamentally different from the relationship between an investor and their investee. Insurers lack ownership of, or direct control over, the activities of insureds. The attribution factors applied across the financed emissions and insurance-associated emissions workstreams therefore necessarily differ to reflect the difference in the underlying relationship.

Although for the purposes of their GHG inventories, both financed emissions and insurance-associated emissions are "downstream" scope 3 emissions of a re/insurance company, the output of financed emissions and insurance-associated emissions calculations are not aligned and will diverge significantly. There is a real risk that, in aggregating the output of financed emissions and insurance-associated emissions, re/insurers risk: (i) double counting their attributed emissions impact; and (ii) misleading the end-user of their reporting. Where reported separately, this distinction can be clearly drawn and the disclosures appropriately caveated. It is therefore recommended that insurance-associated emissions be reported as a supplementary accounting note to scope 3 category 15 (Investments).

The following examples demonstrate the difference between the "Follow the money" and "Follow the risk" principles for a re/insurer when separately considering the emissions associated with its investment and re/insurance relationships:

"Follow the money":

1. Insured A pays premium to insurer
2. Insurer issues a policy of insurance to Insured A
3. Insurer invests a proportion of premium in Company B
4. Company B has direct scope 1 and indirect scope 2 GHG emissions
5. Insurer is required to account for the financed Scope 1 and Scope 2 emissions of Company B in its scope 3 category 15 emissions by applying an attribution factor
6. The attribution factor depends on the financing type and source, but represents the principle that the insurer has the potential to benefit economically from the activities of Company B

"Follow the risk":

1. Insured A pays premium to insurer
2. Insurer issues a policy of insurance to Insured A
3. Insurer reserves a proportion of premium to pay valid claims made by Insured A
4. Insured A has direct scope 1 and indirect scope 2 emissions
5. Insurer is required to account for the insurance-associated scope 1 and scope 2 emissions of Insured A as a supplementary note to its scope 3 category 15 emissions by applying an attribution factor given that the reserves have been invested by the insurer
6. The attribution factor depends on the insurance being offered, but represents the "enabling effect" that the provision of contingent capital (claims payment) may have on Insured A's operations in the event of a claim under the policy of insurance

The following example demonstrates the potential scale of the difference in output between financed emissions calculations and insurance-associated emissions calculations.

Scenario: A re/insurer both invests in, and provides insurance coverage to Company A.

- Equity investment in Company A is [$1m]
- Company A's Enterprise Value Including Cash (EVIC) is [$900m] and it has annual revenues of [$300m]
- Total premium (GWP) earned by the re/insurer from the provision of insurance to Company A is [$1m] for the policy period. The policy carries a [$70m] limit of liability.
- Company A's total scope 1 and 2 emissions are [20,000 tCO_2e]. It does not currently report scope 3 emissions.

For both calculations, the formula is as follows (with 'c' being the investee or borrower for financed emissions, and the insured for insurance-associated emissions):

$$\sum_{C} Attribution\ factor_{\ C} \times Company\ emissions_{\ C}$$

The attribution factor will vary between the financed emissions and insurance-associated emissions (commercial insurance) calculations.

By way of example:

Financed emissions calculation:	*Insurance-associated emissions calculation:*
$\sum \frac{Outstanding\ amount}{Enterprise\ Value\ Including\ Cash} \times Company\ emissions$	$\sum \frac{Premium}{Revenue} \times Company\ emissions$
$\sum \frac{[1{,}000{,}000]}{[900{,}000{,}000]} \times [20{,}000]$	$\sum \frac{[1{,}000{,}000]}{[300{,}000{,}000]} \times [20{,}000]$
= [22.22 tCO_2e]	= [66.67 tCO_2e]

As demonstrated above, the attribution factors for financed and insurance-associated emissions attribution differ materially. Even where the numerators remain constant (unlikely). The reporting of insurance-associated emissions remains a supplementary note to the financed emissions.

GHG EMISSION SCOPE COVERED

Following the logic of the GHG Protocol, the GHG accounting methodology for insurance-associated emissions should at least focus on the scope 1 and scope 2 emissions of the clients of re/insurers.

For integrating clients' Scope 3 emissions, PCAF acknowledges that, to date, the comparability, coverage, transparency, and reliability of customers' Scope 3 data still varies greatly per sector and data source. By supporting the disclosure of Scope 3 emissions of clients over time, PCAF seeks to make the reporting of Scope 3 emissions more common by improving data availability and quality.

To avoid double counting, the insurance-associated emissions relating to client scope 1 and 2 emissions shall be disclosed separately from the customers' Scope 3 emissions; where the data allows for an accurate and fair account of insurance-associated emissions over time, and where reporting in this manner is not unreasonably burdensome. If re/insurers do not report Scope 3 emissions of their customers, PCAF recommends that re/insurers should explain why.

PCAF acknowledges the challenges and limitations of GHG accounting metrics, including that such metrics should not necessarily be interpreted as risk metrics. Nevertheless, PCAF views the reporting of absolute insurance-associated emissions and weighted average carbon intensity (WACI) as a first step. PCAF tries to be aligned with the ISSB and TCFD in that it expects disclosure of this information to prompt important advancements in the development of decision-useful, climate-related metrics.

PCAF recognizes that some re/insurers may be able to report the metrics on only a portion of their portfolio given data availability and methodological issues. Nonetheless, increasing the number of organizations reporting this type of information should help speed the development of better climate-related metrics.

In the years to come, PCAF will monitor the data availability and will provide additional guidance on the associated reporting requirements.

Overall Reporting Requirements and Recommendations

- **Principles**: GHG accounting and reporting of insurance-associated emissions of re/insurers **shall** be based on the following principles: relevance, completeness, consistency, transparency, and accuracy.
- **Purpose**: A re/insurers' reporting **should** align with its specific business goals; for instance, for identifying and assessing climate-related transition risks and opportunities.
- **Frequency**: Re/insurers **shall** disclose at least annually and at a fixed point in time in line with the financial accounting cycle. Re/insurers **shall** ensure that the chosen point in time provides a representative view on the emissions for that reporting year and **shall** transparently disclose if large changes close to (before/after) the reporting date affected the results.
- **Recalculation and significance threshold:** Re/insurers **shall,** in line with the "GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard"

requirement (page 104[60]), establish a baseline recalculation policy. This in order to define under which circumstances a recalculating of (base year) insurance-associated emissions is necessary to ensure the consistency, comparability, and relevance of the reported GHG emissions data over time. As part of the base year emissions recalculation policy, re/insurers **shall** establish and disclose the significance threshold[61] that triggers base year emissions recalculations. Guidance from the GHG Protocol notes that companies are required to recalculate base year emissions when the following changes occur and significantly impact the inventory:

- Structural changes in the reporting re/insurer, such as mergers, acquisitions, divestments, outsourcing and insourcing;
- Changes in calculation methodologies, improvements in data accuracy, or discovery of significant errors; and
- Changes in the categories or activities (i.e., LoB) included in the scope 3 inventory.

