

# GHG emissions associated to insurance and reinsurance underwriting portfolios

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**PCAFA**

Partnership for  
Carbon Accounting  
Financials

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# 1 Introduction

The insurance industry is one of the largest global industries with more than USD 6 trillion in global premium volume and 36 trillion in global assets under management.<sup>1</sup> As such, insurers hold a significant portion of global economic assets and liabilities on their balance sheets.

As risk managers, risk carriers and investors, the insurance industry plays a key role in supporting the transition to a resilient net-zero emissions economy. As risk managers, insurers can play a key role in helping communities understand, prevent, and reduce climate risk. As risk carriers, 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, insurers can invest in zero- and low-emission technologies and engage with their investee companies on their decarbonization pathways.

As investors, many re/insurers, including the founding members of the UN-convened Net-Zero Insurance Alliance (NZIA), are already demonstrating climate leadership through their membership in the UN-convened Net-Zero Asset Owner Alliance (NZAOA) established in 2019.

To also fully reflect the role of re/insurer's underwriting activities in enabling the climate transition, there is an urgent need to develop a set of global, standardized methodologies for measuring and disclosing the greenhouse gas (GHG) emissions associated to insurance and reinsurance underwriting portfolios (throughout the document referred to as Insurance-Associated Emissions). PCAF in collaboration with the NZIA has launched a working group consisting of leading insurance and reinsurance companies to meet the demand for such a methodology.

The PCAF's Insurance-Associated Emissions Working Group will consider existing efforts to tackle carbon footprinting in underwriting. The 2020 Chief Risk Officer (CRO) Forum "Carbon footprinting methodology for underwriting portfolios" publication was a first industry-wide effort to discuss different carbon footprinting methodologies that may be applied to underwriting portfolios. The report proposes estimating the carbon footprint of underwriting portfolios based on company- and industry-specific carbon intensity information.<sup>2</sup> As such, the existing CRO Forum work on company- and industry-specific carbon intensities feeds into the working group's efforts focusing on quantifying Insurance-Associated Emissions.

One of the first concrete sectoral approaches has been published by the Poseidon Principles for Marine Insurance. Signatories commit to measure the carbon intensity measured in grams of CO<sub>2</sub> per dead weight ton-nominal or dwt-nm (gCO<sub>2</sub>/dwt-nm) and assess climate alignment (carbon intensity relative to established decarbonization trajectories) of their hull and machinery portfolios.<sup>3</sup>

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1 UNEPFI & PSI (2021): [PSI-TCFD-global-announcement.pdf \(unepfi.org\)](#)

2 The CRO Forum (2020): [Carbon footprinting methodology for underwriting portfolios – The CRO Forum](#)

3 [Assessment - Poseidon Principles for Marine Insurance](#)

A global, standardized methodology to measure and disclose the GHG emissions associated to insurance and reinsurance underwriting portfolios is intended to stimulate innovative approaches to decarbonization; give re/insurers additional insight into the climate impact and transition path of their respective underwriting portfolios; and create consistency and comparability in reporting for stakeholders. It is also intended to help re/insurers understand the climate impact of their underwriting decisions, laying the foundation to support re/insurers to independently decarbonize their insurance and reinsurance portfolios through inter alia target setting, scenario analysis, and strategy development.

PCAF's Insurance-Associated Emissions Working Group has started to align on the scope of the work and on guiding principles, differences, and challenges for measuring Insurance-Associated Emissions versus financed emissions. The group developed this scoping document to share the first steps of developing the GHG accounting methodologies for insurance and reinsurance underwriting portfolios.

The PCAF's Insurance-Associated Emissions Working Group consists of the following participants:

- Swiss Re (chair)
- Allianz
- Aviva
- AXA
- Bradesco Seguros\*
- Generali
- ICEA Lion\*
- Liberty Mutual
- Lloyds
- Munich Re
- NN Group
- QBE\*
- SCOR
- SOMPO Holdings
- Tokio Marine\*
- Zurich

\*) These participants joined in December 2021/January 2022.

The PCAF Secretariat supports the work by moderating technical discussions, reviewing the content, and coordinating and editing this scoping document. The PCAF Secretariat is operated by Guidehouse, a global consultancy firm that specializes in energy, sustainability, risk, and compliance for the financial industry.

## About this paper

This scoping document outlines the guiding principles for developing a GHG accounting methodology for insurance and reinsurance underwriting and explores the differences between financed emissions and Insurance-Associated Emissions; it also discusses the challenges inherent in attempting to measure the GHG emissions associated with a given re/insurance underwriting portfolio. This scoping document is a product of the collaboration of the PCAF Insurance-Associated Emissions Working Group over the past five months.

This is a scoping document—not a proposal for a GHG accounting methodology. Its intent is to initiate wider engagement on this subject with further stakeholders from the re/insurance industry, academia, civil society, etc.

We begin by explaining the insurance market and the various lines of business (LoB) that exist in the market (Chapter 2: Insurance market and scope of lines of business). We explain the difference between re/insurance underwriting and loans and investments and propose framing the GHG emissions associated with re/insurance underwriting as Insurance-Associated Emissions rather than financed emissions (Chapter 3: Insurance-Associated Emissions versus Financed Emissions). Building on the GHG Protocol, and PCAF's Global GHG Accounting and Reporting Standard for Financed Emissions, we present key guiding principles for developing an Insurance-Associated Emissions accounting methodology (Chapter 4: Goals and principles for accounting for Insurance-Associated Emissions). We review the key challenges and choices necessary to develop GHG accounting methodologies for Insurance-Associated Emissions (Chapter 5: Challenges for accounting Insurance-Associated Emissions). To conclude, we present the next steps for developing and publishing a GHG accounting methodology for insurance underwriting activities in 2022 (Chapter 6: Next steps).

