

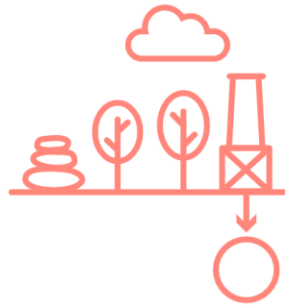
DRAFT

New methods

for public consultation



Sovereign bonds



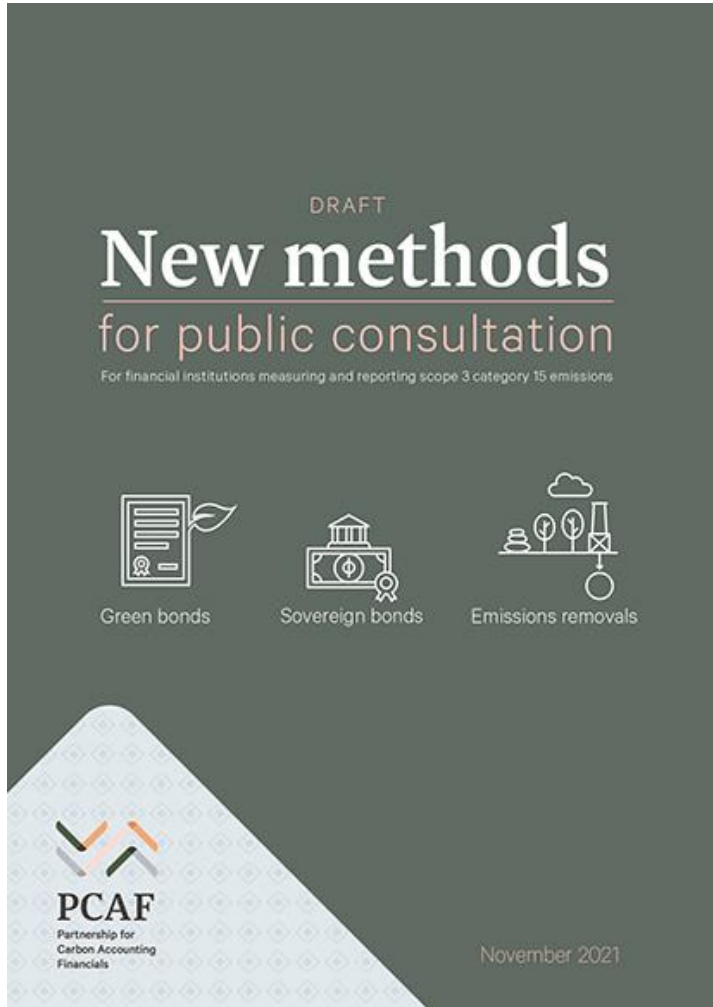
Emissions removals



Green bonds

Welcome to the webinar

Agenda



01 Welcome remarks

Angélica Afanador
Program Manager, PCAF Secretariat
Associate Director, Guidehouse

02 Emissions removals

Sam Nierop
Senior Impact Officer, FMO

03 Green bonds

Reynir S. Atlason
Sustainability Specialist, Landsbankinn

04 Sovereign bonds

Yulia Maletskaya
Senior Fixed Income Strategist, Allianz
Investment Management

05 Q&A

Angélica Afanador
Program Manager, PCAF Secretariat
Associate Director, Guidehouse

06 Closing remarks

Angélica Afanador
Program Manager, PCAF Secretariat
Associate Director, Guidehouse

The public consultation process has three elements

From 10 November to 17 December



Online survey

To collect feedback on the methods

- Survey focused on new methods
- Online platform to collect feedback



Targeted webinars

To have targeted discussions

- Launch event, 10 November
- Technical webinars covering three time zones (Americas, Europe/Africa, APAC)
- Target stakeholders: policy makers, regulators, supervisors, data providers, consultants, NGOs, FIs