Where a recalculation occurs as a result of a change discussed above, which are not anticipated to be a regular occurrence, re/insurers **should** provide qualitative narrative to accompany the recalculation. Re/insurers **should** establish significance thresholds in line with applicable financial reporting requirements.

- **Form of reporting:** Re/insurers **shall** disclose in publicly available reports such as (semi) annual reports, website articles or other publicly available sources as deemed appropriate by the re/insurer. Table 11-1 in Annex 3 provides an example template for how re/insurers can disclose their insurance-associated emissions.
- **Past performance:** Where appropriate and relevant for their business goals, re/insurers **should** disclose their insurance-associated emissions for multiple comparable time periods (e.g., years), with an exception for the first year of disclosure. Table 11-2 in Annex 3 provides an example template for how re/insurers could disclose current year relative insurance-associated emissions as against the relative insurance-associated emissions in the baseline year.

60 (WRI and WBCSD, 2011)

61 Definition according to the GHG Protocol: "A significance threshold is a qualitative and/or quantitative criterion used to define any significant change to the data, inventory boundaries, methods, or any other relevant factors."

EMISSIONS METRICS FOR THE CONTEXT OF INSURANCE-ASSOCIATED EMISSIONS

Different emissions metrics can be used for different purposes and some key insurance-associated emissions metrics and their merits are discussed in Table 6-1. This list is not exhaustive.

Table 6-1 Emission metrics for the context of insurance-associated emissions[62]

Metric	Purpose	Description[63]	Key benefit
Absolute insurance-associated emissions	To understand the climate impact of underwriting and set a baseline for climate action	The share of an insured's absolute emissions that is associated with the re/insurer's underwriting portfolio, expressed in tCO_2e	Useful for GHG accounting and for setting science-based targets (SBTs)
Relative insurance-associated emissions	To understand the effect growth/decline of an insurer's business size via normalization of the absolute insurance-associated emissions at the portfolio or sub-portfolio level	Absolute insurance-associated emissions divided by a monetary unit reflecting the insurer's size of business, expressed in tCO_2e/€M of re/insurer's revenue, or total gross written premium, or other re/insurance exposure measure	Useful for GHG accounting and for comparing different portfolios or parts of portfolios and for managing climate transition risks by normalizing the absolute emissions (see Box 6-2)
Economic emissions intensity	To understand the efficiency of insureds (or portfolios/sub-portfolios) in terms of total GHG emissions per common monetary unit, reflecting the insured's size of business or asset value	Re/insured's absolute emissions divided by a monetary unit reflecting the insured's size of business, expressed in tCO_2e/€M of insured's revenue or asset value	Useful for internal comparison and qualitative understanding of changes within or between different portfolios or parts of portfolios between sectors where a common economic indicator is applied Used predominately to estimate an insured's absolute emissions where self-reported emissions data is missing

62 Adapted from CRO Forum, 2020; please note that not all of the emission metrics may be readily applicable to emissions associated with personal motor portfolios.

63 Where applicable applying currency as aligned to the re/insurer's annual financial statements reporting.

Physical emissions intensity	To understand the efficiency of a portfolio (or parts of a portfolio) in terms of total GHG emissions per unit of a common output	Re/insured's absolute emissions divided by a physical output value, expressed in tCO_2e/MWh, or tCO_2e/ton product produced	Useful for internal comparison and qualitative understanding of changes within or between different portfolios or parts of portfolios where a common output unit is applied Used predominately to estimate an insured's absolute emissions where self-reported emissions data is missing
Weighted average carbon intensity (WACI)[64]	To understand exposure to carbon-intensive insureds (commercial clients/ companies[65]) at the portfolio or sub-portfolio level	Average economic emission intensity, weighted by premium, expressed in tCO_2e/€M of re/insured's revenue A physical WACI could also be calculated	Useful for GHG accounting and to understand a portfolio's exposure to carbon-intensive commercial companies

- In addition to reporting on absolute insurance-associated emissions, re/insurance companies should consider reporting emission intensities, in particular weighted average carbon intensity (WACI), if these values are relevant to their business goals (see chapter 3).
- Economic emission intensities may be expressed on any portfolio, sub-segment or sector level in metric tonnes of CO_2e per million euro, dollar or equivalent of revenue (aligning to the reporting currency in the re/insurer's financial statement): tCO_2e /M€ or tCO_2e/M$.
- When relevant to their business goals, re/insurance companies should consider reporting physical emission intensities per sector using sector-specific activity (e.g., tCO_2e /m^2 for real estate, tCO_2e /MWh for power utilities, tCO_2e /tonne of steel produced for steel companies).

64 (TCFD, 2017)

65 The word company refers to the re/insurer's customers.

Box 6-2. Illustrative example on the benefits of reporting relative together with absolute insurance-associated emissions

"Absolute insurance-associated emissions" refer to the volume of GHG emissions of an insured that are subsequently associated with a re/insurance company for the purposes of GHG accounting. Calculation of absolute emissions provides re/insurers with a necessary baseline from which they can set their decarbonization trajectories. Absolute emissions are independent of diluting business metrics, and reflect real-world changes in emissions. There is an expectation that absolute emissions data will become more readily available over time as reporting requirements increasingly require its disclosure. This should help improve data quality over time.

"Relative insurance-associated emissions" refer to absolute emissions that have been normalised (i.e., divided) by another variable, such as revenue. The primary benefit of relative emissions is that they more effectively enable comparison between two or more re/insurers, lines of business, sectors portfolios or regions, where absolute emissions would not otherwise take into account relevant variables such a value of output or relative size. The reporting of relative emissions may also help end-users of reports disclosing GHG emissions understand relative change against baseline emissions – see Table 11-2 for further information.