### Box 1. Key Definitions

The authors of this paper used certain terms that may differ in use for other financial institutions or financial sector/market participants. The following definitions clarify how we used these terms and what we mean by them:

**Absolute emissions:** Volume of greenhouse gas (GHG) emissions expressed in tonnes CO<sub>2</sub>e.

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

**Carbon dioxide-equivalent (CO<sub>2</sub>e) emissions:** The amount of CO<sub>2</sub> 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 helps keep the economy running smoothly by protecting 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.

**Emissions associated to insurance and reinsurance underwriting portfolios (throughout the document referred to as “Insurance-Associated Emissions”):** GHG emissions in the real economy, which are associated to specific re/insurance policies aggregated in the re/insurance portfolio. The specific options of such association (via a so-called attribution factor) are to be defined.<sup>4</sup>

**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<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF<sub>6</sub>) and nitrogen trifluoride (NF<sub>3</sub>). For ease of accounting, these gases are usually converted to and expressed as carbon dioxide equivalents (CO<sub>2</sub>e).

<sup>4</sup> This definition has been adopted to support the overarching objective of the UN-convened Net-Zero Insurance Alliance (NZIA). 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.

**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<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF<sub>6</sub>), and nitrogen trifluoride (NF<sub>3</sub>). 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 m2 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.

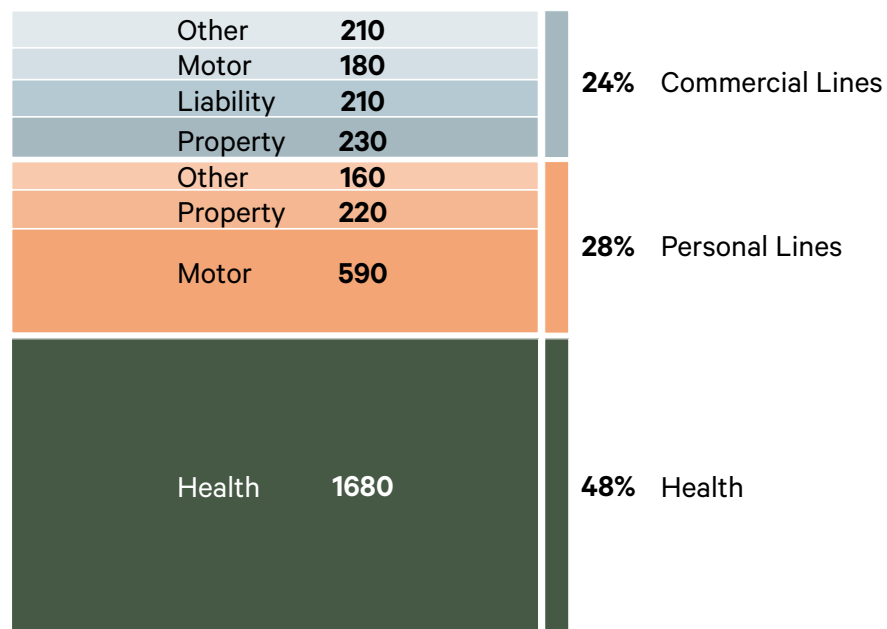
**Scope 3 emissions:** All other indirect GHG emissions (not included in scope 2) that occur in the value chain of the reporting company. Scope 3 can be broken down into upstream emissions that occur in the supply chain (for example, from production or extraction of purchased materials) and downstream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

## 2 Insurance market and scope of lines of business

Re/insurers are key enablers to the real economy. Without proper insurance protection most power plants would not be built, and cargo ships would not sail. Many economic activities are only generally engaged in once the associated external risks are managed through insurance. Insurance manages, diversifies, and absorbs the risks of individuals and companies. As such, insurance is often a precondition for productive activities, such as buying a home and starting or expanding a business.<sup>5</sup> The availability of insurance can promote economic activities, whereas non-availability can discourage economic activities. The decision of individual insurers to steer insurance portfolios away from high GHG-emitting economic activities toward low GHG-emitting economic activities can impact the decarbonization pathways of the real economy; however, any such decisions of individual insurers are not within scope of this paper or of the NZIA or PCAF.

In 2020, total direct insurance premiums written reached over USD 6 trillion or 7.3% of global GDP.<sup>6</sup> The re/insurance industry can be classified in several ways and via many lines of business. Broadly, the insurance industry is segmented between life and non-life products or coverages. Non-life insurance accounted for around USD 3.4 trillion or 56% of direct insurance premiums written in 2019, with personal insurance products for individuals representing 28% and commercial lines for businesses 24%.<sup>7</sup> Health insurance accounts for almost half of global non-life insurance (Figure 1: Global non-life premiums in 2020 by line of business).