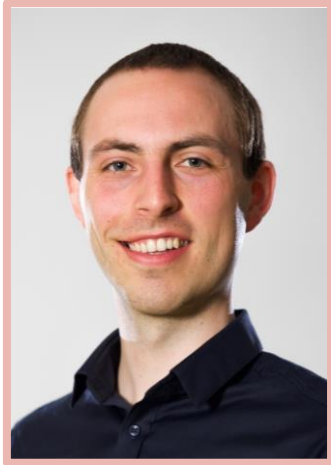


GHGP review

To maintain the “Built on GHG Protocol” mark

- GHGP checklist review
- Feedback on gaps

Speakers: Emissions removals, green bonds, & sovereign bonds



Sam Nierop

Senior Impact Officer

FMO

Entrepreneurial
Development
Bank

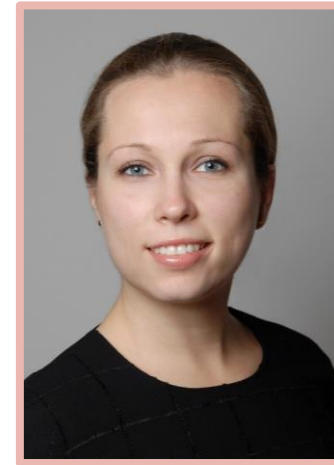


Reynir S. Atlason

Sustainability Specialist



Landsbankinn



Yulia Maletskaya

Senior Fixed Income
Strategist



Emissions removals



The emissions removals methodology contains different parts that will be added into various sections of the PCAF Standard, as follows:

- Narrative on net-zero financed emissions by 2050
- Description of how to include emission removals and carbon credits for three asset classes that already exist in the PCAF Standard. Each approach will be added to the specific subchapter in the PCAF Standard:
 - Listed Equity and Corporate Bonds
 - Business Loans and Unlisted Equity
 - Project Finance
- Description of how to report emissions removals and carbon credits

Net Zero



Emissions removals

- **Net Zero** is reached when anthropogenic emissions in the atmosphere are balanced by anthropogenic removals over a specified period. Achieving net zero requires two primary components:
 1. *Deep decarbonization* in energy, urban infrastructure and industrial systems, as well as reversing emissions growth from land use systems
 2. *Permanently removing* the residual GHG emissions that are unfeasible to reduce or avoid
- FIs can help this transition by lending and investing capital into activities that drive deep decarbonization, as well as technology and nature-based emissions removal solutions.
- Measuring and reporting both generated emissions and emissions removals enables FIs to track progress toward net zero.

FIs can finance emissions removals via three ways:



Emissions removals

Credits purchases: FIs can buy carbon removal credits based in the voluntary carbon market. As these purchases are not part of their lending or investment portfolio, these credits are not incorporated into the PCAF Standard. For more information, FIs are referred to the GHG Protocol on how to include carbon credits in their accounting.

Listed Equity & Corporate Bonds and Business Loans & Unlisted Equity: FIs can lend to or invest in companies, such as forestry companies, that have emissions removals within their organizational boundaries. They can also invest in corporates that purchase carbon removal credits to offset their emissions. For more information on the GHG accounting of these lending and investment activities, see the Chapter on Listed Equity & Corporate Bonds and the Chapter on Business Loans & Unlisted Equity.

Project Finance: FIs can lend to or invest in nature-based or technological projects that remove emissions from the atmosphere. The general context for these investments is covered in the next paragraphs: see for more information on the GHG accounting of these lending and investment activities in the Chapter on Project Finance.

Listed Equity & Corporate Bonds and Business Loans & Unlisted Equity



Emissions removals

The goal of the PCAF Standard is to transparently report the total emissions impacts of investments, not diluted by credits purchased or sold. Emission removals shall be reported separately from absolute emissions:

$$\text{Emissions removals} = \sum_c \frac{\text{Outstanding investment}_c}{(\text{EVIC or Total company equity} + \text{debt})_c} \times \text{Company emissions removals}_c$$

(with c = borrower or investee company)

