Global GHG Accounting and Reporting Standard for the Insurance Industry

Progress Report for Consultation – 14 July 2022

PCAF
Partnership for
Carbon Accounting
Financials

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Important Note

This document ('Progress Report') represents the current status of the 'Partnership for Carbon Accounting Financials' ('PCAF') insurance-associated emissions Working Group ('Working Group') ongoing discussions on technical and methodological aspects facilitating a future PCAF's Global GHG Accounting and Reporting Standard for the Insurance Industry ('Upcoming Standard').

This document is a development progress report for the purpose of facilitating a public consultation on the proposed methodologies for measuring and disclosing insurance-associated emissions as such term is described further herein. The consultation is open to all interested parties including regulators, participants from across the re/insurance industry, brokers, policy makers, data providers, consultants, academia, non-governmental organizations (NGOs), associations of insureds, and civil society as a whole. The Working Group invites all interested parties to submit their views. The responses may focus on the proposed technical and methodological aspects, but also on perceived potential impacts, such as legal, regulatory, and social implications pertaining to what is being proposed in this document.

The proposals and options mentioned in the document provide considerations of the approach the Working Group may take when developing the final Global GHG Accounting and Reporting Standard for the Insurance Industry. However, the proposals and options mentioned in this document do not constitute a final position or prejudice the final formal proposal by the Working Group.

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

The methodologies and the context provided (e.g., possible use of such methodologies) in this Progress Report and in any Upcoming Standard are not to be construed as prescriptive.

The adoption and use of the methodologies discussed in this Progress Report or included in any Upcoming Standard is completely 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 described in this Progress Report or any Upcoming Standard, the applicable laws, rules and regulations shall prevail but any deviations from the Upcoming Standard should be highlighted as to protect the goal and value of the Upcoming Standard.

Executive summary

Given the increasing demand by the insurance industry and other stakeholders for tools to measure and report greenhouse gas (GHG) emissions, there is a need to develop a set of global, standardized methodologies for measuring and disclosing the GHG emissions associated with re/insurance underwriting portfolios for accounting purposes. Against that background, the PCAF insurance-associated emissions Working Group aims to develop a Global GHG Accounting and Reporting Standard for the Insurance Industry.

This document is a Progress Report on the current development of the methodologies that have been considered by the Working Group to date. It has been prepared to facilitate a public consultation for the purposes of receiving feedback from all interested parties on the methodological approaches and reporting requirements considered. The segments that are currently in-scope for the purposes of this consultation are commercial lines insurance and personal motor lines. For each of these two segments, this progress report presents several options for accounting methodologies under discussion.

Based on the feedback from the public consultation, the Working Group will continue with the further development of the insurance-associated emissions Standard. The ultimate purpose of the Upcoming Standard is to provide re/insurers with transparent, standardized, and robust methodologies to measure and report insurance-associated emissions which supplements the requirements of the GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard.

1. Introduction

THE ROLE OF THE RE/INSURANCE INDUSTRY

The re/insurance industry is one of the largest global industries with USD 36 trillion in global assets under management. Premiums written in the non-life insurance sector amount to more than USD three trillion or 4% of global economic output. As such, re/insurers hold a significant portion of global economic assets and liabilities on their balance sheets.

The re/insurance industry plays an important role in supporting the transition to a low-emission economy not only as investors but also as customers of goods and services. As professional risk managers, re/insurers can help communities understand, prevent, and reduce climate risk. As professional risk carriers, re/insurers protect households, businesses, public entities, and governments by absorbing economic shocks due to weather-related risks such as cyclones, floods, extreme heat, and droughts.

As institutional investors, re/insurers could also invest in zero- and low-emission technologies and engage with their investee companies on their decarbonization pathways. For their own operations, re/insurers can set their own climate policies and influence zero- and low-emissions goods and services.

Given the increasing demand by the re/insurance industry and other stakeholders for tools to measure and report greenhouse gas (GHG) emissions, there is a need to develop a set of global, standardized 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).[1] Such global, standardized methodologies do not address target setting. They also do not determine explicitly or implicitly any strategy a company may choose to follow independently as a result of adopting such methodologies.

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 fourteen Dutch financial institutions.[2] Since its start in 2015, PCAF has rapidly expanded in North America, Latin America, Europe, Africa, and Asia Pacific.[3] PCAF aims to standardize the way financial institutions measure and report financed emissions, insurance-associated emissions, and facilitated 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.

1 This definition has been adopted to support the overarching objective of the UN-convened Net-Zero Insurance Alliance. 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. It is for accounting purposes only.

2 https://carbonaccountingfinancials.com/about#our-mission

3 A full list of PCAF participants is found at: https://carbonaccountingfinancials.com/financial-institutions-taking-action#overview-of-institutions

In 2020, the first edition of the Global GHG Accounting and Reporting Standard for the Financial Industry was published.[4] 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.[5]

THE RE/INSURANCE INDUSTRY AND FINANCED EMISSIONS

PCAF's flagship GHG Accounting and Reporting Standard[6] covers methodologies for measuring the GHG emissions associated with loans and investments, known as financed emissions. The re/insurance industry is in the unique position that it has asset owner and underwriting activities within the same balance sheet. For their asset owner and asset management activities, re/insurers can use the existing PCAF Standard. For re/insurance underwriting portfolios, no such standard exists yet.

The core difference between financed emissions and insurance-associated emissions is the nature of the relationship of the financial institution with the client (see Chapter 4.2 for more details). The re/insurer's property and casualty lines of business (LoBs) transfer risks associated with economic activity, but do not finance the activity and do not 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.[7]

The lack of ownership or direct control over the customer's activity is a key differentiation that 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 have influence over a customer's activities. The ability for a customer to engage in its specific business activity is limited without the support of insurance, that is re/insurance enables the customer activity. In turn, the Working Group seeks to develop a uniform and standard methodology to measure and report insurance-associated emissions related to LoBs.

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

There is an opportunity to develop a methodology to consistently measure the insurance-associated emissions of underwriting portfolios across the re/insurance industry, driving transparency, comparability, and accountability in the role of re/insurers in enabling the climate transition.

This document is a Progress Report on the current methodologies that have been considered by the Working Group to date, and has been prepared to facilitate a public consultation for the purposes of receiving feedback from all interested parties on the methodological approaches and reporting requirements considered. Based on this feedback, the Working Group will continue with the further development of the Upcoming Standard. The ultimate purpose of the Upcoming

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

5 (WRI and WBCSD, 2011)

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

7 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 to section 4).

Standard is to provide re/insurers with transparent, standardized, and robust methodologies to measure and report insurance-associated emissions which supplements the requirements of the GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard.

Please note that the Progress Report and any Upcoming Standard address neither target setting nor underwriting/pricing, nor do they determine explicitly or implicitly any strategy a company may choose to follow independently as a result of adopting such methodologies.

This Progress Report was developed by the Working Group, a group of insurers and reinsurers of varied sizes and from different global regions. The Working Group[8] consists of: 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 LoBs which should be included in the scope of the release of the first version of the Upcoming Standard. Subsequently, PCAF published a 'Scoping Document' for public feedback in March 2022. As the Upcoming Standard and PCAF evolve, the Working Group intends to expand the number of in-scope LoBs and case studies. The LoBs/segments that are currently in-scope for the purposes of this consultation and which are discussed in more detail in Chapter 5 are:

Commercial lines insurance

Personal motor lines

Throughout the development of the Upcoming Standard, PCAF will engage with stakeholders to receive feedback, discuss PCAF methodological approaches, and consider their comments and suggestions. During July and August 2022, PCAF is issuing a public consultation on this Progress Report with regulators, the re/insurance industry, brokers, policy makers, data providers, consultants, academia, non-governmental organizations (NGOs), associations of insureds, and civil society as a whole as it continues to refine the approaches presented in this report.

BUILT ON THE GHG PROTOCOL

This work by the Working Group builds on the GHG Protocol standards for corporate reporting such as the GHG Protocol Corporate Accounting and Reporting Standard,[9] the Corporate Value Chain (Scope 3) Accounting and Reporting Standard,[10] and the supplemental Technical Guidance for Calculating Scope 3 Emissions.[11] More specifically, the Upcoming Standard will supplement the GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard[12] by providing additional detailed guidance as to how re/insurance companies can report on insurance-associated emissions – please see Chapter 6.

8 This Progress Report does not constitute a final position or extend the existing requirements or individual company corporate strategies of any of the Working Group participant re/insurers.

9 (WRI and WBCSD, 2004)

10 (WRI and WBCSD, 2011)

11 (WRI and WBCSD, 2011) and (WRI and WBCSD, 2013)

12 (WRI and WBCSD, 2011)

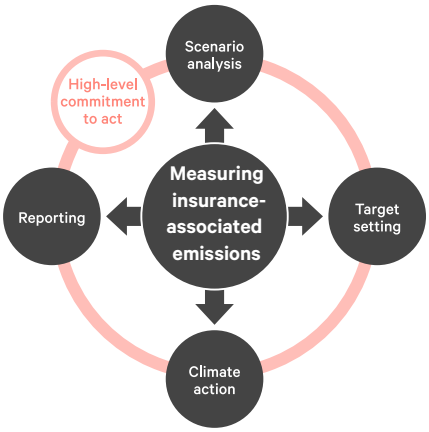
The intention is that the Upcoming Standard will be reviewed by the GHG Protocol to confirm that it meets the requirements set forth in the Corporate Value Chain (Scope 3) Accounting and Reporting Standard as a supplementary note to Scope 3 Category 15 (Investments). This is addressed in further detail in Chapter 2.

Beyond reporting the Scope 3 Category 15 emissions covered by the Upcoming 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 as mentioned above and guidance provided in this Progress Report.

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).

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



Source: (PCAF, 2020)

Multiple climate initiatives exist that support financial institutions with their climate-related business goals, including:

- PCAF focuses on standardizing the measurement and reporting of insurance-associated emissions.
- The Task Force on Climate-Related Financial Disclosures (TCFD) provides a framework for climate-related financial disclosure.
- 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 on defining concrete climate strategies and actions.

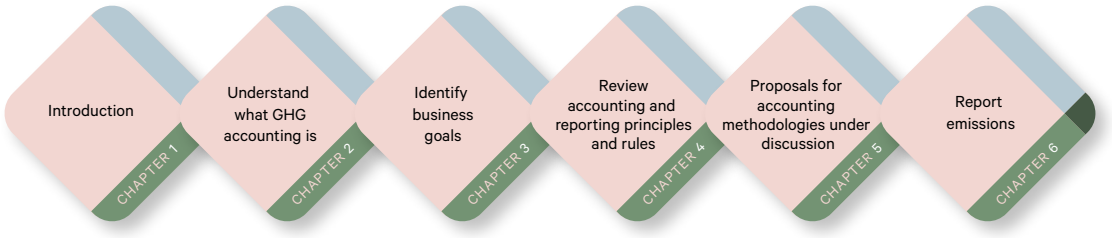
HOW TO READ THIS PROGRESS REPORT

This Progress Report 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 Progress Report:

- "Shall" or "required": Indicates what is required for a GHG inventory to conform with the Upcoming 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 Progress Report and the steps for disclosing insurance-associated emissions.

Figure 1-2. Overview of the Progress Report 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,[13] 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 categorized 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.