Below is an example to demonstrate the benefits of reporting relative insurance-associated emissions in addition to absolute emissions. The figures quoted are illustrative only.

Example:

- Re/Insurer A and Re/Insurer B both report absolute insurance-associated emissions of 20 $MtCO_2e/y$ in both year one and year two.
- Re/Insurer A's revenue for year one was US$10bn and US$11bn in year two.
- Re/Insurer B's revenue for year one was US$10bn and US$9bn in year two.

On an "absolute insurance-associated emissions" basis:

- There are no material changes in emissions, which could lead an end-user of the emissions report to deduce that both Re/Insurer A and Re/Insurer B have made no effort to reduce their GHG emissions across the portfolio.

However, on a "relative insurance-associated emissions" basis:

- Re/Insurer A has grown its business by 10%, whilst retaining the same insurance-associated emissions. Per dollar of revenue, the re/insurer has become less GHG intensive, which indicates that their customers (taken as an average) are decarbonizing (assuming that the business mix as such has remained unchanged);
  Year 1: 2 tCO_2e per $1 of revenue
  Year 2: 1.81 tCO_2e per $1 of revenue
  whereas,
- Re/Insurer B has shrunk its business by 10%, whilst retaining the same insurance-associated emissions. Per dollar of revenue, the re/insurer has become more GHG intensive, which indicates that their customers (taken as an average) are releasing more emissions into the atmosphere.
- **Year 1:** 2 tCO_2e per $1 of revenue
- **Year 2:** 2.22 tCO_2e per $1 of revenueYear 2: 2.22 tCO_2e per $1 of revenue

The above example demonstrates that the underlying principles of relevance, completeness, consistency, transparency and accuracy may be better reflected though the reporting of relative emissions in addition to absolute emissions. To do so would also be in the interests of re/insurers that may be growing their business whilst still reducing the underlying emissions associated with their underwriting portfolio(s).

COVERAGE

- Re/insurers **shall** disclose aggregated absolute insurance-associated emissions for all of the relevant LoBs or sectors[66] covered in Chapter 5 and justify any exclusions. Potential justification criteria for exclusion could include, by way of example:
  - Business goals and strategy of the re/insurance adopting the proposed methodology.
  - Applicable legal and regulatory requirements.
  - Data availability: required data is not available to re/insurers.
  - Methodology: there is no recognised methodology to quantify the insurance-associated emissions of specific activities (i.e., LoBs not currently covered in this Standard).
- Re/insurers **may** disclose the absolute emissions for statutory or compulsory classes of re/insurance separately from non-statutory classes of business in their insurance-associated emissions inventories.
- Re/insurers **should** disclose the absolute emissions for personal lines[67] of motor vehicles in their insurance-associated emissions inventories, separately from commercial lines reported insurance-associated emissions.
- Re/insurers **should** separate out the disclosure of aggregated absolute insurance-associated emissions by relevant lines of business, where the re/insurer is unable to negotiate specific terms and/or rates as a result of government-based insurance schemes in place.
- Re/insurers **shall** disclose the percentage of their total re/insurance portfolios covered in their insurance-associated emissions inventories for the LoBs or sectors covered in Chapter 5.
- Re/insurers **should** separate out the disclosure of insurance-associated emissions by public and private companies, where there is a perceived benefit in doing so.
- Re/insurers **should** separate out the disclosure of insurance-associated emissions by client-reported and re/insurer estimated or proxy emissions, where there is a perceived benefit in doing so.
- Re/Insurers **should** separate out the disclosure of insurance-associated emissions by direct insurance and facultative reinsurance, where there is a perceived benefit in doing so.

GASES AND UNITS

- Re/insurers shall account for the seven gases under the Kyoto Protocol that are also mandated under the UNFCCC to be included in national inventories if they are emitted in the value chain. These are carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O),

66 Re/insurers can choose to report by sector rather than by line of business, however in both cases re/insurers shall only disclose the aggregated absolute insurance-associated emissions per line of business or sector and shall not disclose details of the underlying calculations.

67 Re/insurers looking to set business goals including targets against the insurance-associated emissions should consider doing so where it does not expose the re/insurer to fines, penalties, enforcement action, or other legal liability under applicable laws. This may be the case for personal lines or compulsory insurance or government-based insurance schemes/arrangements.

hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF_6) and nitrogen trifluoride (NF_3).

- These seven gases **shall** be converted to carbon dioxide equivalents (CO_2e) using the 100-year time horizon global warming potentials published by the IPCC; either the AR5 values published by the GHG Protocol[68] or the IPCC's most recently published assessment report.[69]
- Re/insurers **shall** express their insurance-associated emissions in metric tonnes of carbon dioxide equivalents (tCO_2e) or another appropriate metric conversion—e.g., kilotonnes ($ktCO_2e$), megatonnes ($MtCO_2e$). When emissions from a specific GHG (e.g., methane emissions) are material and relevant, re/insurers **should** consider a separate disclosure of these emissions.

ABSOLUTE EMISSIONS

- Re/Insurers **shall** disclose the absolute emissions (scope 1 and 2 combined) associated with their re/insurance portfolios. If it serves the re/insurers' business goals, the absolute scope 1 and scope 2 emissions associated with their re/insurance portfolios **should** be reported separately from each other.
- Re/insurers **shall** also measure and report their own scope 1 and 2 emissions and should report any other relevant scope 3 emissions categories in line with the GHG Protocol "Corporate Value Chain (Scope 3) Accounting and Reporting Standard".
- Re/insurers reporting the absolute scope 3 emissions of their customers **should do this** separately from their client's reported scope 1 and scope 2 emissions, and in line with the considerations covered in Chapter 5.2.

DISCLAIMERS

Further to guidance issued by the UK Climate Financial Risk Forum on managing legal risk[70], any disclaimer applied by a re/insurer **should** accurately reflect the area of concern and should be tested by re/insurers to ensure that it is neither too narrow nor too wide. The location, font size and formatting of the disclaimer **should** also be considered carefully so that it is not presented in the form of legal boilerplate.