Example Accounting – A Portfolio of Different Companies

	Scope 1	Scope 2	Scope 3	Emissions removals	Carbon credits purchased	Carbon credits sold	Attribution factor
Forestry company	1,000	100	5,000	20,000	0	5,000	10%
Industrial company	20,000	5,000	30,000	0	25,000	0	25%
Energy company	5,000	0	10,000	1,000	5,000	500	20%
Based on companies in above table		Calculation				Total portfolio number	
Scope 1 – Absolute emissions		1,000 x 10% + 20,000 x 25% + 5,000 x 20%				6,100	
Scope 2 – Absolute emissions		100 x 10% + 5,000 x 25%				1,260	
Scope 3 – Absolute emissions		5,000 x 10% + 30,000 x 25% + 10,000 x 20%				10,000	
Emission removals		20,000 x 10% + 1,000 x 20%				2,200	
Carbon credits purchased		25,000 x 25% + 5,000 x 20%				7,250	
Carbon credits sold		5,000 x 10% + 500 x 20%				600	

Requiring carbon credits to be reported separately from emission removals

Project Finance



Emissions removals

Projects in an FI's portfolio can also report on emissions removals, whether nature- or technology based, as part of their GHG reporting.

$$\text{Emission removals} = \sum_p \frac{\text{Outstanding investment}_p}{\text{Total project equity} + \text{debt}_p} \times \text{Project emission removals}_p \quad (\text{with } p = \text{project})$$

Example Accounting – A Portfolio of Different Projects

	Scope 1	Scope 2	Scope 3	Avoided emissions	Emissions removals	Carbon credits purchased	Carbon credits sold	Attribution factor
Forestry project	1,000	100	5,000	0	20,000	0	5,000	10%
Industrial project	20,000	5,000	30,000	0	0	25,000	0	25%
Energy project	5,000	0	10,000	20,000	1,000	5,000	500	20%

Based on projects in above table	Calculation	Total portfolio number
Scope 1 – Absolute emissions	1,000 x 10% + 20,000 x 25% + 5,000 x 20%	6,100
Scope 2 – Absolute emissions	100 x 10% + 5,000 x 25%	1,260
Scope 3 – Absolute emissions	5,000 x 10% + 30,000 x 25% + 10,000 x 20%	10,000
Avoided emissions	20,000 x 20%	4,000
Emission removals	20,000 x 10% + 1,000 x 20%	2,200
Carbon credits purchased	25,000 x 25% + 5,000 x 20%	7,250
Carbon credits sold	5,000 x 10% + 500 x 20%	600

Requiring carbon credits to be **reported separately** from emissions removals



- On page 100 of the PCAF Standard in the section ‘Absolute emissions’, the following bullet will be added:
‘Absolute emissions shall be reported without taking into account carbon credits purchased by clients and projects to offset these emissions. Carbon credits purchased by clients and projects may be reported, and if so, shall be reported separately.’
- On page 101 of the PCAF Standard in the section ‘Avoided emissions and emissions removals’, the following bullet will be added:
‘Avoided emissions and emissions removals shall be reported without taking into account carbon credits sold by clients and projects for these same emissions. Carbon credits sold by clients and projects should be reported, and if so, shall be reported separately.’

Green bonds

Asset class definition



Green bonds

In scope	Out of scope
Green bonds where the underlying assets are under the operational control of the corporate	Corporate green bonds where the proceeds are invested in projects outside the operational control of the corporate
Other types of corporate bonds with known-use-of-proceeds , e.g. social	Green bonds issued by sovereigns or financial institutions
...	Sustainability-linked bonds

Emission scopes covered



Green bonds

- Financial institutions shall report the absolute scope 1 and 2 emissions of the project. Scope 3 emissions should be covered if relevant.*
- Avoided and removed emissions may be reported but shall be reported separately from absolute emissions.
- When accounting for the emissions impact of a green bond, the assessment boundary shall be drawn around the projects for which the proceeds of the green bond are used.
- The project emissions can be calculated based on the guidance in the Project Finance chapter of this Standard.
- Only the green bond financed (ring fenced) activities are included. Emissions and financials related to existing activities outside the financed project but within the financed organization are not considered.

Incentive for investors:

Green projects should result in lower absolute emissions. Information about avoided emissions is allowed as well, but methodology on how to calculate those is not described in this section.

*Examples of projects where scope 3 emissions are relevant include but are not limited to hydroelectric power plants, infrastructure projects. [Note, this was taken from project finance chapter.]

