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Red Flags in Green Bond Carbon Accounting Proposal

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- The Partnership for Carbon Accounting Financials (PCAF) has proposed a new approach to account for green bond emissions that effectively treats green bonds as if they were debt of a distinct green entity, separate from the rest of the issuer. This is based on a theoretical construct, rather than a legal segregation of activities or funding sources. This position paper explains why we believe the proposal may ultimately run counter to PCAF's mission of improving transparency and comparability of financed emissions reporting.
- The proposal permits investors considerable freedom on how they set a number of critical assumptions and parameters, which will sometimes result in meaningfully different emissions being attributed to the same position by different investors. Additionally, varying choices on whether and when to apply this guidance will result in double counting of green projects' emissions savings.
- Because the proposal assigns lower emissions to green bonds based on an artificial segregation of certain activities, rather than legal or physical boundaries, it ultimately relies on subjective choices. Most notably, it promotes green bonds over other financing instruments, including equity and other forms of debt. More work is needed to empirically confirm that such promotion is warranted, because this is not a neutral proposition—favourable treatment of green bonds comes at the expense of other classes of investors, whose emissions may even rise to balance the green bond adjustment.
- Several more technical points of the proposal stemming from its theoretical basis could also create challenges in practice. For instance, investors in non-green debt often still provide funding for the operation of green bonds' projects, as well as other financial and administrative backing. However, they may not receive credit for this under the proposal.

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- The additional reporting burden on issuers required under the proposal is substantial, and risks diverting limited resources away from more holistic ESG reporting. This also favours larger issuers, to the detriment of otherwise ambitious issuers with fewer resources to devote to reporting, or that simply do less to publicise their ESG initiatives.
- Higher emissions are not necessarily a problem that must be "fixed." Transition products are often overweight more intensive sectors, as these are usually the ones where transition is most material. Rather than consider higher emissions as a marker of "good" or "bad," they can instead be seen as a marker of materiality.
- As a more effective means of driving real world decarbonisation, we suggest a focus on the overall impact that individual companies have on the climate, and a rigorous assessment of their direction of travel, rather than on portfolio-level financed emissions. Specifically, we recommend a thorough "Temperature Alignment" assessment of each issuer, looking at the ambition and credibility of its emissions reduction strategy, with a focus on issuers for whom climate impacts are most material, which again, will typically be those that are more emissions intensive. If an investor feels an issuer's green bond will be effective at reducing its emissions, that could still be taken into account in such an assessment. However, other factors should be considered as well.

INTRODUCTION

Green bond issuance skyrocketed from just over $185 billion in 2020 to a record high of $570 billion in 2024, the 4th straight year of issuance over $400 billion.[1] While some investors and academics question green bonds' real-world impact, many supporters are dissatisfied with how they are treated under emissions reporting standards. The "problem," according to these proponents, is that green bonds are frequently associated with above-average carbon intensities, which does not appropriately reflect the instruments' purportedly green credentials. For example, the Global Aggregate Index has a carbon intensity of ~200 tCO_2e/$M revenues. By contrast, the Global Aggregate Green Bond Index has a carbon intensity of ~280 tCO_2e/$M revenues.[2] As a result, there have been occasional calls for a revision to emissions accounting standards to offer green bonds special treatment.

The problem may not lie in emission figures, though, but rather in the way the figures are being used. The most essential transitions must often occur at companies that currently have high carbon intensities. Therefore, it is not necessarily problematic that an ambitious, transition-

[1] Source: Bloomberg. In addition, 2024 saw a further $177 billion in green loans and $240 of billion sustainability bonds, which allow both environmental and social initiatives as eligible projects.
[2] Source: Bloomberg.

oriented portfolio has a higher carbon intensity—it might even be more problematic if it didn't—provided, of course, that the issuers it holds are indeed ambitiously decarbonising.

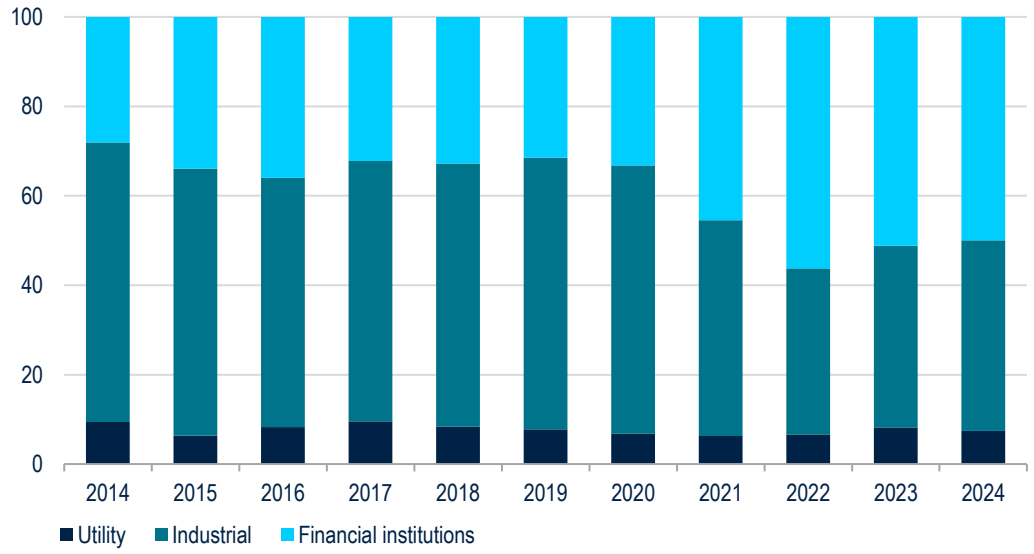
However, others take a different view. This includes the Partnership for Carbon Accounting Financials (PCAF), which has recently revived a proposal to account for the emissions of green bonds in a way that lowers their carbon intensities.[3,4]