**Figure 1: Global non-life premiums in 2020 by line of business in USD billions**

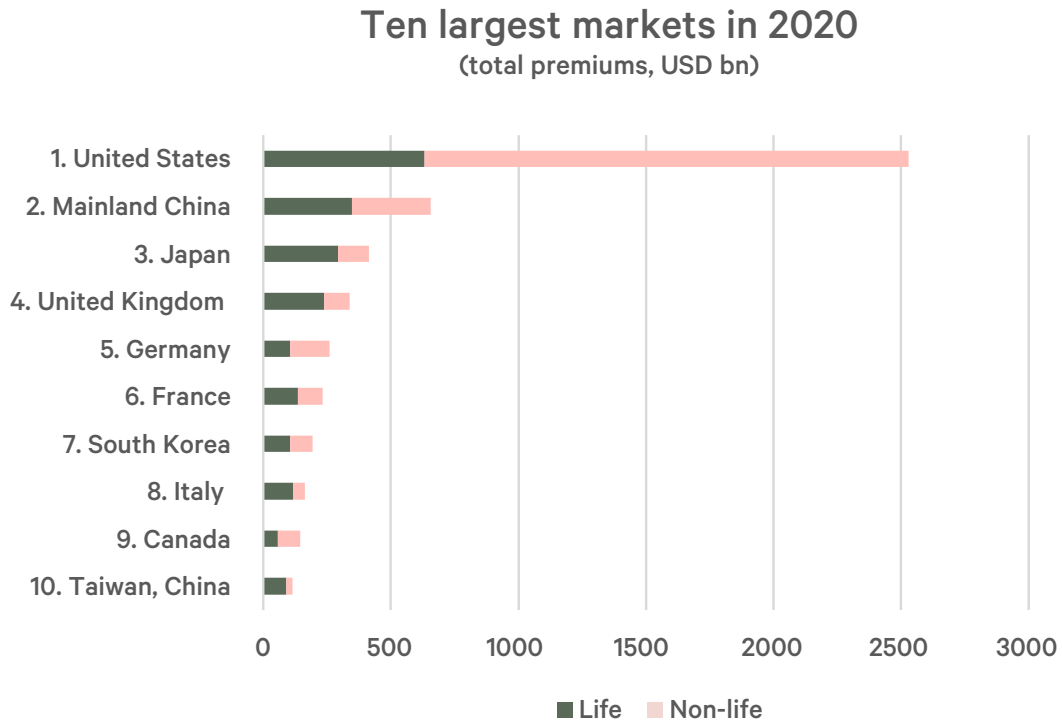
Source: Swiss Re Institute – sigma No 3/2021 – World insurance: the recovery gains pace

5 The Geneva Association (2012): The Social and Economic Value of Insurance.

6 [sigma explorer - catastrophe and insurance market data | Swiss Re Institute \(sigma-explorer.com\)](https://www.sigmare.com/en/insights/sigma-explorer-catastrophe-and-insurance-market-data)

7 The Swiss Re Institute harmonized the allocation of lines of business to compare regions. Accident & health business is allocated to non-life insurance, independent of whether it is written by life, non-life, or composite insurers (see link for methodology).





**Figure 2 Largest insurance markets in 2020**

Source: Swiss Re Institute – sigma No 3/2021 – World insurance: the recovery gains pace

The US, China, and Japan were the world’s top three insurance markets by absolute size in 2020. Together, they accounted for almost 58% of the global market, as compared to 56% in 2019. The market share of the top 20 countries also rose slightly to 90.7% in 2020 from 90.5% in 2019.

As a first step, this methodology will focus on insurance lines covering economic activities with a major role in the transition to a net-zero emissions economy. Consequently, the focus for the first methodology will be on commercial lines insurance and personal motor lines covered by the insurance and reinsurance business.

For the time being, any life or health insurance typically targeting individual persons is not in consideration.

While considering the feedback from stakeholders on this scoping document, the PCAF’s Insurance-Associated Emissions Working Group may change the scope and examine a way to consider obligatory (treaty) reinsurance as well as additional lines of re/insurance business.

### 3 Insurance-Associated Emissions versus Financed Emissions

PCAF’s flagship GHG Accounting and Reporting Standard covers methodologies for measuring the GHG emissions associated to loans and investment, so called financed emissions. However, there is no equivalent global standard for measuring emissions associated to insurance and reinsurance underwriting portfolios, as insurance business differs from banking and investing activities. To appropriately differentiate the GHG accounting and reporting associated to re/insurance underwriting from financed emissions, PCAF proposes calling these Insurance-Associated Emissions. In this chapter, we highlight the differences and similarities between these two distinct concepts that may assist in developing an Insurance-Associated Emissions standard.

The core difference between financed emissions and Insurance-Associated Emissions is in the “follow the money” principle, which is a key tenet for GHG accounting of financial assets, meaning 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. Different financial products require different GHG accounting methodologies for measuring and disclosing GHG emissions associated to these products.

For measuring financed emissions, ownership and organizational boundaries for the GHG inventory are built on the GHG Protocol Corporate Value Chain (scope 3) Accounting and Reporting Standard (GHG Protocol). The GHG Protocol gives organizations three approaches when defining their organizational boundaries and consolidating the GHG emissions measured and reported in their inventories:

- Equity approach
- Financial control approach
- Operational control approach

The core difference between financed and Insurance-Associated Emissions is the nature of the relationship between the financial institution and the client. The property and casualty lines of business mitigate risks associated with economic activity, but they do not finance this activity and do not imply any form of ownership. Using the language of the organizational boundaries specified above, a re/insurer basically holds no capital interest in the client operations and no financial or direct operational control is exerted.<sup>8</sup>

The lack of ownership or direct control over the client activity is a key differentiation that impacts the influence an individual insurer will have on the decisions made by the client to reduce the associated emissions.