Attribution of emissions



Green bonds

If the impact report provides attributed absolute, avoided or removed emissions in line with the PCAF Global Standard, attribution is determined by the ratio below:

$$\textit{Attribution factor} = \frac{\textit{Outstanding par amount held by investor}}{\textit{Green bond par value}}$$

When an issuer finances a pool of projects with several green bonds, and only reports for the aggregated portfolio, an investor may attribute based on the total sum of green bond par values.

Equations to calculate financed emissions



Green bonds

When attributed absolute, avoided or removed emissions in line with the PCAF Global Standard **are not** available, then the investor needs to calculate the financed emissions using the following equation:

$$\text{Financed emissions} = \text{Attribution factor} * \sum_{\text{project}} \frac{\text{Green bond part of project}}{\text{Debt} + \text{Equity of project}} * \text{project emissions}$$

The project emissions can be calculated based on the guidance in the Project Finance chapter of this Standard. This means that these emissions can also be estimated using default emissions factors based on physical activity (e.g. tCO₂e/MWh) or economic activity (e.g. tCO₂e/€ of revenue or tCO₂e/€ of asset).

Data required



Green bonds

Use the data found in impact reports for calculations

The issuer of a green bond typically publishes an impact report annually. This report indicates the estimated environmental impact from projects or activities financed by using proceeds from the green bond. Data needed:

- Scope 1, 2, and relevant scope 3 of financed projects
 - Avoided emissions and emission removals are optional and must be reported separately
- Issued green bond amount
- Invested amount in green bond

In most cases, the impact report will not have all of the data needed to calculate financed emissions. In these cases, financial institutions should apply the project finance methodology to the underlying projects funded by the proceeds of the green bond.



- It is recognized that **many impact reports are not in line yet with the requirements of this Standard**, but it is intended for this methodology to provide an incentive for more issuers to report in line with this Standard.
- Impact reports may report **other environmental benefits** of green bonds in addition to reduction of greenhouse gas emissions. Although PCAF recognizes that green, social and sustainable bonds may provide other benefits, and even be focused on other aspects than reduction of greenhouse gas emissions, these **are not to be considered in the context of climate impacts covered in this Standard**.



Under-Allocation or Over-Allocation of Emissions in the Context of “Use of Proceeds”

- Where a corporate’s green bond emissions and financials are either not both disclosed or not correctly taken into account, then the calculation of financed emissions at a corporate level (PCAF’s general approach to attribution) can result in under-allocated or over-allocated emissions.
- This occurs due to the “use of proceeds” component of Green Bonds outlined in the International Capital Market Association’s (ICMA) Green Bond Principles, which demands that, like avoided emissions, any absolute emissions of a green bond project be “ring-fenced” and solely attributed to owners of that green bond.

Sovereign bonds

Asset class definition



Sovereign bonds

Sovereign Debt:

- Debt obligations (bonds and loans) issued by the sovereign (central government / treasury / central bank) in local and foreign currencies.

Sovereign counterparties in scope:

- Sovereign debt is typically issued by the **central government or treasury**. Investors' exposure to central banks typically consists of cash, FX and derivative (repo) positions. This exposure is not in scope of this accounting standard.
- In some countries however also **central banks** issue debt on behalf of the sovereign. In that case, central banks should be assigned the emissions of the respective sovereign.

Sub-sovereigns / Municipalities:

- Depending on the emissions scope approach chosen and on data availability / approximation, the accounting standard can be extended to sub-sovereign and municipal counterparties.

Suprationals:

- Suprationals are in the first place **political unions**, and their balance sheets represent the aggregated balance sheets of their members. Technically it is possible to aggregate the emissions of Suprationals as a **weighted sum** of emissions of its members.
- Practically this would lead to **double-counting** and can be misleading for investment portfolio assessments.
- However, the aggregated view can be useful for **engagement** with respective bodies.