The disclaimer **should** be reviewed in the context of the disclosure as a whole. Information as to methodology or metrics may be an effective part of limiting the risk of stakeholders misunderstanding the information or relying on information without a clear appreciation of its purpose, gaps and limitations.

DOUBLE COUNTING

Insurance demands for corporate entities and individuals are structured in various different insurance lines. Because certain risks are too large to be borne by an individual re/insurer, they are spread in a complex risk-sharing system comprising many players, including insurance, reinsurance ("insurance of an insurance"), and retrocession ("reinsurance of a reinsurance"). This setup potentially causes double counting in different areas:

68 (GHG Protocol, 2014)

69 The IPCC reports can be found at: https://www.ipcc.ch/

70 See page 18 on: https://www.fca.org.uk/publication/corporate/climate-financial-risk-forum-guide-2021-disclosures-legal-risk.pdf

- Double counting of insurance-associated emissions within a re/insurer, across different lines of business or between insurance and risk management services.
- Double counting between different re/insurers of the same client.
- Double counting could occur across scopes. This effect can be limited by reporting scope 3 separate from scope 1 and 2.
- Associating the same emissions to the primary insurers and reinsurers.

With investors/asset owners also accounting for the full scope 1, 2 and, where applicable, scope 3 emissions of a company as their financed emissions, it is clear that the same emissions are double counted between insurance-associated and financed emissions. With re/insurers sometimes insuring and investing in the same companies, this translates into double counting across the investment and insurance portfolios of a re/insurance company as well.

Double counting is a frequent and inherent aspect of GHG accounting and does not need to be seen problematic, as long as:

- Double counting does not interfere with the goal of getting a clear view on where portfolios are connected to their customer's and investee's emissions, in order to facilitate managements toward stated decarbonization goals.
- Methodologies and limitations are made transparent as part of the disclosure.

PCAF's objective will not be to eradicate any double counting and to create a global balance sheet of absolute GHG emissions, but to minimise double counting concerns where they impact stated principles, and the delivery of a transparent and consistent approach to track and report insurance-associated emissions and their changes over time.

INTERPRETATION AND COMMUNICATION OF INSURANCE-ASSOCIATED EMISSIONS

With the synthetic nature of any insurance-associated emissions methodology and inherent double counting, correctly communicating insurance-associated emissions will be critical to avoid misinterpretation of disclosures by stakeholders.

Characteristics that are relevant for the correct interpretation of absolute emission figures are:

- Insurance-associated emissions cannot be compared or added up with financed emissions, even within the same company. They need to be reported separately.
- Double counting or under counting of emissions among re/insurers prevents a meaningful industry total from being calculated.
- A base number is, as such, not necessarily important as insurance-associated emissions or financed emissions will not add up to a global GHG balance sheet. It is more important that reporting provides a baseline, on which relative Paris-aligned decarbonization trajectories can be reported over time.

INSURANCE-ASSOCIATED EMISSION REMOVALS AND AVOIDED EMISSIONS

- In addition to absolute emissions, re/insurers:
  - **May** report emission removals where relevant to their re/insurance portfolios when appropriate methodologies become available.
  - **May** report avoided emissions, for example emissions avoided as a result of re/insurer support for renewable power projects.
- Where a re/insurer reports on emission removals and/or avoided emissions, it **shall** disclose the methodological formula adopted in calculating such emissions. The methodological formula adopted, and any accompanying narrative, **should** reflect the principles of relevance, completeness, consistency, transparency and accuracy. Where a re/insurer discloses details of a methodological formula that has not been developed and published, or endorsed by PCAF, the re/insurer shall alone be responsible for satisfying itself that the approach and any associated disclosures comply with applicable laws.
- If a re/insurer chooses to report emission removals or avoided emissions, it **shall** report absolute emission removals or avoided emissions separately from its scope 1, scope 2, and scope 3 inventories.

DATA AND DATA QUALITY

- Re/insurers **shall** use the most recent or otherwise appropriate data reasonably available to them. PCAF recognises there is often a lag between financial reporting and required emissions data. In these instances, it is acceptable that the data represents different years.
- Re/insurers **should** provide a description of the types and sources of data, including activity data, assumptions, emissions factors, and all relevant publication dates, used to calculate emissions. The descriptions **should** be written to create transparency.
- Re/insurers **should** publish a weighted score by outstanding premium of the data quality of reported emissions data or **should** explain why they are unable to do so. An example is provided in Box 6-3.
- Where re/insurers report scope 3 emissions, the weighted data quality score **shall** be reported separately from scopes 1 and 2.
- The data hierarchy tables provided in Chapter 5 **should** be used as a guide for disclosing data quality. Re/insurers should explain how data quality is assessed.
- Re/insurers **should** be able to demonstrate that data quality has improved over time (with an exception for the first year of disclosure). Where re/insurers are unable to evidence an improvement in data quality, they **should** explain why they are unable to do so.
- Re/insurers **should** reconcile the premium figures in the insurance-associated emissions reporting with the premium figures cited in the annual accounts. Re/insurers should **consider** whether to reconcile figures on an absolute basis or as a percentage. Where re/insurers are unable to reconcile the premiums reported in the insurance-associated emissions disclosure and annual accounts, they **should** explain why they are unable to do so.
- There are numerous factors extraneous to emissions that may drive volatility in the insurance-associated emissions reported on a year-by-year basis. Where a factor is deemed to be material, re/insurers **should** provide a clarification of how the factor has influenced the reported insurance-associated emissions. It **should** also provide an indication of the relative strength of influence that the factor has had on the reported insurance-associated emissions figures.

Box 6-3. An illustrative example for calculating weighted data quality scores

It is likely that data quality will differ across lines of business, sectors, companies and emission scopes. To disclose the best representation of data quality, the Standard requires that re/insurers normalise the data quality scores for each line of business or sector to the total premium.