Therefore, in the case of Insurance-Associated Emissions we refer to the “follow the risk” principle instead of the “follow the money” principle.

<sup>8</sup> 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).

## The insurance capital flow

As an example, claim payments can be characterized as a money flow. However, insurance proceeds are not an investment or loan as the right to proceeds from insurance is contingent on the occurrence of an insured event. While an 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 Insurance-Associated Emissions versus the financed emissions are listed as follows, as well as some of the similarities.

Financed emissions can be measured as amounts of GHGs generated, avoided, or removed by an institution. Similarly, 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 insurance contract, as well as the investment/loan risk. Financial soundness may impact the “terms” of 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 insurers.

Financial institutions can have both debt and equity relationships with a client; however, following PCAF’s Global GHG Accounting and Reporting Standard, emissions of a client are attributed to debt and equity, thus avoiding the issue of double counting. Similarly, insurers often have multiple contracts with the same client for different insurance risks, also known as lines of business. Additionally, many 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 insurance contract relationship creates no ownership or transfer of equity and results in no financial or direct operational control. Insurance contracts represent an expression of commitment and trust—that is, the insurer will provide the agreed coverage should the terms of the insurance contract be fulfilled. While this coverage is often financial it may also include services (legal, security, 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 insurer and this insurer is often introduced to the insured through an insurance broker/agent.

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

Lessons learned from the financed emissions accounting development will be applied to the methodology development for Insurance-Associated Emissions. While there are some key differences, there are also several similarities and Insurance-Associated Emissions can build on similar GHG accounting principles (see the following chapter).

## 4 Goals and principles for accounting for Insurance-Associated Emissions

Other than asset owners, who are by law responsible for the external effects that their assets may have on their operating environment, re/insurers do not “own” emissions. However, re/insurers being aware of their role for climate action have committed to contribute as risk managers and risk carriers to the transition toward a low carbon economy. Consequently, each re/insurer’s contribution to the transition should be observed based on the type and scope of the risks they insure, i.e., based on their gross underwriting decisions before reinsurance/retrocession.

In the absence of an immediate and simple direct link between insurance services and GHG emissions, the design of an accounting methodology must be intended as the creation of the baseline to allow the re/insurers to set targets and should avoid adverse implications. The translation of the “underlying actual original emissions” into Insurance-Associated Emissions by the application of an attribution factor might lead to a rather arithmetic auxiliary and artificial emission footprint. Therefore, the reported emission figures as such do not have to have an immediate meaning besides to serve as a reference point to measure future changes in emissions to enable the objectives of the initiative discussed in more detail in the following sections.

### Objectives

The guiding principles for GHG accounting associated with re/insurance underwriting follows our overall objective.

Developing an accounting methodology to calculate a baseline which can help facilitate:

- The evaluation of an alignment to a scientific decarbonization pathway over time.
- An adequate reflection of the real-world impact and the transition toward a low carbon economy.
- The objective of climate change mitigation and reduction of emissions, i.e., accompanies economic sectors in their transition and incentivizes facilitating this transition and achieve change in the real economy.
- Transparency for (re-)insurers themselves and other external stakeholders.
- Consistent quantification by (re-)insurers and therefore enables consistent reporting.

## PCAF insurance-associated emissions guiding principles

The following guiding principles apply:

- **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 original emissions,<sup>9</sup> 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 original emissions” of different insurance clients:  
The calculation method of Insurance-Associated Emissions based on actual, original emissions of one insurance client should be consistently applied across a portfolio segment, which is to be evaluated and follow the logic of high “actual original emissions” leading to high Insurance-Associated Emissions.
  - Changes of Insurance-Associated Emissions versus changes of “actual original emissions”:
  - Changes of Insurance-Associated Emissions should proportionally reflect the changes in actual original emissions of an insurance client. I.e., if the actual original 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 than a 10% share of the same insurance client.<sup>10</sup>
- **Comparability:**
  - Between insurance clients: 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.
  - Over time and between the periods being reported—i.e., once the reporting standards have been established, Insurance-Associated Emissions output should be capable of being compared over time (if improved or changing underlying data does not distort such effort).

<sup>9</sup> Credit insurance being by its nature the closest to the concept of financed emission, might justify the similar approach than as for financed emissions

<sup>10</sup> This principle seems easier to adhere to dealing with one line of business as opposed to considering emissions across various lines of business (causing possible double-counting effects across the lines of business).

- **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 be used sensibly for individual re/insurers' portfolio decisions or steering impulses (beyond fulfilling reporting requirements).
  - **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 have to 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 by 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.

Once the PCAF Insurance-Associated Emissions Working Group start developing the Insurance-Associated Emissions GHG accounting standards more specifically, i.e., for the specific industry sectors/economic activities and lines of business, this practice test might reveal that it may not always be possible or sensible to comply with all described guiding principles. The best possible achievement of the overall goals will guide in solving such challenges.

Despite being aware of the substantial differences of the concept of Insurance-Associated Emissions as opposed to own- or financed emissions, PCAF acknowledges the GHG Protocol itself, which is also based on reporting principles that are derived from established principles in financial accounting and reporting. PCAF has previously transferred these principles for its own financed emission standard. Therefore, similarly, in the following PCAF additionally evaluates the possibility and meaningfulness of the transfer of these principles to the accounting of Insurance-Associated Emissions.