Emission Scopes Covered

For sovereigns, the break – down by Scope 1, 2 and 3 appears somewhat artificial, but is required by EU SFDR



Sovereign bonds

Territorial Approach

Scope 1	Scope 2	Scope 3
Domestic territorial production emissions excluding emissions attributable to gross exports	Emissions attributable to gross imports	Emissions attributable to gross exports

Government Approach

Scope 1	Scope 2	Scope 3
Direct emissions of the central government (e.g. government-owned buildings, vehicles)	Indirect emissions of the central government (emissions attributable to energy purchases)	3.1 Indirect emissions of the central government (expenditures, subsidies, investments)
		3.2 Non-governmental territorial production / consumption emissions of the country (e.g. corporate sector)

Approach	Advantages	Limitations
Territorial Approach	<ul style="list-style-type: none"> - Broad sovereign role and responsibility at all scope levels, not limited to central government - Allows accounting for Production and Consumption Emissions 	<ul style="list-style-type: none"> - Double counting emissions with other sectors (e.g., corporates) - Limited Scope 1, 2, and 3 data availability—extension of coverage would require estimates and time extrapolation
Government Approach	<ul style="list-style-type: none"> - Separation of emissions from public and private sectors at Scope 1+2 levels, mitigation of double counting - Allows accounting for Production and Consumption Emissions if Scope 1, 2, and 3 are considered 	<ul style="list-style-type: none"> - Risk of incomplete accounting for sovereign emissions if only Scope 1+2, which typically account for <1% of sovereign emissions, is considered - Limited separate Scope 1, 2, and 3 data availability—approximations are imprecise and complex

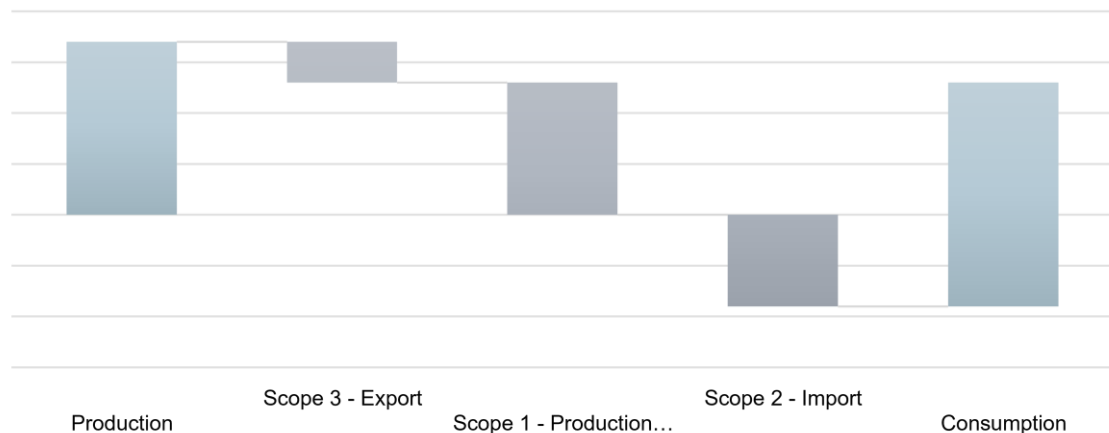
Emissions Scope: Both Approaches Converge to the Same Metrics



Sovereign bonds

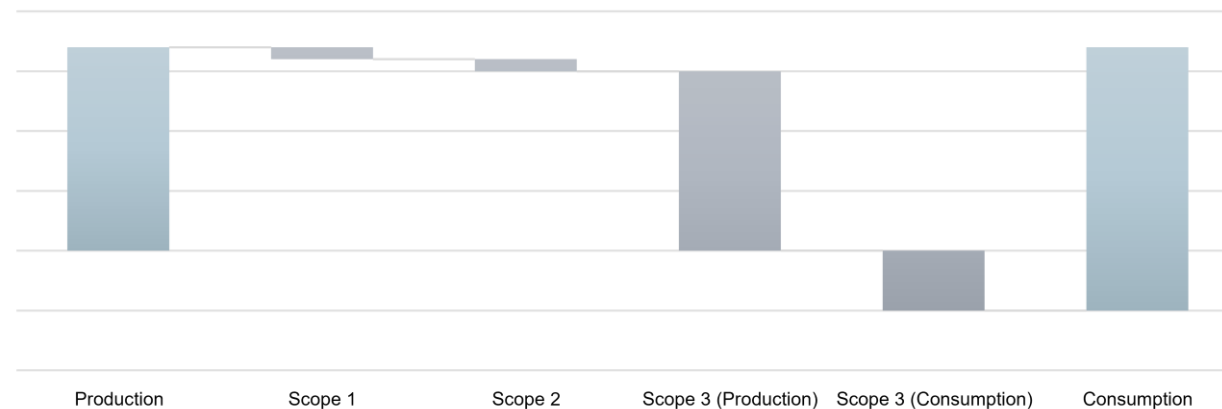
PCAF suggests to align primarily with the metric fulfilling the reporting requirements of United Nations Framework Convention on Climate Change (UNFCCC) – territorial GHG emissions (Production Emissions)