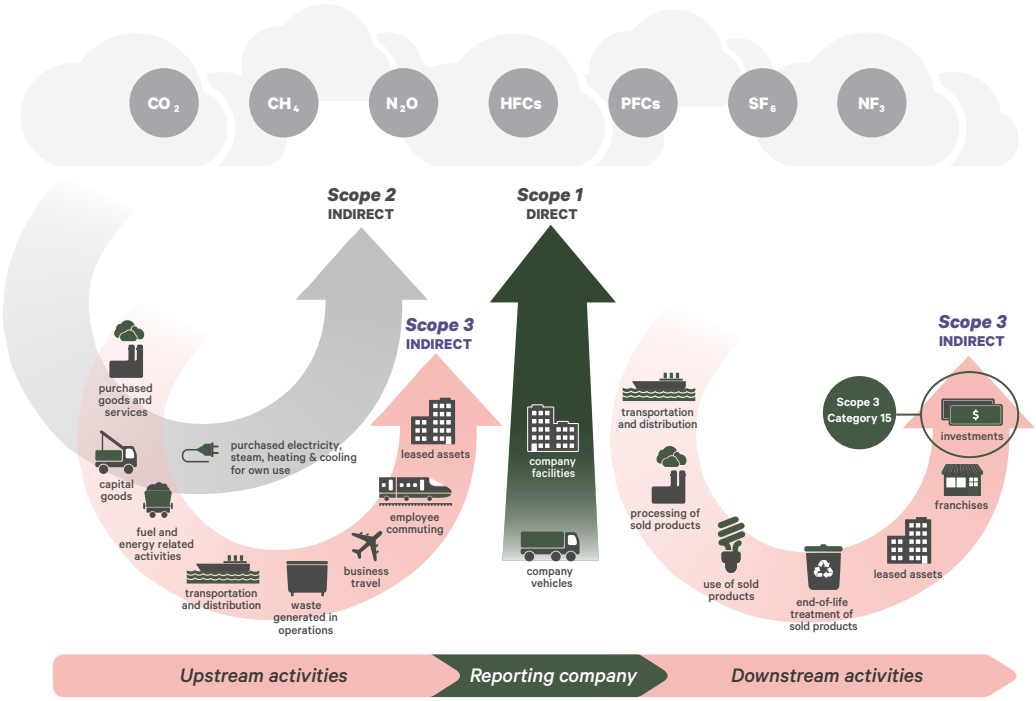
- **Scope 1**: Direct GHG emissions that occur from sources owned or controlled by the reporting company—i.e., emissions from combustion in owned or controlled boilers, furnaces, vehicles, etc.
- **Scope 2**: Indirect GHG emissions from the generation of purchased or acquired electricity, steam, heating, 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[14] categorizes Scope 3 emissions into 15 categories, as shown in Figure 2-1. Emissions associated with a reporting company's insurance underwriting activities for accounting purposes **do not** fall under Scope 3 Category 15 (Investments) as the GHG Protocol expressly states that *"accounting for emissions from insurance contracts is not required"*. This is why is the Working Group proposes that insurance-associated emissions are reported as a supplementary accounting note

13 (WRI and WBCSD, 2004)
14 (WRI and WBCSD, 2011)

to re/insurers' Scope 3 Category 15 (Investments). Please see Chapter 6 for further details on reporting recommendations.

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



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

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

To limit dangerous global warming and achieve the goals of the Paris Agreement, global GHG emissions must be cut drastically. GHG accounting is a necessary step for organizations to better understand and manage their emissions. For a re/insurer, Scope 3 Category 15 emissions (i.e., insurance-associated emissions as a supplementary note to the financed emissions) are the most significant part of its indirect GHG emissions inventory. Special consideration must therefore be made regarding how these are measured. Measuring insurance-associated emissions is an important step a re/insurer could 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 selected insurance-associated emissions in the portfolio of a re/insurer at a fixed point in time in line with financial accounting periods. Insurance-associated emissions can be measured as 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 net-positive 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 property and casualty (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 positive emissions.

Currently, though, there are no international rules for negative emissions accounting. Corresponding guidance by the GHG Protocol is expected to be published in early 2023.[15] While PCAF acknowledges that emission removals are integral in combatting climate change,[16] this Progress Report does not provide guidance on how to measure Insurance-Associated Emission Removals. For the time being, PCAF refers to the forthcoming guidance from the GHG Protocol and will include more specific guidance on emission removals in the future versions of the final insurance-associated emissions Standard.

Lastly, emissions accounting in the real economy sometimes compares the actual emissions of a zero- or low-carbon project (project emissions) to the hypothetical emissions of its high-carbon alternative (baseline emissions). The difference between the project emissions and baseline emissions are then 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.[17] 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 PCAF insurance-associated emissions 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.

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

16 IPCC WGIII 6th Assessment Report, 2022.

17 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

ABSOLUTE EMISSIONS VERSUS EMISSION INTENSITY

Different intensity metrics can be used for different purposes. A wide array of intensity metrics is applied and each has its own merits.

In addition to reporting on absolute insurance-associated emissions, re/insurance companies may report emission intensities if these values are relevant to their business goals (see Chapter 3).

As Table 2-1 below shows, economic emissions intensity is equivalent to absolute emissions divided by a re/insurance exposure measure such as gross written premium. It can be useful for comparing different portfolios or parts of portfolios and for managing climate transition risks. Physical emissions intensity is equivalent to absolute emissions divided by a physical output value, expressed as tCO_2e/MWh or tCO_2e/ton product produced. It can be useful for setting science-based targets (SBTs). The weighted average carbon intensity (WACI)[18] is expressed as tCO_2e/€M company revenue[19] and can be used to understand a portfolio's exposure to carbon-intensive companies.

For recommendations on the reporting of emissions intensity metrics, please see Chapter 6.

Table 2 1. Proposed insurance-associated emissions metrics[20]

Metric	Purpose	Description[21]
Absolute emissions	To understand the climate impact of underwriting and set a baseline for climate action	The total insurance-associated emissions of a Line of Business LoB
Economic emissions intensity	To understand how the emissions intensity of different portfolios (or parts of portfolios) compare to each other per insurance exposure unit	Absolute emissions divided by the insurance exposure unit, expressed as tCO_2e/€M of gross written premium
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	Absolute emissions divided by a physical output value, expressed as tCO_2e/MWh, or tCO_2e/ton product produced
Weighted average carbon intensity (WACI)[22]	To understand exposure to carbon-intensive companies	Portfolio's exposure to carbon-intensive companies, expressed as tCO_2e/€M company[23] revenue for commercial clients

18 (TCFD, 2017)

19 (TCFD, 2017)

20 Adapted from (CRO Forum, 2020)

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

22 (TCFD, 2017)
Also see the CRO Forum page 14.
https://www.thecroforum.org/wp-content/uploads/2020/05/CRO-Carbon-Foot-Printing-Methodology.pdf

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

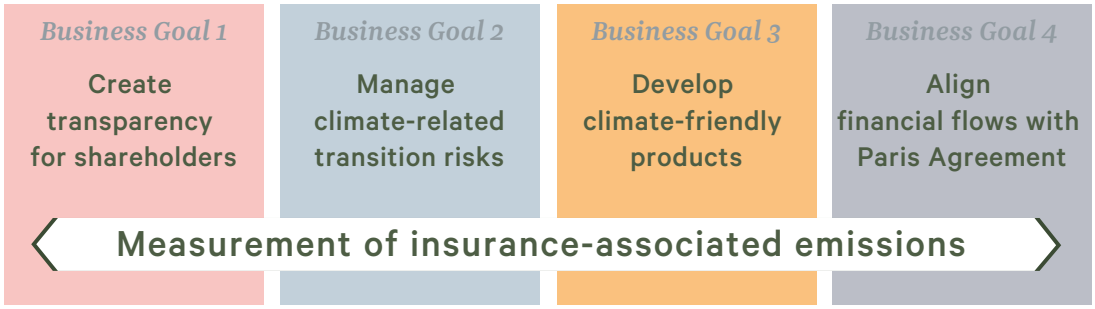
3. GHG accounting can be used as a basis to achieve business goals

The existing PCAF Global GHG Accounting and Reporting Standard for the Financial Industry highlights four of the major business goals of financial institutions which 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, PCAF has recast these business goals in terms of re/insurance to contextualize and support a discussion on whether these business goals are also suitable to be considered to re/insurance underwriting.[24] For example, the effectiveness or ability to put in place such business goals may be restricted by factors such as the mandatory/compulsory nature of some lines of business in certain jurisdictions, the influence of government-backed schemes across certain lines of business in certain jurisdictions, 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



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

The level of detail captured in the assessment of insurance-associated emissions can inform how well the resulting GHG inventory can support the business goals of 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 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 of the re/insurer, which are determined by each re/insurer independently.

24 Please see Chapter 1 for differences between financed emissions and insurance-associated emissions.

BUSINESS GOAL 1: CREATE TRANSPARENCY FOR STAKEHOLDERS

Re/insurers motivated to be more transparent about their climate impact can use GHG accounting to measure the insurance-associated emissions associated with their underwriting activities. Since the economic crisis of 2007-2009, a wide range of stakeholders has demanded more transparency around how their money is invested. 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). The remit of the TCFD was to develop recommendations for "consistent, comparable, reliable, clear and efficient climate-related disclosures by companies."[25] The TCFD framework[26] has expanded since the 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 Progress Report, TCFD-recommended disclosures are mostly voluntary but have become mandatory in certain jurisdictions. However, with strong backing from central banks, the Supervisors' Network for Greening the Financial System (NGFS), and the industry itself, it is likely that companies will be faced with new regulatory requirements in this arena.

For re/insurers, a key facet of TCFD disclosure relates to their underwriting activities. This facet is recognized by 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 above, insurance-associated emissions should therefore be reported as a supplementary note to Scope 3 Category 15 (Investments) emissions for accounting purposes and are not to be aggregated with financed emissions. The first step of this disclosure is measurement. There is currently, however, no strict requirement on re/insurers to disclose the emissions associated with their underwriting portfolios under the GHG Protocol.

Another emerging disclosure framework includes the Exposure Draft of IFRS S2 on Climate-related Disclosures (Climate Exposure Draft) of the International Sustainability Standards Board (ISSB).[27]

Creating transparency for internal stakeholders can also be a business goal for re/insurers. Carrying out an assessment of insurance-associated emissions allows a re/insurer's board members and senior management to get 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 internally define their role, as well as re/insurance's role as a sector in the economy, in combatting climate change.

25 More information about FSB can be found at: https://www.fsb.org/work-of-the-fsb/policy-development/additional-policy-areas/climate-related-financial-disclosures

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

27 IFRS - Climate-related Disclosures

BUSINESS GOAL 2: MANAGE CLIMATE-RELATED TRANSITION RISKS

Re/insurers are increasingly inclined to understand 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 through the introduction of carbon prices and policies and regulations that are pro-climate, i.e., 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.

BUSINESS GOAL 3: DEVELOP CLIMATE-FRIENDLY INSURANCE PRODUCTS

Included in the TCFD framework is a recommendation for disclosure related to business opportunities associated with the transition to a low emission economy.[28] According to the framework, opportunities are categorized 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 carbon economy, re/insurers can independently develop innovative products and services that enable their clients to decarbonize their business activities. By measuring insurance-associated emissions and using the intensity metrics listed in Table 2 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 PARIS AGREEMENT

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. Neither this Progress Report nor any Upcoming Standard prescribe such business strategies.

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 Global GHG Accounting and Reporting Standard for the Financial Industry 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.

28 (TCFD, 2017)

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

To create the first edition of the Global GHG Accounting and Reporting Standard for the Financial Industry, PCAF harnessed the GHG accounting principles from the GHG Protocol Corporate Accounting and Reporting Standard[29] and the GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard.[30] Based on these principles, PCAF developed an additional set of five overarching rules to guide accounting and reporting for financial institutions.

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 organization's disclosure represents an accurate, veritable, 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[31] and the GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard.[32] The GHG Protocol's five core principles are completeness, consistency, relevance, accuracy, and transparency. This Progress Report follows these five core principles and provides 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).