The formula for calculating weighted averages for a line of business or sector is:

$$= \frac{\sum_{i=1}^{n} [Premium]_i \times Data\ quality\ score_i}{\sum_{i=1}^{n} [Premium]_i}$$

$$with\ i = insured$$

An illustrative example of a re/insurers provision of insurance is provided below:

Line of Business	Sector	Company	[Premium]	Attributed Scope 1/2 absolute emissions (tCO_2e)	Data quality score (1 = High, 5 = Low)
Property	Oil and Gas	Company A	X_1	Y_1	Z_1
Property	Power	Company B	X_2	Y_2	Z_2
Property	Transport	Company C	X_3	Y_3	Z_3
Casualty	Oil and Gas	Company D	X_4	Y_4	Z_4
Casualty	Power	Company E	X_5	Y_5	Z_5
Casualty	Transport	Company F	X_6	Y_6	Z_6

Weighted data score for the Property and Casualty lines of business Scope 1 and 2 emissions:

$$= \frac{(X_1 \times Z_1) + (X_2 \times Z_2) + (X_3 \times Z_3) + (X_4 \times Z_4) + (X_5 \times Z_5) + (X_6 \times Z_6)}{(X_1 + X_2 + X_3 + X_4 + X_5 + X_6)}$$

Weighted data score for the Oil and Gas sector Scope 1 and 2 emissions:

$$= \frac{(X_1 \times Z_1) + (X_4 \times Z_4)}{(X_1 + X_4)}$$

7. Glossary

Absolute emissions: Volume of greenhouse gas (GHG) emissions expressed in tonnes CO_2e.

Attribution factor: Share of the total annual GHG emissions from insured assets, activities, and companies that can be associated with re/insurance underwriting portfolios.

Carbon dioxide-equivalent (CO_2e) emissions: The amount of CO_2 that would cause the same integrated radiative forcing (a measure for the strength of climate change drivers) over a given time horizon as an emitted amount of another GHGs or mixture of GHGs. Conversion factors vary based on the underlying assumptions and as the science advances. As a baseline, PCAF recommends using 100-year global warming potentials without climate-carbon feedback from the most recent IPCC Assessment report.

Commercial lines: Commercial lines insurance includes property and casualty insurance products/coverages for businesses that cover potential losses from certain risks

Enabler: An institution that have the opportunity to directly or indirectly influence or support another actor's capacity to operate/perform/own/dispose of a certain economic activity or product/good or service. The actions that a re/insurer' may take to possibly influence or support another actor, are subject to different variants specific to each situation/transaction, including, but not limited to, business and legal considerations. For example, if the provision of insurance for certain LoB is mandatory in a given jurisdiction, an insurer may only be able to engage with a client but not change anything about the provision of cover which is set by law. In this case, the actions a re/insurer can take are relatively limited.

Emission Factor: The average mass of CO_2 emitted by an entity in one year usually expressed in tCO_2/year.

Emission Intensity (of a vehicle): The average mass of GHG of CO_2 emitted by a vehicle when it drives one unit of measure, usually expressed in gCO_2/km.

Insurance-associated emissions: GHG emissions in the real economy, which are associated with specific re/insurance policies aggregated in the re/insurance portfolio. This definition is for accounting purposes only. It is not intended, and should not be interpreted as, an admission of liability by any re/insurer for any emissions caused, or contributed to, by an insured or an insured activity.

Insurance-associated emission removal: Removed GHG emissions in the real economy, i.e., emissions that are captured from the air and stored durably, which are associated with specific re/insurance policies aggregated in the re/insurance portfolio.

Insurance-associated avoided emissions: Avoided GHG emissions in the real economy, i.e., the difference between project and baseline emissions, which are associated with specific re/insurance policies aggregated in the re/insurance portfolio.

Financed emissions: Absolute emissions that banks and investors finance through their loans and investments.

GHG emissions accounting: GHG emissions accounting refers to the processes required to consistently measure the amount of GHGs generated, avoided, or removed by an entity, allowing it to track and report these emissions over time. The emissions measured are the seven gases mandated under the Kyoto Protocol and to be included in national inventories under the United Nations Framework Convention on Climate Change (UNFCCC) – carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF_6) and nitrogen trifluoride (NF_3). For ease of accounting, these gases are usually converted to and expressed as carbon dioxide equivalents (CO_2e).

Greenhouse gas (GHG) emissions: The seven gases mandated under the Kyoto Protocol and to be included in national inventories under the United Nations Framework Convention on Climate Change (UNFCCC)—carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF_6), and nitrogen trifluoride (NF_3). These typically refer to the underlying emissions produced by the client or assets in the real economy that are covered by an insurance contract.

Insurance: Insurance is a contract, represented by a policy, in which an individual or entity receives financial protection or reimbursement against losses from an insurance company.

Layers: Insurers often specialise in underwriting to different exposure attachment and exit levels, some preferring to insure where there is a higher probability of claims but a commensurately higher level of premium (primary layer) and others where there is a lower probability of claims for a lower premium (excess layers). Layering of insurances can affect pricing.

Personal lines: Personal lines insurance refers to any kind of insurance that covers individuals against loss that results from death, injury, or loss of property.

Reinsurance: Insurance for insurance companies.

Relative emissions: Absolute (GHG) emissions normalised (i.e., divided) by another variable such as revenue, or enterprise value, or m^2 for example.

Scope 1 emissions: Direct GHG emissions that occur from sources owned or controlled by the reporting company—i.e., emissions from combustion in owned or controlled boilers, furnaces, vehicles, etc.

Scope 2 emissions: Indirect GHG emissions from the generation of purchased or acquired electricity, steam, heating, or cooling consumed by the reporting company. Scope 2 emissions physically occur at the facility where the electricity, steam, heating, or cooling is generated.

Scope 3 emissions: All other indirect GHG emissions (not included in scope 2) that occur in the value chain of the reporting company. Scope 3 can be broken down into upstream emissions that occur in the supply chain (for example, from production or extraction of purchased materials) and downstream emissions that occur as a consequence of using the organization's products or services.

Underwriting: The means by which insurers evaluate the risks posed by the individual, company, events, or transaction to decide whether to cover the risk and if so to set the contract terms and a fair price for the insurer to accept this risk; also known as the insured liability..