Territorial Emissions Scopes



Production Emissions	Scope 1: Production excl. exports
	Scope 3: Exports
Consumption Emissions	Scope 1: Production excl. exports
	Scope 2: Imports

Government Emissions Scopes



Production Emissions / Consumption Emissions, depending whether only production or also consumption scope is taken into account	Scope 1: Direct government
	Scope 2: Indirect government
	Scope 3: Government investments + non-government country emissions

Attribution of emissions



Sovereign bonds

Attributed to Portfolio (Owned) Emissions = Attribution Factor * Sovereign Emissions

	Attribution Factors (where s = sovereign in scope)	
	$\frac{\text{Portfolio investment amount}_s}{\text{Gross Government Debt}_s}$	$\frac{\text{Portfolio investment amount}_s}{\text{PPP} - \text{adj. GDP}_s}$
Reasoning	<ul style="list-style-type: none"> • Straightforward link between 1 unit of investment and 1 unit of sovereign debt • Close to corporate bonds financed emissions formula 	<ul style="list-style-type: none"> • GDP is seen as the measure of 'value' of the sovereign (value of the output) • National GDPs are more directly connected to the economic activities of the countries and consequently to generated emissions • PPP-adjustment for a more appropriate comparison of economy sizes by removing exchange rate effect
Limitations	<ul style="list-style-type: none"> • Creates incentives for investing more in countries with higher levels of debt • There is limited empirical link between sovereign emissions and debt levels, also as sovereigns aren't only financed by debt 	<ul style="list-style-type: none"> • There is not a 1:1 link between 1 unit of investment and 1 unit of GDP (<i>options of a factor are complex but are explored</i>) • <i>Countries with larger GDPs tend to get more favourable treatment (partially mitigated by PPP-adjustment)</i>

Equations to calculate financed emissions



Sovereign bonds

$$\text{Financed emissions} = \sum_s \text{Attribution factor}_s \times \text{Sovereign Production Emissions}_s$$

Debt Attribution:

$$\text{Financed emissions} = \sum_s \frac{\text{Outstanding amount}_s}{\text{Gross Government Debt}_s} \times \text{Sovereign Production Emissions}_s$$

GDP Attribution:

$$\text{Financed emissions} = \sum_s \frac{\text{Outstanding amount}_s}{\text{PPP - adjusted GDP}_s} \times \text{Sovereign Production Emissions}_s$$

(with s = sovereign borrower)

Data required



Sovereign bonds

Data Category	Description	Source	Scope	Limitations
Territorial Approach				
Scope 1 absolute emissions	CO ₂ production – CO ₂ gross exports emissions	Carbon dioxide emissions embodied in international trade (oecd.org)	OECD countries, 2015 most recent data	Limited country coverage, significant data time lag, only CO ₂ data available
Scope 2 absolute emissions	CO ₂ gross imports emissions			
Scope 3 absolute emissions	CO ₂ production emissions (incl. gross exports)			
Government Approach				
Scope 1,2 3	Raw data on the basis of data directly available (Eurostat) or input-output tables	WIOD (WIOD Home), Eurostat, GTAP	Eurostat: only EUR data, Global for WIOD & GTAP	Varying country coverage, data time lags
Aggregated metrics:				
Absolute Production Emissions	Territorial production emissions in line with UNFCCC definition	World Total including LUCF Greenhouse Gas (GHG) Emissions Climate Watch (climatewatchdata.org) EDGAR - The Emissions Database for Global Atmospheric Research (europa.eu)	GHG emissions , global country coverage, other sources (PIK, UNFCCC) available	Slight time lag (2018), but in line with UNFCCC
			CO ₂ 2019 emissions, global coverage	Most recent GHG emissions data available at 2015
Absolute Consumption Emissions	Domestic territorial production emissions + imports - exports	Carbon Footprint Results (worldmrio.com) CO2 emissions - Our World in Data	Global coverage, 2016 most recent data	Calculation based on input-output models, notable data time lag (2016)
			Global coverage, 2018 most recent data	Complex supply value chain allocation, estimates involved
PPP-adjusted GDP	GDP adjusted by purchasing power parity	GDP, PPP (current international \$) Data (worldbank.org)	Global coverage, 2019 data	
Nominal GDP, Population	Standard macroeconomic metrics	Worldbank / IMF	Global coverage, 2019 data	