GHG Protocol principles <sup>11</sup>	Additional PCAF requirements from the existing PCAF Standard	Implications for the accounting of Insurance-Associated Emissions
<p><b>Relevance</b> 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.</p>	<p><b>Attribution</b> The financial institution’s share of emissions shall be proportional to the site of its exposure to the borrower’s or investee’s total (company or project) value.</p>	<p><b>Attribution</b> The re/insurer’s share of Insurance-Associated Emissions of the insured risk shall be proportional (see PCAF Insurance-Associated Emissions Guiding Principles). Details of the specific “attribution factors” to be applied still to be decided.</p>
<p><b>Completeness</b> Account for and report on all GHG emission sources and activities within the inventory boundary. Disclose and justify any specific exclusions.</p>	<p><b>Recognition</b> 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.</p>	<p><b>Recognition</b> Re/insurance companies may voluntarily account for certain parts of their Insurance-Associated Emissions separately under scope 3 category 15,<sup>12 13</sup> as defined by the GHG Protocol Corporate Value Chain (scope 3) Accounting and Reporting Standard. Any limitations or restrictions shall be disclosed.</p>
<p><b>Consistency</b> 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.</p>	<p><b>Measurement</b> 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.</p>	<p><b>Measurement</b> Re/insurance companies shall measure and report their Insurance-Associated Emissions for specific insurance products and specific segments (tbd) by “following the risk” and considering the PCAF methodologies for insurance-associated emissions. If data availability and methodologies allow, avoided and removed emissions can also be measured and included in the considerations.</p>
<p><b>Transparency</b> 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.</p>	<p><b>Disclosure</b> Public disclosure of the results of PCAF assessments is crucial 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.</p>	<p><b>Disclosure</b> Public disclosure of the results of PCAF assessments is crucial for external stakeholders as well as insurance and reinsurance companies using the methodology to have a clear, comparable view on how the insured risks contribute to the Paris climate goals.</p>
<p><b>Accuracy</b> 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.</p>	<p><b>Data quality</b> Financial institutions shall use the highest quality data available for each asset class and improve the quality of the data over time.</p>	<p><b>Data quality</b> 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, also approximative KPIs which best reflect emissions could be used.</p>

**Table 1: PCAF Insurance-Associated Emissions Guiding Principles**

<sup>11</sup> <https://ghgprotocol.org/sites/default/files/standards/ghg-protocol-revised.pdf>, p.7

<sup>12</sup> 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-)insurers own ambitions and goals.

## GHG emission scope covered

Following the logic of the GHG Protocol, the GHG accounting methodology for Insurance-Associated Emissions should at least focus on their clients' **scope 1 and scope 2 emissions**.

For integrating clients' **scope 3 emissions**, PCAF follows a phased-in approach. 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 requiring scope 3 reporting for selected sectors over time, PCAF seeks to make scope 3 emissions reporting more common by improving data availability and quality over time.

To avoid double counting, the clients' scope 3 emissions shall be disclosed separately from client's **scope 1 and scope 2 emissions**.

In the years to come, PCAF will monitor the data availability and will provide additional guidance on the associated reporting requirements.<sup>14</sup>

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<sup>14</sup> For example, within the EU regarding financed emissions, both the Delegated Act (now in effect) and the TEG's Final Report on Climate Benchmarks and Benchmarks' ESG Disclosures state that the phase-in of scope 3 emissions occurs over four years. Article 5 of the legislation itself states that the methodology for the benchmarks "shall include Scope 3 GHG emissions data in the following way" ([https://ec.europa.eu/info/sites/default/files/business\\_economy\\_euro/banking\\_and\\_finance/documents/190930-sustainable-finance-teg-final-report-climate-benchmarks-and-disclosures\\_en.pdf](https://ec.europa.eu/info/sites/default/files/business_economy_euro/banking_and_finance/documents/190930-sustainable-finance-teg-final-report-climate-benchmarks-and-disclosures_en.pdf); <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32020R1818&from=EN>)



## 5 Challenges for accounting insurance-associated emissions

### Data availability

Following the GHG Protocol principles and in line with the PCAF's Global GHG Accounting and Reporting Standard, calculating Insurance-Associated Emissions will require the absolute GHG scope 1 and 2 (and scope 3, where significant, and where data allow) emissions of an insurance client. For larger and public companies, particularly those in carbon intensive sectors, scope 1 and 2 emissions disclosure has become fairly comprehensive, although getting such data in consolidated format is often through paid subscription services (which reduces the accessibility).

The insurance industry's clients range from large corporations, with comprehensive disclosure requirements and increasingly well-established emission reporting standards, to small businesses (SME) and individuals, where little to no emission data is available. PCAF recognizes that high quality data can be difficult to come by when calculating Insurance-Associated Emissions particularly for small, private companies and individuals. However, data limitations should not deter re/insurers from taking the first steps toward preparing their inventories. Where data quality is low, re/insurers can design approaches to improve it over time. Disclosing the share of the portfolio covered by disclosed versus estimated emissions can increase transparency and help with interpreting potential margins of error in the disclosed figures.

Using estimations based on averages is problematic for portfolio analysis because it does not reflect the decarbonization efforts of individual customers and does not provide the ability or incentives to steer the portfolios to the best-in-class companies of a sector or geography. However, if GHG emissions are not already available from an insurance client's disclosure, requesting additional information from clients is challenging if not directly related to the insured risk. New methodologies to improve estimates might evolve over time, as other financial services providers, such as banks, face similar issues with their retail clients.