29 (WRI and WBCSD, 2004)
30 (WRI and WBCSD, 2011)
31 (WRI and WBCSD, 2004)
32 (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[33]	Additional PCAF requirements in the existing PCAF Standard	Implications for the accounting of insurance-associated emissions
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 financial institution's share of emissions shall be proportional to the size of its exposure to the borrower's or investee's total (company or project) value.	**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. Details of the specific "attribution factors" to be applied still to be decided.
Completeness Account for and report on all GHG emission sources and activities within the inventory boundary. Disclose and justify any specific exclusions.	**Recognition** Financial institutions shall account for all financed emissions under Scope 3 Category 15 (Investment) emissions, as defined by the GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard. Any exclusions shall be disclosed and justified.	**Recognition** Re/insurance companies shall account for certain parts of their insurance-associated emissions separately under Scope 3 Category 15,[34][35] 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** Financial institutions shall measure and report their financed emissions for each asset class by "following the money" and using the PCAF methodologies. As a minimum, absolute emissions shall be measured; however, avoided and removed emissions can also be measured if data is available and methodologies allow.	**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 the Upcoming Standard for insurance-associated emissions. If data availability and methodologies allow, avoided and removed emissions can also be measured and reported.
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 PCAF assessments is for external stakeholders and financial institutions using the methodology to have a clear, comparable view of how the investments of financial institutions contribute to the Paris climate goals.	**Disclosure** Public disclosure of the results of PCAF assessments is for external stakeholders as well as re/insurance companies using the methodology to have a clear, comparable view on how the insured risks contribute to the Paris climate goals.
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** Financial institutions shall use the highest quality data available for each asset class and improve the quality of the data over time.	**Data quality** Re/insurance companies shall use high quality data available for specific insurance products and the underlying assets/companies and shall improve the quality of the data over time. Whenever necessary or appropriate, re/insurance companies may use approximative key performance indicators (KPIs) which best reflect emissions

33 https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf, p.7

34 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.

35 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

Re/insurers shall account for emissions that are associated with their insurance contracts where material and where data is available. This subChapter 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. Chapter 6 includes additional details on reporting.

ATTRIBUTION

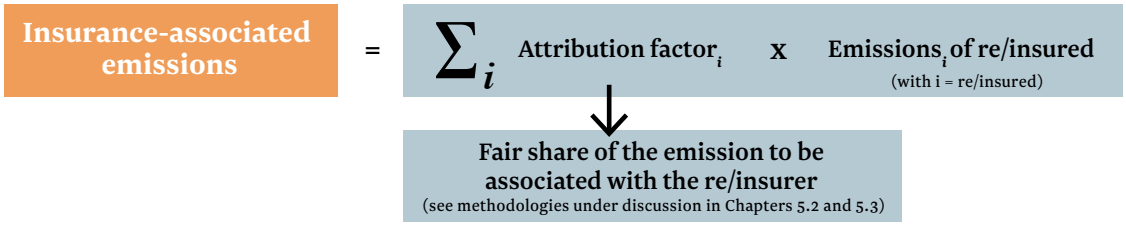
The GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard provides guidance for GHG emissions from loans and investments: They should be allocated to the reporting financial institutions based on the proportional share of lending or investment in the borrower or investee.[36]

A similar logic should be applied to insurance-associated emissions, amended to reflect the distinct relationship between a re/insurer and their customer—as discussed in greater detail below. Attribution is based on annual GHG emissions of the primary re/insurance clients. As a result, GHG insurance-associated emissions are reported on at least an annual basis.

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

The absolute GHG scope 1 and 2 (and scope 3, where significant and where data allows in according with the guidance in Chapter 5) emissions of the insured client or asset are multiplied with a variable known as an "Attribution Factor". This attribution factor serves to determine the fair share of the absolute emissions of the insured customer or asset associated with the re/insurance underwriting portfolio.

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



36 (WIR and WBCSD, 2011)

Re/insurance demands for corporate entities and individuals are structured in various different re/insurance lines. As certain risks are too large to be borne by an individual re/insurer, these risks are also 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:

- Double counting of insurance-associated emissions within a re/insurer, across different LoBs 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 in line with the guidance provided in this Progress Report
- 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 also clear that the same emissions are accounted for twice between insurance-associated emissions 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 stated decarbonization goals of getting a clear view on where portfolios are connected to their customer's and investee's emissions
- 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 minimize 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.

Additional LoBs/segments-specific information on attribution can be found in Chapter 5.

RECOGNITION

The core difference between Financed and insurance-associated emissions is the nature of the relationship of the financial institution with the client. Re/insurance mitigates risks associated with economic activities, but it does not directly finance these activities and does not imply any form of ownership. Therefore, a re/insurer basically holds no capital interest in the client operations and no financial or direct operational control is exerted.[37]

While recognizing that re/insurance customers have a vital need for re/insurance for their businesses, and that 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

37 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 Chapter 5).

is a key differentiation that impacts the approaches that an individual re/insurer may take when engaging clients and contributing to their decisions to reduce the associated emissions. In addition, this Progress Report is not intended to dictate how re/insurers can meet net zero targets, including in how they interact with their customers, or in respect of the customers they choose to work with. Such decisions will continue to rest with individual re/insurers.

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 above on "Recognition"), we refer to the "follow the risk" principle instead of the "follow the money" principle in the case of insurance-associated emissions. For additional information on the re/insurance capital flow, please see Box 4-1.

Re/insurers that intend to conform to the Upcoming Standard shall measure and report their insurance-associated emissions using the methodologies set out in the Upcoming 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 the Upcoming Standard on both insurance-associated emissions and avoided emissions, re/insurers shall disclose separately the methodological formula adopted in calculating such emissions removals or avoided in accordance with the guidance contained 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., 30 June or 31 December). The GHG accounting period shall align with the financial accounting period.

Box 4-1 details the re/insurance capital flow.

Box 4-1. The re/insurance capital flow

As an example, claim payments can be characterized as a money flow. However, re/insurance proceeds are not an investment or loan as the right to proceeds from insurance 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. Other differences to consider for re/insurance-associated emissions versus financed emissions, as well as some of their similarities, are listed as follows:

Financed Emissions can be measured as amounts of GHGs generated, avoided, or removed by an institution. Similarly, re/insurance-associated emissions will also include those generated, avoided, or removed by the insured entity and/or activity.

The financial soundness of a client can have bearing on the risk associated with the re/insurance contract, as well as the investment/loan risk. Financial soundness may impact the "terms" of re/insurance contracts and loan or investment conditions. For example, clients in financial distress are often viewed as representing a higher risk of loan default. Likewise, distressed clients may be unable to invest in appropriate equipment maintenance and safety assessments, which can lead to less effectual risk mitigation capabilities. This could present an increased risk of loss to re/insurers.

Financial institutions can have both debt and equity relationships with a client. Following PCAF's Global GHG Accounting and Reporting Standard, emissions of a client are attributed to both debt and equity, thus avoiding the issue of double counting. Similarly, re/insurers often have multiple contracts with the same client for different re/insurance risks, also known as lines of business. Additionally, many commercial re/insurers have a relationship with clients as both a liability (insured) and an asset (investment). Without clear accounting rules, this presents additional complexities to avoid multiple accounting of the emissions.

As for differences, the re/insurance contract relationship creates no ownership or transfer of equity 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, e.g., legal, security, and claim remediation such as with environmental and cyber claims.

An 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 whereas the client ultimately chooses the re/insurer and this re/insurer is often introduced to the insured through an re/insurance broker/agent.

The length of the contractual relationship for most property and casualty re/insurance lines is most often on an annual basis, whereas corporate investment and financing relationships are usually structured over a multi-year period.

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 Upcoming 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).

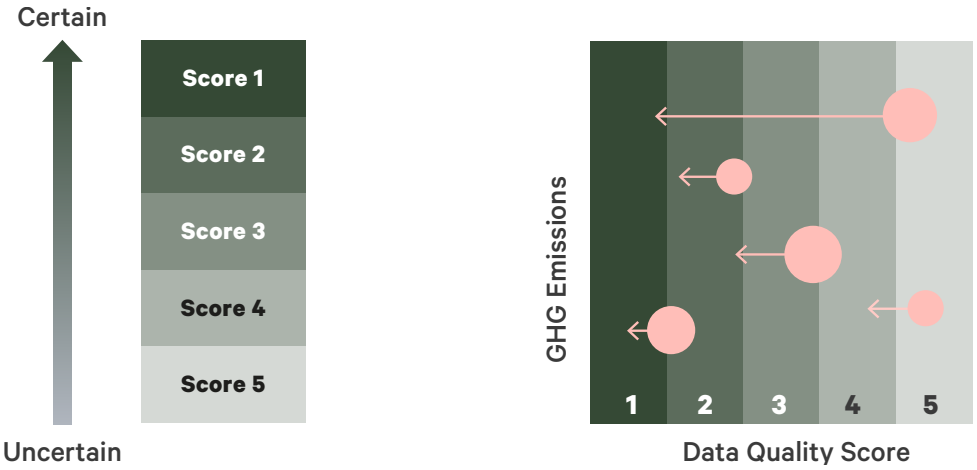
DATA QUALITY

Re/insurers shall ensure their GHG accounting appropriately reflects the GHG emissions associated with their insurance and reinsurance portfolios. To safeguard these outcomes, re/insurers shall use the highest-quality data that is reasonably available for each line of business for calculations, and, where relevant, improve the quality of the data over time. PCAF recognizes that high-quality data can be difficult to obtain when calculating insurance-associated emissions, particularly for certain lines of business 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 can in turn 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 itself and its clients. However, the data required to calculate the client's emissions might not be readily available and must be sought out by the re/insurer. 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 lines of business and coverage types. In these instances, the re/insurer should use the best available data that is reasonably available to them in accordance with the data hierarchy shown in Figure 4-3.

Figure 4-3. General data quality scorecard enables re/insurers to develop a strategy to improve data over time



PCAF recognizes that there is often a lag between financial reporting and required data, such as emissions data for the insured client, becoming available. In these instances, re/insurers should use the most recent data available even if it is representative of 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.

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.

5. Methodology to measure insurance-associated emissions

5.1 General considerations

The ultimate goal of the Upcoming Standard is to fairly associate the GHG emitted by actors in the economy (i.e., firms, households and the public sector) with the players in the insurance value chain (i.e., insurers, reinsurers, and possible others such as agents or brokers) for accounting purposes. The association with re/insurance portfolios is achieved through the application of an attribution factor. This factor defines the percentage of the emissions of a company or a specific real asset that will be associated with the re/insurer providing cover. Such an attribution factor should follow the principles of the GHG Protocol and the existing PCAF standard outlined in Chapter 4.1. In addition, the Working Group has defined the following five guiding principles for an adequate methodology for insurance-associated emissions (see Box 5-1 below).

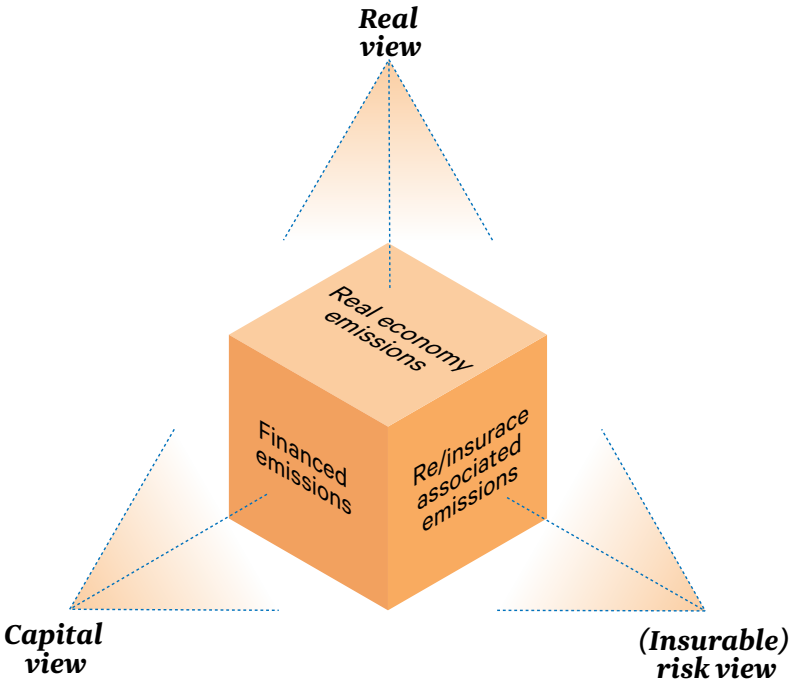
Box 5-1. Guiding principles for methodology for GHG accounting associated with re/insurance underwriting

- **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. 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 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.