8. Acronyms

CDP	Carbon Disclosure Project
CH_4	Methane
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
CRE	Commercial real estate
EEA	European Environment Ageny
EEIO	Environmentally extended input-output
EU	European Union
EU TEG	European Commission Technical Expert Group on Sustainable Finance
EV	Electric vehicle
EVIC	Enterprise value including cash
FAO	Food and Agriculture Organization of the United Nations
FSB	Financial Stability Board
GAAP	Generally accepted accounting principles
GEMIS	Global Emissions Model for integrated Systems
GHG	Greenhouse gas
GRI	Global Reporting Inititive
GTAP	Global Trade Analysis Project
HFC	Hydrofluorocarbon
ICCT	International Council on Clean Transportation
IEA	International Energy Agency
IFI	Internal Financial Institution
IFRS	International Financial Reporting Standards
IPCC	Intergovernmental Panel on Climate Change
IPO	Initial public offering
ISIC	Industrial Classification of All Economic Activities
ISSB	International Sustainability Standards Board
ITF OECD	International Transport Forum at the Organisation for Economic Co-operation and Development
$ktCO_2e$	Kilotonnes of carbon dioxide equivalent
L2	Level 2 (NACE)
$MtCO_2e$	Megatonnes of carbon dioxide equivalent
MWh	Megawatt-hour
N_2O	Nitrous oxide
NACE	Statistical Classification of Economic Activities in the European Community
NDC	Nationally determined contribution
NEDC	New European Driving Cycle
NF_3	Nitrogen trifluoride
NGO	Nongovernmental organization
NZIA	UN-convened Net Zero Insurance Alliance

PCAF	Partnership for Carbon Accounting Financials
PFC	Perfluorocarbon
SASB	Sustainability Accounting Standards Board
SBT	Science-based targets
SBTi-FI	Science Based Targets initiative for Financial Institutions
SDA	Sectoral Decarbonization Approach
SF_6	Sulphur hexafluoride
TCFD	Task Force on Climate-related Financial Disclosures
tCO_2e	Metric tonnes of carbon dioxide equivalent
UNEP FI	United Nations Environment Programme Finance Initiative
UNFCCC	United Nations Framework Convention on Climate Change
US	United States
WACI	Weighted Average Carbon Intensity
WBCSD	World Business Council for Sustainable Development
WIOD	World Input-Output Database
WLTP	Worldwide Harmonized Light Vehicles Test Procedure

9. Annex 1: Due diligence for third-party data providers

Data collection

- Is the methodology adopted to collect data transparent?
- Does the data provider report the number of dedicated staff collecting and processing GHG data? data? Does the data provider use automated data collection tools, web-scrapping or artificial intelligence?
- Is collected data reviewed and cross-checked? Are plausibility checks performed to ensure comparability, consistency and completeness of data?
- If a company reports both location- and market-based scope 2 emissions, which is collected? Is this difference clearly labelled in the database?
- If any sources (e.g., facilities, specific GHGs, activities, geographies, etc.) of scope 1 and 2 emissions that are within the reporting boundary selected by the company are not included in the reported data, is this clearly labelled in the database? And is there an estimated percentage of total scope 1 and 2 emissions this excluded source represents?
- How often is the data updated (update frequency)?
- How soon after new data is reported by the company is it updated in the provider's database (data timeliness)?
- Does the data provider indicate the assurance/verification status of reported emissions?
- Does the data provider compare year-on-year trends, using this to highlight where step-changes have occurred, potentially indicating data quality issues?
- Does the data provider update its database to account for data corrections reported by the company? If so, is this done only for the last reporting year?
- Does the data provider have a process in place for companies to verify their data and submit data correction requests?
- Does the data provider have a data quality assurance process in place for identifying and correcting data errors? Is the quality assurance process certified?
- Does the data provider make the reporting boundaries clear? I.e., Financial Control, Operational Control, Equity Share
- Is it clear which scope 3 emission categories are included?

Data coverage

- What is the coverage of the GHG data?
- Does this coverage vary in terms of emission scopes?

Data coverage

- Does the data provider provide estimated data if reported data is not available?
- Does the data provider indicate whether data is reported or estimated?
- Does the data provider deliver a data quality score for estimated data?
- Is the estimation methodology clear and transparent?
- How often are estimation models fine-tuned and updated?
- If the data provider uses sectoral proxies where specific reported data is not available, does a clear taxonomy of sector classification exist to reduce the risk of overlaps?
- How does the estimation for companies differ to that for "projects", e.g., opening a new mining site?

10. Annex 2: Detailed data quality score tables per line of business

COMMERCIAL LINES INSURANCE – DETAILED SUMMARY OF DATA NEEDS AND FORMULAS TO CALCULATE INSURANCE-ASSOCIATED EMISSIONS

Table 10-1. Detailed description of the data quality score table for commercial lines insuranc[71]

Option	Description				Data quality
	Attribution		Emission factor	Insurance-associated emissions calculations	Highest to lowest
	Financial data		Emission data	Equations	
Option 1a	Re/insurance premium	Revenue	Verified GHG emissions data from the company/ asset in accordance with the GHG Protocol	Scope 1: $\sum_c \frac{Re/insurance\ Premium}{Revenue_c}\ x\ Verified\ Emissions_c$ Scope 2: $\sum_c \frac{Re/insurance\ Premium}{Revenue_c}\ x\ Verified\ Market\ Based\ Reported\ Emissions_c$	Score 1

71 Where c= company or asset insured; s=sector of the company insured; r=region(province/state/country). If the data used is not on the same entity level as the insured (e.g., company revenue is used for an insured asset), the data quality score given will be score 5 regardless of the equation used.

Option 1b			Unverified GHG emissions data from the company/ asset in accordance with the GHG Protocol		Scope 1: $\sum_c \frac{Re/insurance\ Premium}{Revenue_c}\ x\ Unverified\ Emissions_c$ Scope 2: $\sum_c \frac{Insurance\ Premium}{Revenue_c}\ x\ Unverfied\ Market\ Based\ Reported\ Emissions_c$ or $\sum_c \frac{Insurance\ Premium}{Revenue_c}\ x\ Location\ Based\ Reported\ Emissions_c$	Score 2
Option 2a			Primary physical activity data for the company's energy consumption by energy source (e.g., megawatthours of electricity) plus any process emissions	Emission factors specific to that primary data (e.g., energy source-specific emission factors)	$\sum_{c,r} \frac{Insurance\ Premium}{Revenue_c}\ x\ Energy\ Consumption_c\ x\ Emission\ Factor_r$	Score 2
Option 2b			Primary physical activity data for the company's production (e.g., tons of rice produced)	Emission factors specific to that primary data (e.g., emission factor per ton of rice)	$\sum_{c,s,r} \frac{Insurance\ Premium}{Revenue_c}\ x\ Production_c\ x\ Emission\ Factor_{s,r}$	Score 3
Option 2c			Any option described above (options 1a-2b) but with data not aligned with insured entity (e.g., using company emissions in an asset insurance coverage)			Score 4
Option 3		Average sector revenue	Average sector revenue	GHG emissions per sector	$\sum_{c,s,r} \frac{Insurance\ Premium}{\sout{Average\ Revenue_{s,r}}}\ x\ \sout{Average\ Revenue_{s,r}}\ x\ Emission\ Factor_{s,r}$	Score 5