Scope 3 emission reporting is less advanced, with larger variability of availability and quality. It is therefore recommended to report on insurance-associated scope 3 emissions separately and clarify which sectors are considered. As outlined in Chapter 4: Goals and principles for accounting for Insurance-Associated Emissions, a phased-in approach by sector might need to be defined for scope 3 reporting, starting with the most material sectors and additional sectors to be added at a later stage based on the data availability and impact for these additional sectors.

A particular challenge will be to collect emission data for personal lines insurance, outside of vehicle (motor) insurance, as there is currently little standardization in personal emission accounting and privacy concerns complicate any data gathering. Methods developed by other financial markets participants, such as banks wanting to measure the carbon footprint of their mortgage portfolio, might be leveraged over time.

**Box 2. PCAF Database**

PCAF’s web-based emission factor database provides a large set of emission factors for physical activity-based emissions and economic activity-based emissions. The database can help re/insurers get started with estimating the Insurance-Associated Emissions of their insurance portfolio.

These emission factors are collected from publicly available sources and available for all PCAF participants for free.

This data already helps banks, asset owners and asset managers to start the GHG accounting and use estimated emissions for e.g. their SME portfolio.

**Absolute versus emissions intensities**

Next to reporting on absolute Insurance-Associated Emissions, re/insurance companies may report emission intensities if these values are relevant to their business goals.

Economic emission intensities can be expressed on any portfolio, sub-segment, or sector level in metric tonnes of CO<sub>2</sub>e per million euro or dollar revenue: tCO<sub>2</sub>e /M€ or tCO<sub>2</sub>e/M\$.

When relevant to their business goals, re/insurance companies can consider reporting physical emission intensities per sector using sector-specific activity (e.g., tCO<sub>2</sub>e /m<sup>2</sup> for real estate, tCO<sub>2</sub>e /MWh for power utilities, tCO<sub>2</sub>e /tonne of steel produced for steel companies).

Concept	Advantages	Disadvantages
<b>Absolute emissions-based metrics</b>	<ul style="list-style-type: none"> <li>Independent of diluting business metrics</li> <li>Correctly reflect real world changes</li> <li>High degree of availability, as reporting is mandatory under various jurisdictions following GHG Protocol</li> </ul>	<ul style="list-style-type: none"> <li>Do not reflect value of output</li> <li>Does not necessarily reflect size of client</li> <li>Thereby dilute the correct capture of efficiency of technology</li> <li>Limited comparability</li> </ul>
<b>Emission intensity-based metrics</b>	<ul style="list-style-type: none"> <li>Reflect value of output</li> <li>Reflect size of client</li> <li>Allows for comparability on climate performance between similar clients</li> </ul>	<ul style="list-style-type: none"> <li>Are diluted by business metrics, such as sales, pricing, etc.</li> <li>Do not always correctly reflect real world changes</li> <li>Low degree of availability, as reporting is optional under GHG Protocol</li> </ul>

**Table 2: Absolute emissions-based metrics vs. emission intensity-based metrics**

## Attribution factor: no causal relationship between insurance and emissions

### Box 3. Attribution factor

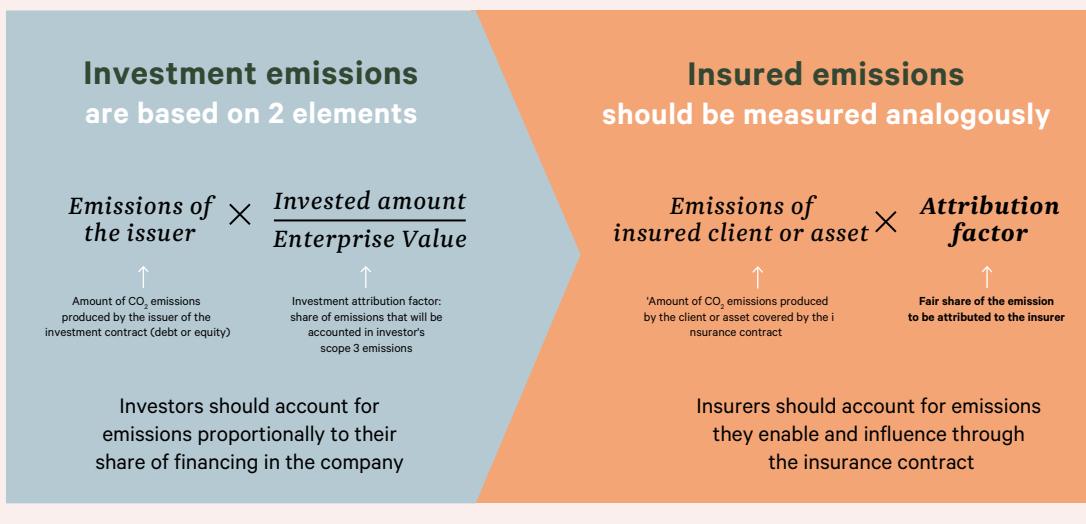
From the existing PCAF Standard for financed emissions (p. 38):

1. Financed emissions are always calculated by multiplying the emissions of the borrower or investee by an attribution factor (specific to that asset class).
2. The attribution factor is defined as the share of total annual GHG emissions of the borrower or investee that is allocated to the loans or investments.
3. The attribution factor is calculated by determining the share of the outstanding amount of loans and investments of a financial institution over the total equity and debt of the company, project, etc. that the financial institution is invested in.