Emissions Scope:

- The two approaches to classify Scope 1, 2 and 3 emissions of sovereigns are both only an attempt to mirror corporate approach. The direct comparison is challenging.

Double counting:

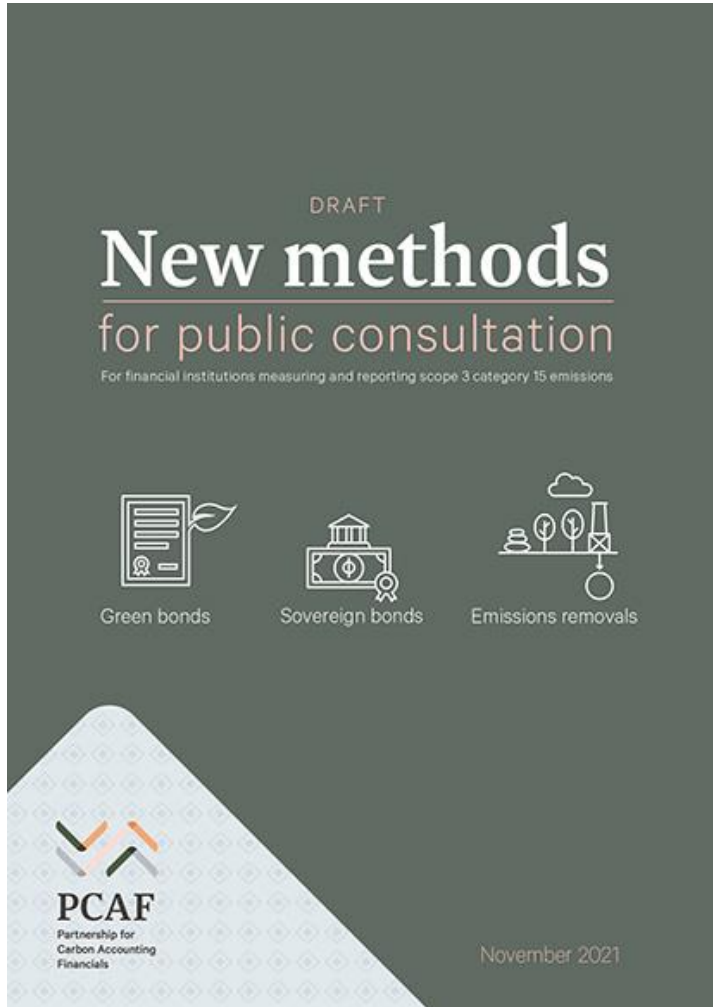
- Double counting involved in accounting by Production and Consumption Emissions, in Territorial Approach and in Scope 3 Government Approach.
- Scope (1+2) of Government Approach avoids double counting, but raises the risk of investors accounting for only a fraction of sovereign emissions

Data availability, consistency, approximation:

- Data limitations are predominant in the availability of separate Scope 1,2,3 emissions.
- Proxies and approximation can resolve the issues to some extent.

Q&A

The public consultation is open until 17 December



To download the draft new methods and participate in the consultation survey, visit the public consultation webpage:

<https://carbonaccountingfinancials.com/newsitem/public-consultation-three-draft-methods-capital-market-instruments>

For all questions about the public consultation, please contact the PCAF Secretariat at: info@carbonaccountingfinancials.com

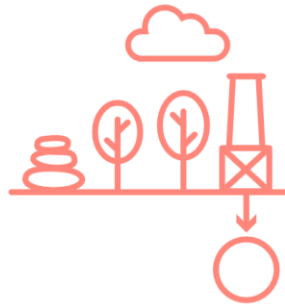
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