PERSONAL MOTOR VEHICLE INSURANCE – DETAILED SUMMARY OF DATA NEEDS AND FORMULAS TO CALCULATE INSURANCE-ASSOCIATED EMISSIONS

Table 10-2. Detailed description of the data quality score table for motor vehicle insurance[72]

Option	Description				Data quality
	Attribution	Highest to lowest		Equations	Highest to lowest
		Vehicle usage (Fuel Consumption or Distance Driven)	Emission intensity		
Option 1a	TBD by PCAF	Actual fuel consumption	Emission intensity of the fuel type	$\sum_{v,r} Attribution\ Factor_r\ x\ Fuel\ Consumption_v\ x\ Emission\ Intensity_f$	Score 1
Option 1b		Actual distance travelled	Emission intensity of the actual vehicle or of the vehicle's make & model	$\sum_{v,r} Attribution\ Factor_r\ x\ Distance\ Travelled_v\ x\ Emission\ Intensity_v$	
Option 2a		Estimated distance traveled of an average vehicle type (cars, vans, motorcycles) on the province/state /country		$\sum_{v,vt,r} Attribution\ Factor_r\ x\ Distance\ Travelled_{vt,r}\ x\ Emission\ Intensity_v$	Score 2
Option 2b		Estimated distance traveled of an average vehicle on the for the province/state/country		$\sum_{v,va,r} Attribution\ Factor_r\ x\ Distance\ Travelled_{va,r}\ x\ Emission\ Intensity_v$	Score 3

72 Where v=actual/insured vehicle; r=region (province/state/country/continent); f=fuel and/or propulsion type (e.g., petrol, HEV, PHEV); vt= vehicle type (e.g., passenger car) va= average vehicle.

Option 3a		Estimated distance traveled of an average vehicle on the subcontinent / continent	Emission intensity of an average vehicle type (cars, vans, motorcycles) and/or fuel type (fossil fuel, hybrid, electric)	$\sum_{vt,f,r} Attribution\ Factor_r\ x\ Distance\ Travelled_{vt,r}\ x\ Emission\ Intensity_{vt,f,r}$	Score 4
Option 3b			Emission intensity of an average vehicle	$\sum_{v,va,r} Attribution\ Factor_r\ x\ Distance\ Travelled_{va,r}\ x\ Emission\ Intensity_{va,r}$	Score 5

11. Annex 3: Sample table templates displaying reported emissions for a given fiscal year

Table 11-1. Example reporting of Insurance-Associated Emissions [Note 1]

Activity	Total gross written premium (x € 1,000)	Scope 1 + Scope 2 emissions (tCO_2e) absolute	Scope 3 emissions (tCO_2e) absolute [Note 4]	Emission intensity (e.g., weighted average carbon intensity (WACI) - tCO_2e/€M of re/insured's revenue)	Relative insurance-associated emission (tCO_2e/€M per GWP) [Note 5]	Weighted data quality score (high quality = 1, low quality = 5)
Emissions per line of business (if reporting by LoB) [Note 2]						
Property						
- **Sector 1, e.g., Oil & Gas**						
- **Sector 2, e.g., Power & Utilities**						
- **Sector 3 e.g., Mining**						
...						
Liability						
- **Product 1, e.g., General Liability**						
- **Product 2, e.g., Directors & Officers**						
- **Product 3, e.g., Product Liability**						
...						
Total						
Emissions per sector (if reporting by sector) [Note 3]						
Aluminium						
Apparel and footwear						
Aviation						
Buildings						

Chemicals						
Cement						
Financial Institutions						
Forest, Land and Agriculture						
Information and Communication Technology						
Oil and Gas						
Power						
Steel						
Transport						
[Others]						
Total						

Note 1: Insurance-associated emissions are reported as a sub-category of the GHG Protocol scope 3 category 15 (Investments). They are distinct and different from financed emissions. Insurance-associated emissions and financed emissions shall not be aggregated. The insurance-associated emissions would be a supplementary accounting note to scope 3 category 15 (Investments).

Note 2: Where re/insurers report by line of business, they should align their disclosures on insurance-associated emissions to the financial accounting regime(s) that is/are applicable to them, for consistency.

Note 3: The sectors above correlate with those sectors adopted by the Science Based Targets initiative (SBTi). The list of sectors is not intended to be restrictive, and may change over time. Where a re/insurer chooses to adopt different sector groupings for the purposes of their reporting that diverge from the SBTi sectors, it is recommended that the re/insurer provides definitions that will allow users of the report to understand the sector compositions.

Note 4: For integrating clients' scope 3 emissions, PCAF acknowledges that, to date, the comparability, coverage, transparency, and reliability of clients' scope 3 data still varies greatly per sector and data source. By supporting the disclosure of client scope 3 reporting over time, PCAF seeks to make scope 3 emissions reporting more common by improving data availability and quality.

To avoid double counting, the insurance-associated emissions relating to client scope 1 and 2 emissions shall be reported separately from the clients' scope 3 emissions; where the data allows for an accurate and fair account of insurance-associated emissions over time.

Note 5: Policies in force can be used in place of gross written premium in the calculation of relative insurance-associated emissions and the unit would therefore reflect appropriately.

Table 11-2. Example reporting of insurance-associated emissions (scope 1 and 2) as an intensity metric for the current year as against the baseline yeari

	Baseline year emissions / [denominator] (i.e., tCO_2e / £m)	Current year emissions / [denominator] (i.e., tCO_2e / £m)	% Change in relative emissions between the baseline year and current year (± %)
[Line of business]			
[Sector]			
[Total]			

12. Annex 4: Guiding principles for developing the GHG accounting methodology for re/insurance underwriting

- **Robustness and high level of independence:**
  - The GHG accounting methodology should be as robust and agnostic as possible of any other changes not being associated with changes in actual emissions and re/insurance structure. This helps to fairly apply measurements and limit/avoid volatility on the outcomes. The methodology should avoid randomness and arbitrage, whenever possible.
- **Proportionality:**

  Assuming all other relevant (insurance-related) parameters are equal.