The use of this common denominator, including equity and debt funding, is important because:

1. It ensures the use of one common denominator across all asset classes, which is in line with leading practices in the financial sector.
2. It ensures 100% attribution of emissions over equity and debt providers and avoids double counting of emissions between equity and debt providers. This is specifically important for financial institutions that hold both equity and debt positions within the same companies or projects.

Following this existing approach, the PCAF Insurance-Associated Emissions Working Group is thinking about how the attribution factor for GHG emissions from insured assets, activities and companies could be attributed to a re/insurance company.



Contrary to the logical link of the share of ownership as an attribution factor for financed emissions, the same attribution factor cannot be directly applied when looking to allocate a share of Insurance-Associated Emissions to an insurance policy (see Chapter 3: Insurance-Associated Emissions versus Financed Emissions ).

Instead, attribution factors for Insurance-Associated Emissions accounting-purposes could rely on technical insurance metrics (see Table 4: List of possible numerators and denominators for attribution and their challenges).

Those metrics are both sensitive to 1) general economic factors unrelated to the insured risks and 2) sometimes to specifics of company proprietary methodologies. The former impacts the principle to properly reflect the real-world impact of portfolio changes if Insurance-Associated Emissions are more sensitive to hardening or softening insurance markets than trends in company emissions. The latter impacts the comparability of Insurance-Associated Emissions between companies and the transparency of the methodology applied. Depending on the choice of attribution factor, Insurance-Associated Emissions of the same underlying risk may vary for different re/insurers calculating different technical elements, or indeed using different data sources – which could impact the comparability of reporting between insurers. Anti-trust and trade secret considerations may limit the level of transparency and industry alignment feasible for certain metrics and approaches.

Some possible attribution factors may also be more sensitive to unrelated portfolio changes or can be coincidentally misleading (i.e., they may come with incentives to reduce emissions on paper only). The chosen attribution factor should incentivize an emission reduction in the real economy with as little side effects as possible.

Insurance products/coverages are often related to specific insured activities, locations, or projects that are only responsible for parts of the company's emissions rather than the (overall) footprint of the insured company itself. An example would be a construction policy that is insuring the construction of a specific building. While from a logical point only emissions from the construction of that specific building should be associated to such a policy (such cover would end once construction is completed and would not relate to any emissions from operations), establishing the associated amount of emissions seems prohibitively complex and the contribution of the policy to portfolio emissions will likely be calculated by reference to total company emissions.

As part of its efforts the working group will assess whether an appropriate approach would be to suggest one methodology applicable to all lines of business or to suggest different methodologies for different lines of business and report on them separately. Where distinct physical assets, such as vehicles in motor insurance, are insured, the adoption of a single methodology seems feasible. For the majority of products (including casualty products that provide general liability cover), however, accurately assigning a share of company emissions to an insurer can be expected to be extremely complex; both from a methodological perspective and also in the context of data availability.

	Advantages	Disadvantages
<b>Treating all LoBs equally</b>	<ul style="list-style-type: none"> <li>• Lower data requirements</li> <li>• Easy to communicate and understand</li> </ul>	<ul style="list-style-type: none"> <li>• Disconnect between insurance-associated emissions and actual insurance coverage</li> <li>• Fewer nuances to influence most emission intense company activities</li> </ul>
<b>Differentiation by LoB based on “level” of contribution</b>	<ul style="list-style-type: none"> <li>• Enables more granular portfolio steering</li> </ul>	<ul style="list-style-type: none"> <li>• Complicated, introducing more artificial assumptions</li> </ul>

**Table 3: Defining one attribution factor for all LoBs vs. differentiated factors for different LoBs**

As part of its scoping efforts, the PCAF Insurance-Associated Working Group has identified several potential approaches to the association of emissions to re/insurance underwriting portfolios, falling broadly into the following types: premium-based approaches, contract limit-based approaches, and capital-based approaches. Each approach has features that adhere to the guiding principles set out in Chapter 4, while all approaches have some practical challenges that require further analysis to determine how the challenges can be overcome.

Presented in Table 4 are the benefits and challenges associated with the attribution approaches considered so far by the working group.