Possible attribution factors

Both insurance-associated emissions and financed emissions are a form of shadow accounting for real economy GHG emissions. They offer a different view on the cube of "real" GHG emissions (see Figure 5-1). 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.

Figure 5-1: Different views on real emissions



There are many approaches to define meaningful attribution factors for re/insurance which have been discussed in the Working Group.

If an insurance cover is mandatory, one could argue that all emissions of a company need to be allocated to the insurer. Without cover, a company could not operate, hence the fair attribution factor is 100%. Problems arise here as well, for example in circumstances where a company needs to take out multiple mandatory insurance covers. In addition to mandatory coverages, it is important to note that other prerequisites for the activity often need to be fulfilled, e.g., for vehicles, not only insurance is required, but also fuel and tires. Ultimately, there can be multiple contributors that enable the activity to take place. The fair shares of all contributors must therefore be considered.

Another option for a fair attribution factor could be to allocate emissions of a company or a household/individual according to structure of its total cost of risk, i.e., measures to avoid, mitigate, retain, or insure various risks. This option is also not practical due lack of data, particularly for households/individuals. However, 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 5-2: Total cost of risk of a company

Source: Swiss Re Institute sigma No 05/2012

This Progress Report proposes only options for attribution factors that are practical to be implemented. They are relatively straightforward to calculate and are based on data that is readily available such as premiums, limits of liability of an insurance policy, or cost/revenue of a company/asset. Global commercial insurance premiums account for an estimated 0.5% of global gross revenues of all economic sectors[38] and most of the proposed approaches for commercial insurance give rise to relatively low attribution factors for GHG emissions. 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.

Scope of this Progress Report

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

The focus of the Progress Report is on commercial lines insurance (i.e., all types of insurance purchased by companies) and personal motor insurance (i.e., auto/motor insurance of vehicles owned by private individuals or households). For the time being, this Progress Report does not consider other personal lines (e.g. homeowner insurance), any life or health insurance (including corporate life and pensions) and personal accident. Special considerations for treaty reinsurance are also out of scope at this time in the current Progress Report.

Table 5-1 below provides a more detailed list of the covered types of insurance. Chapter 5.2 and 5.3 present the proposals for commercial lines and motor insurance, the latter of which is the only personal line currently in scope.

38 Based on Swiss Re sigma and Oxford Economics data.

Table 5-1. Business segments and lines of business covered by this Progress Report.

Segment	LoB	Covered in
Commercial insurance (directly insured and facultative reinsurance covers)	• **Property** (e.g. Fire, Multi-Peril Engineering • **Marine** (liability and hull) • **Aviation** (liability and hull)	5.2 Emissions associated with commercial lines portfolios
	• **Liability** (e.g. General Liability, Product Liability, Product Recall, Environmental Liability)	5.2 Emissions associated with commercial lines portfolios
	Other / Special Lines[39] (e.g. Financial Lines [e.g. Professional Indemnity, D&O], workers compensation	5.2 Emissions associated with commercial lines portfolios
	Commercial Motor (all lines)	Two options: 5.2 Emissions associated with commercial lines portfolios or 5.3 Emissions associated with personal motor portfolios
	Corporate Life and Pensions, Personal Accident	Out of scope of current Progress Report
Statutory lines of business		5.2 Emissions associated with commercial lines portfolios
Personal lines	**Motor** (all lines)	5.3 Emissions associated with personal motor portfolios
	Liability	Out of scope of current Progress Report
	Property	Out of scope of current Progress Report
	Other Personal lines (e.g. Travel Assistance, Legal assistance, Pet)	Out of scope of current Progress Report
	Life and Health	Out of scope of current Progress Report
Treaty reinsurance	**All LoBs**	Out of scope of current Progress Report Reinsurers do not have an adequate level of information on the underlying customers in their treaty reinsurance portfolios, therefore treaty reinsurance is considered out of scope for this Progress Report and the first version of the Upcoming Standard. However, it is planned to include treaty reinsurance in future versions of the Upcoming Standard.

39 As outlined in Chapter 4.2. Credit re/insurers might have comparable rights to financing institutions under specific constellations. That's why credit re/insurance might be considered differently.

5.2 Emissions associated with commercial lines portfolios

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 the laws applicable to each reporting re/insurance company.

EMISSION SCOPES COVERED

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 greenhouse gas intensities over time in line with government policies.

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 re/insurers 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 also acknowledges that, to date, there exist 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 collecting, collating, processing and publishing these figures will also vary by re/insurer, and methodologies must be developed in a way that best suit the internal capabilities of each re/insurer. PCAF also recognizes 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 recognizes that re/insurers have different compositions of customers and LoBs within their underwriting portfolios and that re/insurers may insure 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 directly or indirectly influence a reduction in customers' Scope 3 emissions. PCAF recognizes 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 of data available and are assisted by the expectation that data capture and comparability will improve over time.

PCAF supports efforts by re/insurers to improve over time levels of data capture and data integrity of customers' emissions, 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 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

As discussed above, insurance-associated emissions lack the "ownership" and control characteristics associated with investor related emissions.

The attribution factor proposals in this Progress Report have been chosen because the Working Group views these as best suited to attribute a fair share of the insured's emissions for accounting purposes based on the role of the re/insurance sector to facilitate the insured's activity.

ATTRIBUTION OF EMISSIONS PROPOSAL A: GROSS WRITTEN PREMIUM / REVENUE

Proposal A is based on customer-related data to account for the size of the insured company. It provides a methodology that relies on straightforward KPIs and is agnostic to LoBs . However, this attribution proposal is susceptible to volatility due to insurance market cycles (e.g. driving premiums up and down) and wider economic impacts combined with additional external data requirements.

Rationale

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 revenue of the insured.

The attribution factor is chosen to mirror the considerations made for financed emissions. It is based on the rationale that the premium received is the insurer's share of the company's revenue and that this share is commensurate with the fair share of the emissions associated with the insurer.

Financed emissions are attributed to an investor using for instance the following expression: $\frac{I_{FI}}{EV_C}$ where I_{FI} is the outstanding amount of the equity or debt investment of the financial institution and EV_C is the Enterprise value of the company.

This formula can be interpreted as a rough proxy for the financing institution's share of the investee company's earnings. See equation below.

$$\frac{I_{FI}}{EV_C} = \frac{\frac{Earnings_C}{EV_C} * I_{FI}}{\frac{Earnings_C}{EV_C} * EV_C} = \frac{Earnings_C * \frac{I_{FI}}{EV_C}}{Earnings_C} \cong \frac{Investment's\ share\ of\ earnings}{Earnings_C}$$

Where the investment's share of earnings corresponds to the dividends, capital gains and interest payments that the holder of the investment receives from the investee company.

Using this logic, this approach defines a proposal for insurance-associated emissions analogous to that of financed emissions as follows:

$$\frac{Investment's\ share\ of\ earnings}{Investee\ earnings} \sim \frac{Insurer's\ share\ of\ earnings}{Insured's\ earnings}$$

Annual earnings of an insurance company for an individual insurance client are not a stable metric given the volatility of claims payments. Therefore, the approach proposes using the insurer's revenues, equating to its gross written premium, as a proxy for earnings. For consistency reasons the insured's revenue is used as a denominator.

With this approach, insurers' shares of a company's revenue would be typically much smaller than a share taken by an investor calculating financed emissions. The Working Group has not yet concluded whether this is desirable. The insured's earnings could be used in the denominator to be more similar to the financed emissions approach.

To simplify this approach based on more widely available revenue data, a scaling factor $\left(\frac{1}{Earningsmargin}\right)$ can be applied to a company's revenue data as a proxy to earnings data. While earning margins vary across industries, based on recent data the order of magnitude of a single economy-wide weighted average factor would be around 10.[40] For the purpose of this approach, such a single weighted global factor is proposed to reduce complexity.

Insurance products/coverages are often related to specific insured activities, locations, or projects that only account for a part of a company's emissions rather than the overall climate impact of the insured company. This is particularly relevant for project-specific insurance such as a construction policy that insures 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. However, reporting of emissions and revenue by customers is usually only available at an aggregated company level or based on a legal entity view.

With this discrepancy between insured risks and available data on client emissions and revenue, attributed emissions can be overstated where insurance contracts do not cover emissions-intensive parts of the customer's activities. As the capital relief provided by the re/insurer is fungible across a customer's operations, consistently using company level metrics for revenues and emissions is not seen as materially impacting the principles set out in this Progress Report. An increase in the availability of recognized methods of calculating the emissions and

40 See e.g. https://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/margin.html

revenues associated with physical insured assets may give rise to considerations of using a more granular approach within the calculation of insurance-associated emissions in place of parent-level or entity-level emissions. Given the complexities of developing a recognized standard that associates revenues with individual assets, this methodology is not expected to allow for reasonable asset-level attribution.

Additionally, the availability of data on client revenues and emissions at the same granularity reduces the potential for mismatching the organizational scope in the attribution factor and the emissions side of the equation.

In cases where policies only cover specific subsidiaries of a company, the insurance-associated emissions can be calculated to account solely for the particular emissions of said subsidiaries. However, this may only be done if all required input data corresponds to the organizational level of said subsidiaries. See below for examples:

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 information for Subsidiary A1 and A2 respectively
- When insuring Subsidiary A3 or A4 – use parent-level information

Formula to calculate insurance-associated emissions

Insurance-associated emissions = **Attribution factor$_i$ × Emissions$_i$ of insured company or asset**

Proposal A1: without scaling factor:

$$Attribution\ factor_i = Gross\ Written\ Premium_i / (Revenue_i)$$

Proposal A2: with earnings margin scaling factor:

$$Attribution\ factor_i = Gross\ Written\ Premium_i / (Revenue_i \times [EM\%_i])$$

Definitions:

1. **Gross Written Premiumi (GWP)(numerator)**: This is the amount paid by the insured to receive insurance coverage. It is gross of any reinsurance or retrocession but net of brokerage and of commissions. For multi-year contracts an annualized premium value shall be used.[41] Fronting companies only account the fronting fee or the retained premium.[42]
2. **Revenue$_i$ (denominator)**: Total amount of income generated by the customer through the sale of goods or services.
3. **[EM%$_i$] Earnings margin scaling factor**: Transforms the revenue figures into an earnings proxy for attribution comparable to that of the PCAF Global GHG Accounting and Reporting Standard.
4. **Statutory LoBs**: 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, 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 the example below:

$$Customer\ attribution\ factor = \frac{GWP1 + GWP2 + \cdots + GWPn}{Revenue}$$

Customer with multiple LoBs[43]

LoB	GWP	Revenue	Insurance-associated emissions Attribution factor
Third Party Liability	50	10,000	0.005
Property	100		0.01
Total	150	10,000	0.015

41 Gross Written Premium is used because it is the most readily available and transparent premium figure that insurers already tend to disclose on an aggregate basis. Using premiums gross of reinsurance also avoids the incentive to cede more high emissions-intensive business to reinsurers, which would lower attributed emissions for net premiums without any effects on real-world emissions.

42 Fronting is a business solution whereby an insurance company (Fronting Company) issues an insurance policy (Fronting Policy) on behalf of another risk carrier (which assumes the role of a reinsurer), such as another primary insurer, a reinsurance company, or a captive. The Fronting Company cedes such risk (usually 100%) to the reinsuring risk carrier. Although the actual exposure insured in the fronting policy is simply passed to the reinsuring risk carrier, the Fronting Company remains the legal risk carrier. The Fronting Company charges a fee for their fronting services and the assumption of the legal and some credit risk. Gross premium shall be used for the Fronting Policy because the Fronting Company as the legal risk carrier must disclose this business as part of its gross insurance activities. Insurer internal fronting arrangements should only be considered to the extent that the underlying emissions are only attributed once in order to avoid double counting between different entities of the same re/insurer.