  "Insurance-associated emissions" versus "actual emissions" of different insurance clients:
  - The calculation method of insurance-associated emissions based on actual emissions of one insurance client should be consistently applied across a portfolio segment. This follows the logic of high "actual emissions" leading to high insurance-associated emissions.

  Changes of insurance-associated emissions versus changes of "actual emissions":
  - Changes of insurance-associated emissions should proportionally reflect the changes in actual emissions of an insurance client. I.e., if the actual emissions are reduced by x%, the insurance-associated emissions should be reduced by the same percentage.
  - The extent of an insurer's level of involvement should be adequately reflected in the resulting insurance-associated emissions. I.e., a 20% insurance participation should double the insurance-associated emissions relative to a 10% share of the same insurance client.
- **Comparability:**
  - Between (i) insurance clients within a portfolio; (ii) insurance portfolios within a company; (iii) companies of a same group; and (iv) independent companies based on publicly available information: Given similar actual original emissions and at the same time assuming similar insurance coverages, the GHG accounting methodology should lead to similar insurance-associated emissions. Details regarding the application to different lines of business need to be further discussed. Due to diverse business models, care should be given when making a peer-to-peer comparison of insurance-associated emissions.

  - Over time and between the periods being reported, i.e., once the reporting standards have been established, insurance-associated emissions output should be comparable over time if improved or changing underlying data does not distort such an effort.
- **Feasibility and reasonableness:**
  - Simplicity: The GHG accounting methodology should be simple enough to be manageable and at the same time precise and technically sound enough to provide accurate output over time.
  - Communicable: It shall be as understandable as possible to serve as a basis for engagement with clients and internal stakeholders and to avoid misperception by external stakeholders and the public.
  - Data availability: GHG accounting methodologies shall take into consideration data limitations (including the lack of availability of emissions data) and data dependencies (including the costs associated with obtaining third party data). For such cases where the required data is not readily available and cannot be obtained with reasonable effort, a feasible fallback calculation methodology should be allowed to be used.
- **Materiality:**
  - As a starting point, it is proposed that the accounting methodology should be applied to the most significant emissions per sector in the re/insurer's portfolio. Further guidance on how this principle is to be interpreted is under development.

13. Annex 5: Commercial insurance – Template to capture attribution data at the source

The template is intended to support customer engagement on disclosure, to enhance capture of the most accurate and timely data, to reduce the risk of attributing emissions inappropriately and reduce the need to rely on proxies and estimates (e.g., sector or country intensity data). Today, the required data is not seldom routinely captured (revenue) or availability is still limited (e.g., emissions data). The template is therefore encouraged to be used at the point of underwriting to help procure the data components needed.

The template does not include proxies that would be required from insureds in case actual data points for the insured are not available. Based on the actual data provided by customers as well as other data sources, each insurer will use calculations, approximations and estimation methodologies that could lead to different values of the data points required to calculate insurance-associated emissions (and different data quality scores).

A similar template for motor personal lines has not yet been created, due to the assumption that some key attribution data requirements are publicly available and/or already captured, for example as part of routine submissions.

Company name*	Name of the company/asset
Level of reporting*	Group level, subsidiary level, asset level
Reporting year*	Year the data refers to (all data needs to be from same reporting year)
Scope 1 absolute emissions*	In tonnes, based on reported figures
Scope 2 absolute emissions*	See Scope 1
Scope 3 absolute emissions by category	See Scope 1, shall be requested if material
Revenue*	In millions
Currency*	ISO code
Is absolute emissions data third party verified?*	Yes / No

* Mandatory field

14. Annex 6: Sample classifications for vehicle types in the EU and US

EU CLASSIFICATION OF VEHICLE TYPES / EUROPEAN ALTERNATIVE FUELS OBSERVATORY (EUROPA.EU)

Table 14-1. Guiding principles for developing the GHG accounting methodology for re/insurance underwriting

Category	Examples/ Common name	Definition	Wave 1 Scope proposal
Category M		Motor vehicles having at least four wheels and for the carriage of passengers.	
M1	Cars/ Vans	Vehicles used for the carriage of passengers and comprising not more than eight seats in addition to the driver's seat.	Yes
M2	Minibusses	Vehicles used for the carriage of passengers, comprising more than eight seats in addition to the driver's seat, and having a maximum mass not exceeding 5 tonnes	No, since it has >8 seats and is therefore probably used mainly for commercial purposes
Category N		Power-driven vehicles having at least four wheels and for the carriage of goods	
N1	Vans	Vehicles for the carriage of goods and having a maximum mass not exceeding 3.5 tonnes.	Yes
Category L	Mopeds, Motorcycles, Motor Tricycles and Quadricycles	Motor vehicles with less than four wheels and some lightweight four-wheelers.	
L1	Mopeds, Electric bicycle	A two-wheeled vehicle with an engine cylinder capacity in the case of a thermic engine not exceeding 50 cm^3 and whatever the means of propulsion a maximum design speed not exceeding 50 km/h.	Yes
L2	Auto Rickshaw	A three-wheeled vehicle of any wheel arrangement with an engine cylinder capacity in the case of a thermic engine not exceeding 50 cm3 and whatever the means of propulsion a maximum design speed not exceeding 50 km/h.	Yes
L3	Motorcycles	A two-wheeled vehicle with an engine cylinder capacity in the case of a thermic engine exceeding 50 cm3 or whatever the means of propulsion a maximum design speed exceeding 50 km/h.	Yes
L4	Motorcycles with sidecar	A vehicle with three wheels asymmetrically arranged in relation to the longitudinal median plane with an engine cylinder capacity in the case of a thermic engine exceeding 50 cm^3 or whatever the means of propulsion a maximum design speed exceeding 50 km/h (motorcycles with sidecars).	Yes

US VEHICLE CLASSIFICATION CODE

https://www.fhwa.dot.gov/publications/research/infrastructure/pavements/ltpp/13091/002.cfm