Premium-based numerators	Denominator	Exemplary benefits	Exemplary challenges
<b>Premium</b>	<b>Revenue</b>	Simplicity, premium data availability on policy or client level, considers insurance as an operating cost	Potentially volatile measure due to market fluctuation in pricing.
<b>Technical premium</b>	<b>Annualized Enterprise Value (EV)</b>	Technical premium is the risk cost element, reflecting claim frequency/severity	Technical Premium calculations depend on company proprietary methodologies, limiting the comparability of reporting.  Potential fluctuation in Annualized Enterprise Value
	<b>Asset Value</b>	Accurately based on specific asset-level emissions	Technical Premium calculations depend on company proprietary methodologies, limiting the comparability of reporting.  Similar assets may have different values but similar emissions (e.g., properties with different locations).
	<b>Revenue</b>	Simple premise that premium have comparable emission intensity to insured company revenue	Technical Premium calculations depend on company proprietary methodologies, limiting the comparability of reporting.  Hard to apply to asset-level insurance contracts. May lead to very low attribution levels. Not suitable for personal lines.
Contract limit-based numerators	Denominator	Exemplary benefits	Exemplary challenges
<b>Limit of liability</b>	<b>Enterprise Value (EV)</b>	Simple premise that considers insurance as contingent capital and is very close in form to financed emission attribution approach.  Contract Limit data is readily accessible.	Not suitable for personal lines. Potentially too high for certain liability classes where limits are high relative to company values, e.g., SMEs. Does not reflect probability of insurance payout.
	<b>Retention + Limit of Insured</b>	This approach considers the element of risk sharing between insurer and insurance client. Not influenced by market factors.  Can be applied to Personal and Commercial Lines.	Complex to apply to layered programs. Does not reflect probability of insurance payout.
	<b>Total value of assets</b>	Simple premise that attribution is based on the share of a company's assets protected by each insurance contract	May lead to artificially high attribution levels especially in SMEs and personal lines. Large companies may have many policy layers covering the Total Insured Value (TIV) leading to double counting challenges.
Capital-based numerators	Denominator	Exemplary benefits	Exemplary challenges
<b>Capital allocated to contract</b>	<b>Enterprise Value (EV)</b>	Simple concept, applicable to all lines and classes of business.	Would lead to very different attribution values for different insurers underwriting the same contract depending on e.g., portfolio diversification.

Table 4: List of possible numerators and denominators for attribution and their challenges

## 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 an insurance-associated emission 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 limitation are made transparent as part of the disclosure

PCAF’s objective will not be to eradicate any double counting and to create a global carbon 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 insurers and reinsurers prevent a meaningful industry total
- Base number as such is not necessarily important as Insurance-Associated Emissions or financed emissions will not add up to a global carbon balance sheet. It is more important that reporting provides a baseline, on which relative Paris-aligned decarbonization trajectories can be reported over time

### Data availability

The PCAF Global GHG Accounting and Reporting Standard requests that investors should account for emissions proportionally to their share of financing in the company, with enterprise value including cash (EVIC) of the respective company or the sum of total company equity and debt, where no market value is available, as a denominator. A logical equivalent for Insurance-Associated Emissions would be to calculate a re/insurer's share of a customer's insurance in relation to the customer's overall insurance purchasing. However, while re/insurers have access to their own share of premium or limits per customer, due to the complexity of corporate insurance where the overall premiums and limits are distributed over multiple insurers or reinsurers it is not feasible to get to comprehensive figures of a company's total insurance spend.

Using the same overall metrics for company values as the PCAF Standard can be seen as alternative. With insurance also provided for many small private companies, EVIC or equity and debt figures will not be available or applicable for a large part of an insurer's portfolio. Company revenues are more widely available and provided by external providers, but accuracy and coverage still vary across countries, depending on local reporting requirements.



## 6 Next steps

In this scoping document we highlight the significant role re/insurance plays as an enabler of the real economy and its low carbon transition. We introduce the concept of absolute Insurance-Associated Emissions which effectively associates a share of the emissions of an insurance client to its re/insurer(s).

This scoping document was written with the intent to consult a targeted group of stakeholders that may be affected by Insurance-Associated Emissions as well as other interested parties. The working group looks forward to receiving comments on the considerations discussed in this document. These comments and inputs will help us develop the methodologies for Insurance-Associated Emissions.

Developing a GHG accounting methodology for emissions associated with insurance underwriting will entail numerous challenges, including choice of attribution factors, double counting, and data availability as described below:

- **Calculating Insurance-Associated Emissions:** In contrast to linking a share of ownership to a share in financed emissions, linking a policy of insurance to the emissions caused or contributed to by an insurance client is not straight forward. Various options are discussed in this paper. All of them come with certain advantages and challenges. The working group will consolidate the discussion on attribution factors also taking into consideration the comments received in the consultations process.

Changes in Insurance-Associated Emissions need to be proportional to the emission reductions of the insurance clients in the real economy. It will thus be important that the chosen attribution factors do not generate unintended consequences such as for example an incentive to restructure re/insurance policies to reduce allocated emissions while still providing the same coverage.
- **Minimizing double counting:** A common concern voiced on the proposed incorporation of insurance underwriting into PCAF's guidance is that it encourages double counting. PCAF works to minimize double counting wherever possible. The initiative's main goals are transparency and consistency (not creation of a global carbon balance sheet) to enable a clearer view of the various actors connected to emissions from a financing (or re/insurance) perspective. The working group will consider ways to clarify and enhance PCAF's existing guidance on double counting since a separate method for Insurance-Associated Emissions will likely operate in line with PCAF policy—allowing re/insurers to account for and report on emissions from their liabilities and investments separately. Issues from double counting may in some instances remain unavoidable within the accounting of Insurance-Associated Emissions when scope 2 and 3 are considered for various economic sectors. In such circumstances materiality of accounted emissions needs to be reflected in reporting and decision-making.
- **Data availability:** Only a limited share of insurance clients may be able to report or even track their emissions. If re/insurers cannot obtain specific emission data for/from their clients, they cannot meaningfully support sectoral decarbonization through steering of

their underwriting portfolios. The challenge may be heightened if the chosen attribution factors require further data about the insurance client which may not be readily available (e.g., enterprise values). The working group will explore various data sources and test the impact of the candidate approaches for the attribution factor on data availability and reliability.

Based on the feedback received through the targeted consultation, PCAF's Insurance-Associated Emissions Working Group will continue to explore, discuss, test, and report on the developments of a GHG accounting methodology for re/insurance underwriting.

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