43 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.

Advantages of Proposal A

- The attribution factor has the advantage that it is universally applicable across a range of lines of business and GWP is a widely available internal insurance KPI.
- Well suited for aggregation on customer and portfolio level, minimizing issues of double counting within a single risk carrier's portfolio.
- Agnostic to LoBs.

Limitations of Proposal A

- The volatility of both GWP and Revenue due to insurance market cycles and other market movements, respectively, means trends can be removed from real world GHG emissions. For example, a surge in energy prices would lead to lower insurance-associated emissions, or an increase in loss activity factored into GWP over time could lead to increased insurance-associated emissions, even if neither the insured's emissions nor the provided insurance coverage has changed.
- A value based on GWP could disadvantage new, low-emission technology solutions that have limited loss data and are therefore risk-rated higher than established, high-emission technologies. On the other hand, this would be an advantage when looking at portfolio weighted emissions because it overweights the low GHG emissions of those companies compared to established, high-emission technologies.
- With revenues calculated on a company level, this attribution factor is applied against the overall emissions of a customer's legal entity, irrespective of insurance policies that cover only a subset of customer assets or activities. For larger corporates, the insured legal entities will not always be aligned with the available emission and revenue reporting of the customer.
- The quality of revenue data differs across countries. This would typically require the willingness and ability of the client to provide data or the use of external data providers.
- The use of external data providers reduces comparability between insurers due to differences in the methodologies of data providers.
- Using GWP for fronting arrangements inflates the attribution factor for such contracts. With only low amounts of GWP retained by the re/insurer, fronting deals can have an attribution factor that is much higher than one from a comparable direct insurance policy.

Related options discussed during the development of the standard

Disregarded alternative attribution factors	Key rationale
Technical Premium / Revenue	While Technical Premiums are subject to lower market fluctuations than actual GWP, using them has the following limitations: • there is no industry standard on how to calculate them, which would complicate comparability and transparency; and • they are not consistently available for all customers and LoBs.
Technical Premium / Annualized Enterprise Value	Enterprise Value is predominantly available for large listed companies. Since insurers' portfolios would also include small private companies, this approach would therefore cover only a limited proportion of the portfolios.

ATTRIBUTION OF EMISSIONS PROPOSAL B: GROSS WRITTEN PREMIUM / CONTRACT LIMIT OF LIABILITY

Proposal B relies on insurance-related KPIs and provides little comparability between re/insurers, but relies on internally available data.

Rationale

As an attribution principle, the emissions attributed to an insurance portfolio are determined by the ratio of the GWP received from the insured to the limit of a potential pay-out for this risk.

The rationale for this factor is that contract limits can be seen as a proxy for contingent capital extended to the customer. The higher the limit of the potential payout, the larger the enabling role of the re/insurer, whereas the GWP provides a measure of the riskiness of the assumed risk: the more likely a risk leads to a loss, the greater the potential premium paid for the same limit, all else equal.

Where multiple insurers share a risk and take just a percentage of the overall limit of a risk (of an individual layer), and are by the very nature of the policy aware of the overall limit, the full limit (of this layer) is used for each attribution. This is because the full limit of a layer is seen as the contingent capital provided by the entire insurance industry. The GWP of each of the participants divides the attribution fairly between all participating insurers.

As discussed above in relation to Proposal A, insurance products/coverages are often related to specific insured activities, locations, or projects that only account for a part of a company's emissions rather than the overall climate impact of the insured company. This is particularly relevant for project-specific insurance such as a construction policy that is insuring the construction of a specific asset. For instance, if insuring the construction of a solar power plant by a diversified energy company that owns fossil generating plants as well, emissions from those fossil plants would factor into the attribution as well, even they are not covered by the insurance policy. However, reporting of emissions by customers is usually only available at an aggregated company level or based on a legal entity view.

Due to this data availability, this Progress Report generally recommends using the overall emissions of the customer to calculate the insurance-associated emissions, irrespective of specific contract coverages. However, as all metrics of the attribution factor are available on a contract-level granularity, it does allow for more granular attribution based on the emissions of the actual insured assets (such as in the case of Property or Construction LoBs) once accepted methodologies to account for asset-level emissions become available. The guidance provided in the existing PCAF Global GHG Accounting and Reporting Standard for the Financial Industry, particularly as it pertains to Project Finance and Commercial Real Estate, could serve as a first reference for calculating insurance-associated GHG emissions at an asset level. As such, where re/insurers are able to obtain reliable emissions data on an asset basis, they can use this approach for more accurate attribution. If emissions of the actual insured assets are used for attribution, this approach should be used for all contract coverages of that client. If this information is not available for all covered assets, or the insurer is providing both asset-specific and non-specific (e.g., a general liability policy) coverage, the most suitable entity-level emissions

data should be used for attribution for all contracts of that client instead. This will also be reflected in a higher data quality score in accordance with table 5-3 below. Any methodologies, but not the underlying data used in the calculations, used for this purpose shall be transparently reported as part of the insurance-associated emissions disclosure.

Example asset level: Coverage for diversified oil & gas major

This example provides an indication of the current status of discussions. The detailed requirements on how to perform aggregation of asset- and entity-level emissions are still under consideration and will further evolve based on working group testing.

	Insurer A	Insurer B	Insurer C
Coverages	• Property insurance for 3 refineries owned by subsidiary X of parent	• Property insurance for 3 refineries owned by subsidiary X of parent • Property insurance for offshore oil platform owned by subsidiary Y of parent	• Property insurance for 3 refineries owned by subsidiary X of parent • D&O insurance for officers of subsidiary X of parent
Data availability	• Asset-level scope 1, 2, and 3 emissions for each refinery available	• Asset-level scope 1, 2, and 3 emissions for each refinery available • Emissions for oil platforms unknown • Emissions for subsidiary Y and parent company available	• Asset-level scope 1, 2, and 3 emissions for each refinery available • Emissions for subsidiary X and parent company known
Applicable methodology	Apply attribution factor to actual asset-level emissions	Apply attribution factor to parent-level emissions, as it is the only data consistently applicable to all contracts	Apply attribution factor to subsidiary X emissions, as they most closely fit all covered exposures

Formula to calculate insurance-associated emissions

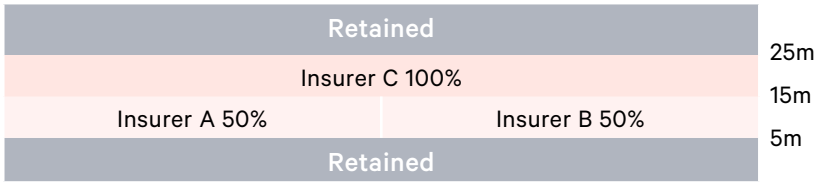
$$\text{Insurance-associated emissions} = \text{Attribution factor}_i \times \text{Emissions}_i \text{ of insured company or asset}$$

$$Attribution\ factor = \sum \frac{Gross\ Written\ \text{Pr}\,emium}{100\%\ Limit}$$

Definitions:

1. **Gross Written Premium (GWP)(numerator)**: This is the amount paid by the insured to receive insurance coverage. It is gross of any reinsurance or retrocession, but net of brokerage fees and commissions. For multi-year contracts an annualized premium value shall be used.
2. **100% Limit (denominator)**: The highest potential amount to be paid to the customer in the event of a loss. Where a re/insurer only writes a share of this limit, the full limit (100%) shall be used to calculate the attribution factor. For contracts with multiple limits, the limit with the highest value shall be used for reporting, without taking further sub-limits into account.
   Limits are considered on a per-occurrence basis and, not taking aggregate limits into account to keep complexity to a reasonable level.

E.g., in the example below, the relevant limit for all insurers would be 10m (100% of the 10m xs 5m layer for insurer A & B, and 100% of 10m xs 15m layer for Insurer C).[44]



Aggregation approach

When insuring commercial customers, re/insurers are likely to cover more than one LoB, or several layers of an insured's business.

To get to an overall customer view of the insurance-associated emissions, the attribution factors from each individual contract can be aggregated in different ways. This will impact the value of the customer-level attribution. The following examples highlight potential approaches and the sensitivity of the aggregated attribution factor to enable testing and consultation feedback.

Option a) below is the preferred approach by the Working Group because it allows a more flexible segmentation of reporting by customer/industry segment or LoB while yielding results that do not substantially vary. However, additional feedback on any unintended consequences of the two options are welcome.

Customer with multiple LoBs[45]

LoB	GWP	Contract limit	Insurance-Associated Attribution factor
Third Party Liability	100	1000	0.1
Property	100	10000	0.01

44 In a policy with a layer of 10m xs 5m all losses larger than 5 million, but less than 15 million are covered by the insurer.

45 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.

Attribution Option a)

$$Attribution\ factor = \frac{GWP1}{Limit1} + \frac{GWP2}{Limit2} = 0.11$$

Attribution Option b)

$$Attribution\ factor = \frac{GWP1 + GWP2}{Limit1 + Limit2} = 0.018$$

Advantages of Proposal B

- Relies on internally available data.
- Can be applied to overall customer emissions and also allows attribution of emissions from only specifically covered assets, which might be further explored in a future iteration of the Upcoming Standard.
- Contract limits are largely independent of market and wider economic volatility, but volatility from gross written premium and changes in program structure remains.

Limitations of Proposal B

- Insurance contracts with larger companies typically include multiple limits, complicating an industry-consistent calculation of limit figures.
- The method penalizes certain co-insurance structures like layered programs by generating higher attribution factors compared to quota share participations.
- Significant GWP adjustments or changes in program structure period-on-period will lead to volatile attribution factors.
- An attribution factor based on GWP could disadvantage new, low-emission technology solutions which have limited loss data and therefore are risk-rated higher than established, high-emission technologies. On the other hand, this would be an advantage when looking at portfolio weighted emissions as it overweights the low GHG emissions of those companies compared to established, high-emission technologies.
- Contracts are still subject to insurance market fluctuations of hardening/softening markets.
- Risk Carriers may find that, where they would make the strategic underwriting decision to lower the size of the risk taken in a policy to manage risk exposure, e.g., instead of asking for a higher premium for the same limit, this decision would increase the insurance-associated emissions of those “right line-sized” accounts by increasing the attribution factor where real emissions would nevertheless remain equal.

Related options discussed during the development of the standard

Disregarded insurance-associated emissions factors	Key rationale
Limit of Liability / Total Insured Value	Due to differences in liability and property LoBs, this approach is more suited to property.
Limit of Liability / (Retention + Total Limit)(per LoB)	Where total limit = maximum limit bought by the insured across the insurance market. As the approach reflects the overall capacity extended to the customer and each re/insurer's share of that capacity, it represents the principle of contingent capital well. However, it does face practical difficulties as the overall market limit can be difficult to obtain. Furthermore, when covering more than one line per customer, the attribution can be more than 100%.

DATA QUALITY

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

While 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 public data sources such as statistics or data from other third-party providers.

Options 1 and 2 are preferred over Option 3 from a data quality perspective—they provide more accurate results of insurance-associated emissions to a re/insurer. 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.

Table 5-3. General description of the data quality score table for commercial lines insurance

Data quality	Options to estimate the insurance-associated emissions		When to use each option (what data should be available)		
			Attribution Factor	Emissions	Granularity of Emissions Data
Option 1: Reported Emissions	1a	**Score 1**	TBD	Reported - Verified	Emissions data reported/estimated aligned to entity or asset insured.
	1b	**Score 2**		Reported - Unverified	
Option 2: Physical activity-based emissions	2a			Energy Consumption x EF (Intensity per MWh of Electricity)	
	2b	**Score 3**		Production Output x EF (Intensity per t of Production [output] of Activity Type)	
Option 3: Economic-activity based emissions	3a	**Score 4**		Revenue x EF (Intensity per Revenue)	Emissions data reported/estimated not aligned to entity or asset insured.
	3b	Score 5		EF (Intensity dependent on attribution factor)	

A detailed summary of the data quality score table, including data needs and formulas to calculate insurance-associated emissions, is provided in Annex 10.1 (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 using emissions data reported by companies, given the data fully covers a company's emissions-generating activities disclosed in official filings and environmental reports. The most recent available data should be used with mention to the data source, reporting period, or publication date. Using this data is in line with Option 1. PCAF acknowledges that commercial insurance portfolios include both listed and non-listed companies and that availability of reported data can be limited, especially for non-listed clients. PCAF also recognizes 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.

Data providers collect emissions data as reported by the companies themselves, either through a standardized 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 percent of the emissions boundaries. In such 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 scoring method to their own data, which would allow them to share the data quality scores directly with their clients.

While PCAF does not recommend a preferred data provider, it recommends using data providers that use the standardized 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, as well as using the most recent available data. PCAF also encourages re/insurers to mention the data source, reporting period, or publication date of data used.

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 maximize 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 emission factors from revenue-based models (i.e., emission intensity per revenue) because the former 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 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,[46] Defra,[47] Intergovernmental Panel on Climate Change (IPCC),[48] GEMIS (Global Emissions Model for integrated Systems),[49] and Food and Agriculture Organization of the United Nations (FAO).[50] The most recent available data should be used, including a mention of the data source, reporting period, or publication date.

46 More information can be found at: https://www.ecoinvent.org

47 More information can be found at: https://www.gov.uk/government/publications/greenhouse-gas-reporting-conedition-factors-2019

48 More information can be found at: https://www.ipcc-nggip.iges.or.jp/EFDB/find_ef.php

49 More information can be found at: http://iinas.org/gemis-download.html

50 More information can be found at: http://www.fao.org/partnerships/leap/database/ghg-crops/en

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,[51] 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 and not an emission factor for the agricultural sector in general. Example EEIO databases that can be used to obtain such emission factors are EXIOBASE,[52] Global Trade Analysis Project (GTAP),[53] or World Input-Output Database (WIOD).[54]

PCAF's web-based emission factor database provides a large set of emission factors for Options 2 and 3. The database 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, PCAF allows the use of alternative options to calculate emissions if none of the specified options 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 recognizes that it can be more challenging to source project–level, asset-level, or child-company-level data, compared to ultimate- or parent-company-level data. Parent-company-level data, or data related to a higher entity relative to the insured entity, may still be used but will be assigned a lower quality score. An example of this is using company-reported verified emissions for an insured project or asset: this will be awarded score 4 instead of score 1. In addition, if company production output is known and is used to estimate the emissions of the insured asset or project, this will be awarded score 4 instead of score 3.

51 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.

52 More information can be found at: https://www.exiobase.eu

53 More information can be found at: https://www.gtap.agecon.purdue.ed

54 More information can be found at: http://www.wiod.org

Quality Scoring

Since Scope 1 and Scope 2 emissions will be reported together, data quality scoring will be applied to Scope 1 and Scope 2 emissions jointly and Scope 3 emissions separately if reported. Since Scope 1 and 2 emissions can have different methods of estimation, the combined data quality score to be reported will be the lowest of the two methods if they differ.

LIMITATIONS

Estimation of Asset-Specific Emissions

As accepted methodologies to account for asset-level emissions become available, re/insurers are encouraged to apply these to calculate the specific GHG emissions of insured assets. Guidance provided in the Global GHG Accounting and Reporting Standard for the Financial Industry, particularly as it pertains to Project Finance and Commercial Real Estate, can serve as a first reference for calculating GHG emissions at an asset level.

Generalized nature of Option 3

One limitation of Option 3 is the generalized 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 for Option 3 largely depends on assumptions and approximations derived from region and sector 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 emissions) 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 remainder of the clients in the sector that did not provide specific emissions data.

5.3 Emissions associated with personal motor portfolios

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 the laws applicable to each reporting re/insurance company.

ASSET CLASS DEFINITION

This asset class refers to insurance contracts made to cover losses by giving financial protection or reimbursement to different types of personal motor vehicles.

Insurance companies provide financial protection from potential risks like damages and theft. There are different types of vehicle coverages that offer additional financial protection such as floods, earthquake, and vandalism, among others. Insurance companies also provide safety and security for various types of motor vehicles. Therefore, an insurance company may offer coverage to motorcycles and passenger cars while another company may offer insurance for trucks and buses.

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

The following list exemplifies the vehicle types that may fall under the asset class of motor vehicle insurance products. This is not an exhaustive list as other vehicle types can also be included. This asset class does not cover any vehicles that are used for commercial purposes and covered under a commercial insurance policy.

- Passenger car
- Motorcycle
- Light commercial truck (e.g., vans) – If they are being used for personal purposes and do not have commercial coverage

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 vehicle and electric vehicles

ATTRIBUTION OF EMISSIONS

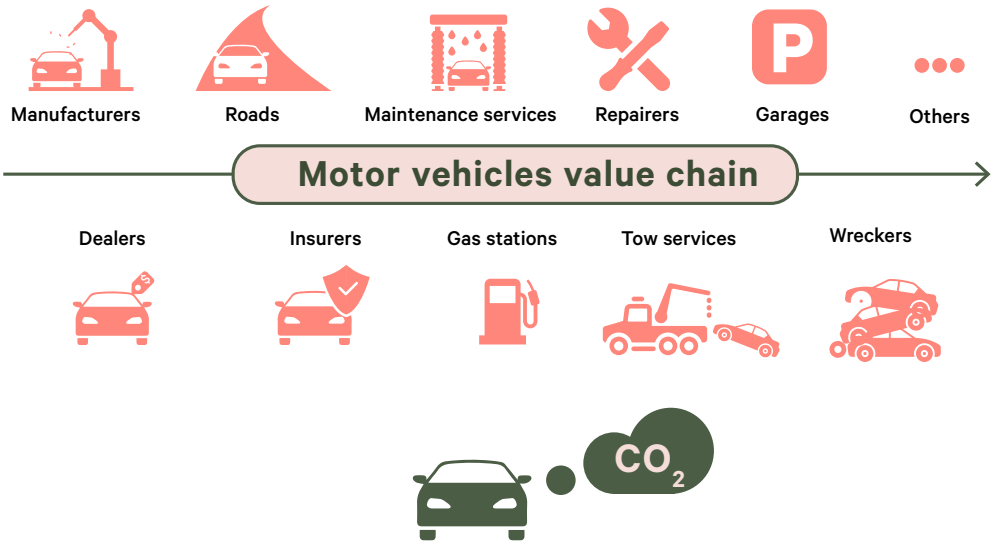
One philosophy behind calculating insurance-associated emissions for personal motor is that of an “enabler”, versus the financed emissions philosophy being that of an “owner”. Re/Insurers are not alone in making it possible for vehicles to be on the road, but they are one significant stakeholder. Whereas lending institutions will use the values of the outstanding loan amount

divided by the value of the vehicle at origination, insurers and reinsurers need values that relate to the vehicle's use throughout its operational life while being insured.

While this philosophy is also present for commercial insurance products, it is broader than the follow-the-risk narrative described above for commercial lines of business. That is, by adequately abating the risks for the insured, the insured activities are also enabled—that is, the ability to operate. There are other activities of re/insurers which facilitate the insured client to continue the covered activity, such as risk engineering services, claims services, etc., which are not relevant per se for personal motor and not in-scope here.

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

Accounting of GHG emissions associated with insurance activities should therefore entail the usage of a proper Attribution Factor that associates an appropriate, or "fair", share to re/insurers and recognizes the role of others as mentioned. This is related to the economic participation of re/insurance within the entire value chain of motor vehicles [see illustration below].



The entire range of perils considered within Motor Insurance contracts are eligible for the purpose of defining potential attribution emission factors. These are considered in different intensity levels, as can be the case for compulsory perils in some jurisdictions such as MTPL (mandatory third party liability), compared to non- compulsory perils such as MOD (motor own damage), Road assistance or driver's accident. Using the full range of perils eligible for defining potential attribution factors simplifies and facilitates the data collection process.

Another view of the attribution factor is in consideration of encouraging 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 recognizes individual policyholder actions would be appropriate.[55]

Formulas to calculate insurance-associated emissions

The following methods are proposed for the calculation of insurance-associated motor emissions.

PROPOSAL A: INSURANCE EXPENSE WITHIN THE TOTAL COST OF VEHICLE OWNERSHIP

Rationale

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 circulation.

The calculation of the first method for insurance-associated motor emissions is summarized by the following formula for an underwriting portfolio P of n vehicles:

$$\textit{Insurance} - \textit{associated emissions} = \sum_{1}^{n} E(V_i) * D(V_i) * \frac{R_{C,I}}{R_{C,M}}$$

Where:

- $R_{C,I}$ represents the insurance industry's total premium from the motor line of business for all insurance covers (monetary amount).
- $R_{C,M}$ represents the total costs associated with vehicle ownership, which includes insurance as well as depreciation, fuel expenses, maintenance, repairs, taxes, and registrations (monetary amount).[56]
- $E(V_i)$ are the emissions generated per km driven for the make, model and fuel type of the vehicle i (gCO_2e/km).
- $D(V_i)$ is the (estimated) yearly distance travelled by vehicle i as declared by the vehicle's owner, or estimated based on similar vehicles (km).[57]

The attribution factor $(R_{C,I}/R_{C,M})$ as explained above would be calculated and provided by PCAF using publicly available information and open-source research from a wide variety of global markets to then converge on a single, average value. The proposed single, average value would

55 PCAF recognizes 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.

56 It is important to avoid double counting when calculating the "total revenues". I.e., re/insurers should not add up all the revenues from all suppliers of car producers as well as the revenues from the car producer. Supplier revenues are captured in the price of the car, so re/insurers should only take the sum of the revenues from the car producer. One option could be to consider the cost of ownership of the vehicle as the denominator of the attribution factor, as all revenues in the value chain have to be paid by the end customer.

57 It could be considered that if the mileage driven per customer is not yet known, an average value of km driven per year could be used; this is true for all three formulas.

then be used by all personal motor risk carriers for all markets, with updates to the attribution factor occurring when relevant. The exact timing for updates is not yet known, but it is reasonable to consider that significant changes are unlikely to occur annually. A time frame of three to five years would be reasonable.

Initial research[58] into this attribution factor reveals the main elements which make up the total cost of ownership:

- Depreciation ≈ 35% - 50% of the total cost of ownership
- Fuel Costs ≈ 10% - 25% of the total cost of ownership
- Insurance ≈ 10% - 26% of the total cost of ownership
- Maintenance ≈ 1% - 5% of the total cost of ownership
- Registrations/taxes ≈ 3% - 12% of the total cost of ownership

This research has shown that the insurance costs range between 10% and 26%, with the average being 18%. Further research will be done and shared before a final attribution factor would be released by PCAF.

Advantages of Proposal A

- Ease of explanation, as the attribution factor includes components that are easily understood.
- Low data/calculation costs for the re/insurers, as PCAF will be responsible for specifying and updating the value of the attribution factor.
- Recognizes the role of other actors in the circulation of vehicles and subsequent emissions.
- High comparability, as all insurers use the same attribution value.

Other Considerations of Proposal A

- Is not specific to each insurer. Each insurer would use the same value, with decreased granularity.
- Places emphasis of measures to reduce associated emissions on insured actions/choices, potentially at conflict with the compulsory nature of MTPL.

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

PROPOSAL B: PREMIUM AND ANNUALIZED ASSET VALUE

Rationale

Similar to the attribution factor for financed emissions, this formula uses the annualized asset value as the denominator and premium as the numerator.

This attribution factor, calculated by the insurer rather than PCAF, is summarized by the following formula for an underwriting portfolio P of n vehicles:

$$\textbf{\textit{Insurance} - \textit{associated emissions}} = \sum_{1}^{n} (E(V_i) * D(V_i)) * \left(\frac{\sum_1^n V_{i,p}}{\sum_1^n (V_{i,a} + V_{i,p})}\right)$$

Where:

- $V_{i,p}$ represents the insurance premium for vehicle i (monetary amount).
- $V_{i,a}$ represents the annualized asset value of vehicle i, e.g., current asset (replacement) value divided by the residual life of the vehicle (monetary amount).
- $E(V_i)$ are the emissions generated per km driven for the make, model and fuel type of the vehicle i (gCO_2e/km).
- $D(V_i)$ is the (estimated) yearly distance travelled by vehicle i as declared by the vehicle's owner, or estimated based on similar vehicles (km).[59]

The residual life of the vehicle should be based on the year of manufacture of the vehicle. For example, if the average life of a vehicle is assumed to be 10 years, then the annualized asset value of a new vehicle would be the current asset (replacement) value divided by 10. If the vehicle was manufactured 5 years ago, then it would be the current asset (replacement) value divided by 5. If the vehicle was manufactured 9 or more years ago, then it would simply be the current asset (replacement) value.

Advantages of Proposal B

- Uses insurer data as well as asset-level data.
- Aligns with the attribution factor for financed emissions of motor vehicle loans.
- Can be calculated at different levels of granularity (See below for more on this topic).

Other Considerations of Proposal B

- Costs of data acquisition will be incurred as the asset values of the portfolio will be required; additionally, the portfolio premium values will need to be obtained.
- Depending on the level of granularity for calculation, the attribution factor can be significantly impacted by factors like inflation and hardening/softening insurance markets. This hinders comparability over time.
- Different insurers could apply the methodology differently, lessening comparability.
- Some portfolio assets may not have clear annualized asset value calculations, specifically vehicles with above-average useful lives.
- Generally, using premium as a numerator might create an unintended incentive to adjust premiums to change the associated GHG emissions.

59 It could be considered that if the mileage driven per customer is not yet known, an average value of km driven per year could be used; this is true for all three formulas.

Additionally, while the attribution factor(s) could be re-calculated annually, this is not a requirement. Assuming that portfolios continue to grow and contain a mix of new and aging vehicles, it is reasonable to expect that the attribution factor value may stay relatively consistent over a two- to three-year period.

PROPOSAL C: PORTFOLIO PREMIUM VERSUS PORTFOLIO COVERAGE LIMITS

This attribution factor is specific to insurance portfolios and is calculated by the insurer rather than PCAF.

Rationale

In risk finance theory, insurance is considered a type of alternative capital. People or companies can financially prepare for unexpected disasters by setting aside sufficient money or purchasing insurance. In this respect, purchasing insurance is a means of raising capital.

The calculation of the proposal C for insurance-associated emissions for personal motor is summarized by the following formula for an underwriting portfolio P of n vehicles:

$$\sum_{1}^{n}(E(V_i) * D(V_i)) * (\frac{\sum_1^n V_{i,p}}{\sum_1^n V_{i,a}})$$

Where:

- $V_{i,p}$ represents the insurance premium for vehicle i (monetary amount).
- $V_{(i,a)}$ represents the coverage limit for each policy. Where the coverage is unlimited, the second largest limit can be applied to the policy. For example, if policyholders can choose the coverage limit from USD 0.5M to 2M or Unlimited, use USD 2M as a proxy of unlimited (monetary amount).
- $E(V_i)$ are the emissions per km driven for the make, model and fuel type of the vehicle i (gCO_2e/km).
- $D(V_i)$ is the (estimated) yearly distance travelled by vehicle i as declared by the vehicle's owner, or estimated based on similar vehicles (km).[60]

The attribution factor in the above is then equivalent to the ROL (Rate on Line) for the entire portfolio.

In calculating financed emissions, fair share is a percentage of total capital raised. In calculating insurance-associated emissions, total capital raised is equal to the total compensation limit. Therefore, it is appropriate to use the total compensation limit as the denominator to determine the fair share. The portion of this amount associated with the insurance company is the amount that the insurance company pays for the total compensation limit, and therefore, theoretically, the technical premium. This is substituted for insurance premium in the methodology above for ease of calculation. The total limit of coverage minus the technical premium is the portfolio diversification effect, which is the portion attributable to all policyholders in the portfolio.

60 It could be considered that if the mileage driven per customer is not yet known, an average value of km driven per year could be used; this is true for all three formulas.

Advantages of Proposal C

- Since the data used to calculate the attribution factor is owned by the insurance company, there is no data availability problem.
- Consistent with the attribution factor for Commercial LOB (Proposal B) and with the concept of attribution factor for financed emissions.
- Can be calculated at different levels of granularity (See below for more on this topic).

Other Considerations of Proposal C

- Some data/calculation costs in order to calculate the portfolio-level information.
- As MTPL in many markets is unlimited cover, a proxy "limit" is required as suggested above. As different insurers could apply this differently, comparability between insurers may be limited.
- As the premium amounts associated with higher and even unlimited limits are generally small, the attribution factor values may also be very small. Some may consider this small attribution factor not a fair share to insurers.
- Given the need to use specific insurance information and potentially proxy information, this method may be difficult to explain to others.
- Generally, using premium as a numerator might create an unintended incentive to adjust premiums to change the associated GHG emissions.

If the distance driven per customer is not yet known, an average value of the distance driven per year could be used; this is true for all methods provided here for consultation.

ATTRIBUTION FACTOR CONSIDERATIONS

Variable versus constant attribution factor

The attribution factor can be defined either as a variable factor or a constant factor in the formula of insurance-associated emissions. It is important to understand the mechanics of the formula and the different results.

$$\textit{Insurance-associated emissions} = \textit{GHG emissions} \times \textit{attribution factor}$$

Potential effect of a variable attribution factor

All of the attribution factors proposed are defined as a variable: the attribution output value varies as the input values vary. All proposed formulas use input values (GWP, asset value, limits) that vary to a certain extent across insurance companies, markets, and especially, over time. These fluctuations can have different reasons (inflation, market cycles, go-to-market strategies, changing or different regulatory requirements), and the reasons can be intended or unintended. As a consequence, it needs to be taken into consideration that the calculated insurance-associated emissions are not only driven by changes in GHG emissions, but also to a certain extent, by fluctuating input values from the attribution factor. These changes can even possibly exceed the reflected changes in GHG emissions. If the attribution factor is defined as a variable, the overall insurance-associated emissions might reflect the fluctuation of the attribution factor input values, such as significance of insurance for the total cost of ownership, GWP, vehicle values or policy limits, rather than changes in real-world GHG emissions. This limitation might distort the

comparison between insurance companies and especially the comparison over time.

Considerations on level of granularity

All proposed methods of calculating the attribution factor can be applied on different levels of granularity:

- Individual insurance contract (highest level of granularity)
- Insurance company portfolio (medium level of granularity)
- All insurance companies' portfolios in one market (country or wider economic market)
- On a global level, for all insurance companies (lowest level of granularity).

The higher the level of granularity, the more fluctuation was observed with testing of the insurance-associated emissions due to fluctuation in GWP, asset value, or limits. Conversely, the lower the level of granularity on which the attribution factor is applied, the less impact of fluctuating input values on the insurance-associated emissions is observed. Using lower levels of granularity brings a variable attribution factor close to a constant attribution factor.

The advantage of using a higher level of granularity is that the attribution factor will better reflect the value of insurance as a facilitator for the specific contract. The use of a lower level of granularity will not reflect the value of insurance as a facilitator at individual or market level, but rather the average value of insurance as a facilitator at market or global level.

Individual versus market-wide attribution factor

As the level of granularity significantly impacts comparability and is more greatly influenced by the above-mentioned variable elements, a lower level of granularity is preferred. On the other hand, a certain level of granularity is able to reflect the situation of each market and insurance company. The appropriate level of granularity should be considered by balancing these factors. More importantly, the level should be specified by the recommended attribution factor.

While it may be easier to apply a globally uniform attribution factor, from the perspective of local stakeholders in each country, it can be unconvincing to apply an attribution factor that does not directly reflect their own circumstances or that reflects the circumstances of other countries.

Leaving certain decisions about calculation methodologies to the discretion of each and every insurance company may not lead to a fully standardized way of calculating insurance-associated emissions. Individual approaches may lead to diverging results. Transparency and comparability can be best supported by recommending a consistent approach in which all insurance companies are encouraged to apply the recommendations contained in the Upcoming Standard in a uniform way.

If certain aspects are left to the discretion of individual companies, PCAF recommends that such aspects are explained publicly by re/insurers exercising such discretion.

Calculation complexity, cost efficiency, and simplicity

Cost efficiency of gathering relevant data is important, not only for insurers but also for customers, as insurance companies may pass through any additional administration cost to

the customers. Customers are also likely to be reluctant to answer additional questions from insurance companies who are seeking only to gather additional data.

The higher the level of granularity, the higher also are the costs to gather necessary data and to run the calculations of the attribution factor. On the other hand, the lower the level of granularity, the less reflective the calculations are of the specific circumstances of each market and company. A balance of these factors needs consideration when evaluating cost efficiency.

Calculation complexity also includes the use of any third party provided data or client provided data. If different re/insurers use different data providers, the resulting attribution factor calculations will vary. Likewise, if asking data from a client and the client is inconsistent in their reply, the resulting attribution factor may vary. These differences are minimized when a lower level of granularity is applied to the calculation of the attribution factor.

Additionally, the re/insurer(s) would need to make decisions on frequency of re-calculation and whether to calculate the attribution factor on a country, regional, or global basis.

Robustness and independence

The principle of robustness and independence applied to the attribution factor shall ensure that changes in real-world emissions are properly reflected in insurance-associated emissions. The methodology of the attribution factor shall not encourage risk carriers to make “cosmetic” changes to coverage or premium to achieve lower insurance-associated emissions.

Proportionality and comparability between insurers and over time

After application of the attribution factor in the formula, it shall be ensured that high-emitting cars lead to higher insurance-associated emissions than lower-emitting cars, given the same distances travelled. This will inform public stakeholders appropriately about the development of the underlying business and motor insurance portfolios.

High levels of granularity (i.e., attribution factor calculated on contract level) may distort proportionality due to insurance technical fluctuations with impact on, for example GWP, such as the age of the driver or the location or asset value of the vehicle.

Just and fair transition

The concept of fair and just transition shall ensure that customers with certain disadvantages in their socio-economic circumstances are not structurally disadvantaged in the transition. Using asset values or total cost of ownership on a highly granular level (i.e., value of the vehicle in the denominator), portfolios with structurally less valued or older cars may be disadvantaged. As this leads to higher insurance-associated emissions, using highly granular data may structurally disadvantage poorer regions in the world.

Market price fluctuations

When using Annualized Asset Value as the denominator, the annualized value of the cars change because of fluctuating market prices. Under the influence of this fluctuation, the measurement, reporting, and projection of real-world emissions becomes challenging. Changes in insurance-

associated emissions will potentially not reflect the real-world impact of portfolio changes. It could be considered to normalize market prices across countries and time. But applying such corrections for market price fluctuations can influence the results and reduce the comparability of results between different insurance institutions when applied inconsistently. The Working Group recognizes the necessity to develop a guidance to normalize market price in order to increase the comparability among insurers and beyond time. Such adjustments would therefore be only applied if made transparent.

Similarly, actual premiums or revenues are volatile and influenced by market fluctuations that can be larger than decarbonization trends. This limits the comparability of attributed emissions over time.

Finally, the annualization of the Asset Value is a challenge and insurers in each country should follow the same approach for every country to maintain comparability. E.g., the market value of the new car could depreciate over time with the same depreciation factor, but a loss of value because of an (un-)repaired claim is not taken into consideration this way.

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 emission of the insured vehicle. Overall, PCAF distinguishes three options to calculate the insurance-associated emissions from motor vehicle policies depending on the data used:[61]

- **Option 1**: **actual vehicle-specific emissions**,[62] where emissions are calculated based on actual vehicle fuel consumption or actual vehicle distance travelled for a known vehicle make and model with data directly collected from the vehicle owner/insured.
  - **Option 1a**: Vehicle emissions are calculated based on primary data on **actual vehicle fuel consumption**.
  - **Option 1b**: Vehicle emissions are calculated based on vehicle efficiency and fuel type (fossil or electricity) from **known vehicle make and model**[63] and primary data for **actual vehicle distance travelled**.
- **Option 2**: **estimated vehicle-specific emissions**, where emissions are calculated based on estimated vehicle distance travelled for a **known vehicle make** and model with data collected from official statistics.
  - **Option 2a**: Vehicle emissions are calculated based on vehicle efficiency and fuel type (fossil or electricity) from **known vehicle make** and model and **estimated vehicle distance** travelled derived from **province/state-level statistical data**.[64]

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

62 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.

63 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.

64 Local statistical data refers to statistical data at the province/state or small country level.

  - **Option 2b**: Vehicle emissions are calculated based on vehicle efficiency and fuel type (fossil or electricity) from **known vehicle make and model** and **estimated vehicle distance travelled** derived from **country or subcontinental statistical data**.[65]
- **Option 3**: **estimated vehicle-unspecific emissions**, where emissions are calculated based on estimated vehicle distance travelled for an unspecified vehicle with data collected from official statistics.
  - **Option 3a**: Vehicle emissions are calculated based on vehicle efficiency and fuel type (fossil or electricity) from **known vehicle type**[66] (vehicle make and model are unknown) and **estimated vehicle distance travelled** derived from **geographical statistical data**.
  - **Option 3b**: Vehicle emissions are calculated based on vehicle efficiency and fuel type (fossil or electricity) from an **average vehicle** (vehicle make and model and vehicle type are unknown)[67] and **estimated vehicle distance** travelled derived from **geographical statistical data**.

Data required

PCAF distinguishes three options with six sub-options to calculate the insurance-associated emissions from motor vehicle policies depending on the data used. Option 1b, Option 2a, and Option 2b are based on vehicle characteristics of known or reasonable estimated vehicle efficiency and fuel type. 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. In this sense, while there are several options to calculate insurance-associated emissions, the quality of the results is not the same for all these options.

For this reason, PCAF gives a higher score to results obtained with higher 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., actual distance travelled and vehicle type is known, while vehicle make and model is unknown, which means that Option 1b and Option 3a are mixed), the data score for the lower-rated option should be assumed for this insured (i.e., score 4 from Option 3a).

Table 5-10 provides data quality scores for each of the described options that can be used to calculate the insurance-associated emissions for motor vehicle policies.

65 Regional statistical data refers to statistical data at the large country or a subcontinental level.

66 Vehicle type refers to an overall vehicle class such as passenger car, bus, or light commercial truck.

67 If it is not possible to know the vehicle type, then an average vehicle can be assumed.

Table 5-10. 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 the insurance-associated emissions		Statistical Data	
Score 1	**Option 1: actual vehicle-specific emissions**	**1a**	• Vehicle's **actual fuel consumption** • **Vehicle's fuel type** (can be derived from **vehicle's make and model**)	Emission factor using **fuel type**
		1b	• Vehicle's **actual distance travelled** • Vehicle's **fuel type** and **fuel efficiency** (derived from **vehicle's make and model**)	Emission factor using **fuel type**
Score 2	**Option 2: estimated vehicle-specific emissions**	**2a**	• Vehicle's **fuel type** and **fuel efficiency** (derived from **vehicle's make and model**)	**Estimated distance travelled** of an average vehicle type **in province/state-level**
Score 3		**2b**		**Estimated distance travelled** of an average vehicle type in **country or subcontinent** level
Score 4	**Option 3: estimated vehicle-unspecific emissions**	**3a**	• **Vehicle's type** (passenger car, van, etc.)	**Average fuel type and efficiency** (derived from **vehicle's type**)
Score 5		**3b**		**Average fuel type and fuel efficiency** (derived from 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 10.2 (Table 10-1).

Data for all three options can be derived from different data sources. Data on vehicle efficiency and fuel type per vehicle make and model can be derived from official statistical data sources such as the US EPA's Federal Test Procedure[68] and the EEA's Worldwide Harmonized Light Vehicles Test Procedure (WLTP).[69] Both data sources provide detailed vehicle efficiency and fuel type information 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 efficiency and fuel type can be estimated on the vehicle type level (e.g., passenger car) using the International Council on Clean Transportation's (ICCT's) Transportation Roadmap or the International Transport Forum at the Organisation for Economic Co-operation and Development (ITF OECD).

68 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.

69 The WLTP is a global, harmonized 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/co2-carsemission-16.

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 car insurance.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 (Option 2), or estimated vehicle-unspecific emissions (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 if it deviates from the options defined above.

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. 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.

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. Since there is no industry standard on naming vehicles, PCAF recognizes that vehicle matching using make and model as a proxy can give rise to inconsistencies. 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 the vehicle efficiency is determined by the weighted average vehicle efficiency in the respective geography).

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.

Electricity grid estimates

Exact electricity source data will not be known for each vehicle in a re/insurer's portfolio as it is not feasible for a re/insurer to ascertain how every 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.

6. Reporting requirements, recommendations, and metrics

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

Rather than creating a new framework, PCAF developed these reporting requirements and recommendations to complement existing frameworks such as TCFD, GRI, Sustainability Accounting Standards Board (SASB), generally accepted accounting principles (GAAP), and International Sustainability Standards Board (ISSB). It is supplementary to and builds 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 the Upcoming Standard when published shall follow the requirements therein when publicly disclosing their insurance-associated emissions. 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. Flexibility in reporting is allowed largely as a consequence of limitations in data availability and quality. PCAF recognizes that data for many insureds may not be available to re/insurers and that Insured 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 beyond this level. Any requirements not fulfilled must be accompanied by an explanation. 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.

The public disclosures to be made by re/insurers concerning commercial line portfolios is limited to the information included in Tables 10-1, 10-2 and 10-3 only. In particular, the data used in the emissions calculations, the associated workings and the relevant attribution factors will not be publicly disclosed or disclosed between 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.

Figure 6-1 below demonstrates 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 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 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 'facilitating 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 example below 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 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 emissions and insurance-associated emissions attribution materially differ; even where the numerators remain constant (which is unlikely). The reporting of insurance-associated emissions remains a supplementary note to the financed emissions.

Note: We have considered GWP / Revenue solely for the purposes of this example. We note that the commercial attribution factor that will ultimately be adopted in the Upcoming Standard is yet to be decided. The overriding principle remains the same across proposed attribution factors.

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, 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 (pg.

104[70]), establish a baseline recalculation policy 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[71] that triggers base year emissions recalculations.

- **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 10.1] 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 10-2 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.

COVERAGE

- Re/insurers **shall** disclose aggregated absolute insurance-associated emissions for all of the relevant LoBs or sectors 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 recognized methodology to quantify the insurance-associated emissions of specific activities (i.e., LoBs not currently covered in this Progress Report).
- Re/insurers **should** 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 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

70 (WRI and WBCSD, 2011)

71 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."

client-reported emissions, 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), 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 or the IPCC's most recently published assessment report.
- 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 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, 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, these risks are also 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:

- 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 also clear that the same emissions are accounted for twice between insurance-associated emissions 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 stated decarbonization goals of getting a clear view on where portfolios are connected to their customer's and investee's emissions that allows to manage toward stated decarbonization.
- 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 minimize 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 the 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 and need to be reported separately.
- Double counting or under counting of emissions among re/insurers prevents a meaningful industry total from being calculated.
- Base number as such is 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, re/insurer **shall** disclose the methodological formula adopted in calculating such emissions removals or avoided 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 re/insurers choose to report emission removals or avoided emissions, they **shall** report absolute emission removals or avoided emissions separately from the re/insurer's scope 1, scope 2, and Scope 3 inventories (see [Annex 10.3] for an example).

RELATIVE EMISSIONS

- In addition to reporting on absolute insurance-associated emissions, re/insurance companies **should** consider reporting emission intensities if these values are relevant to their business goals.
- 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 /m2 for real estate, tCO_2e /MWh for power utilities, tCO_2e /tonne of steel produced for steel companies).

DATA AND DATA QUALITY

- Re/insurers **shall** use the most recent or otherwise appropriate data reasonably available to them. PCAF recognizes 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, emission factors, and all relevant publication dates— used to calculate emissions. Descriptions **should** be written to create transparency.
- Re/insurers **should** publish a weighted score by outstanding amount of the data quality of reported emissions data or **should** explain why they are unable to do so. An example is provided in Box 6-2.
- Where re/insurers are reporting 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 premium 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 and **should** provide an indication of the relative strength of influence that the factor has had on the reported insurance-associated emissions figures.

Box 6-2. 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 Upcoming Standard requires that re/insurers normalize 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	X1	Y1	Z1
Property	Power	Company B	X2	Y2	Z2
Property	Transport	Company C	X3	Y3	Z3
Casualty	Oil and Gas	Company D	X4	Y4	Z4
Casualty	Power	Company E	X5	Y5	Z5
Casualty	Transport	Company F	X6	Y6	Z6

Weighted data score for the Property and Casualty line 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. Commercial lines insurance protects businesses from potential losses they could not afford to cover on their own, which allows businesses to operate when it might otherwise be too risky to do so.

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 specialize 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. These insurance lines generally protect people and their families from losses they could not afford to cover on their own.

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

Reinsurance: Insurance for insurance companies.

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
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
GTAP	Global Trade Analysis Project
HFC	Hydrofluorocarbon
HEL	Home equity loan
HELOC	Home equity line of credit
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
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
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? 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 Scope 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+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?
- Estimated data
- 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 insurance

Option					Data quality
				Attribution	Highest to lowest
Option 1a					**Score 1**
Option 1b					**Score 2**
Option 2a					
Option 2b					**Score 3**
Option 3a					**Score 4**
Option 3b					**Score 5**
Option 3c					

Personal motor vehicle insurance – detailed summary of data needs and formulas to calculate insurance-associated emissions

Base Formula for Calculating Insurance-associated emissions of Personal Motor

Option					Data quality
		Attribution Factor Formula	Vehicle Emission Formula	Geographical Accuracy Distance Travelled statistical data	Highest to lowest
Option 1: Actual vehicle specific emissions	1a	TBD		N/A	**Score 1**
	1b	TBD			**Score 2**
Option 2: Estimated vehicle-specific emissions	2a	TBD		State/Province Average	
	2b	TBD		Country Average	**Score 3**
Option 3: Estimated vehicle - unspecific emissions	3a	TBD			**Score 4**
	3b	TBD		Subcontinental Average	**Score 5**

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

[Table 10.1] 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	Carbon emission intensity (tCO_2e/€M per GWP)	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 forces can be used in place of gross written premium in the calculation of emissions intensity and the unit would therefore reflect appropriately.

[Table 10.2] Example reporting of insurance-associated emissions (scope 1 and 2) as an intensity metric for the current year as against the baseline year

	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]			

[Table 83.] Example reporting of insurance-associated emissions removals and avoided emissions

Activity	Total Gross Written Premium (x € 1,000)	Emissions (tCO_2e)	Emission intensity (tCO_2e/€M)	Weighted data quality score High Quality = 1 Low Quality = 5
Emission removals				
Carbon Capture and Sequestration				
Re/Afforestation				
[Other]				
Total				
Avoided emissions				
Wind				
Solar				
[Other]				
Total				

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