This paper outlines our understanding of PCAF's green bond proposal and explores our view on its major limitations. In a prior paper, we proposed an alternative solution to carbon footprinting that looks past simple metrics and labels, and instead focuses on measures of climate ambition and credibility, such as Temperature Alignment. **Here, however, we focus on the reasons why we feel this proposal runs counter to the aim of increasing the transparency and comparability of emissions reporting.**

GREEN BONDS' CARBON INTENSITY

Companies with few emissions usually have little reason to embark on major emissions-cutting projects. Green bonds therefore tend to be issued by companies whose emissions are still high. One sector that stands out is utilities. Since 2014, the sector has made up 6-9% of total Investment Grade (IG) corporate new issuance. But its share of IG corporate green bond issuance is far higher, typically a quarter to half in recent years, and sometimes more (Figures 1 and 2).[5]

Figure 1: Sector shares of total investment grade corporate bond issuance (%)



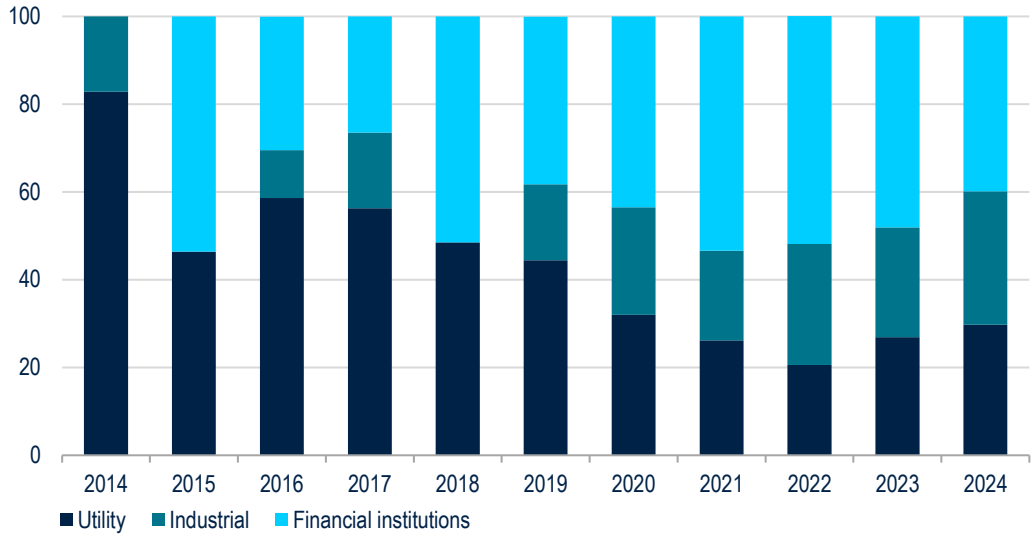
Source: Bloomberg as of January 2025.

[3] PCAF is a global partnership of financial institutions that work together to develop and implement a voluntary, harmonized approach to assess and disclose the greenhouse gas (GHG) emissions associated with their loans and investments. PCAF's recommendations matter a great deal for how the financial institutions report on emissions. At the time of writing, over 500 financial institutions—including many of the largest in the world—were PCAF signatories, and many industry standards and regulations derive directly or indirectly from the group's work. PGIM Fixed Income became a PCAF signatory in 2024, and we value and support the organisation's mission. We also respect PCAF for allowing its signatories to disagree with individual components of its methodologies, as we are doing here.

[4] PCAF made a similar proposal in 2022, but this was not adopted.

[5] Source: Bloomberg as of May 2024.

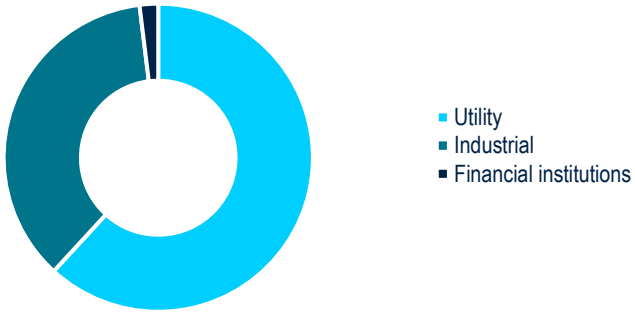
Figure 2: Sector shares of investment grade corporate green bond issuance (%)



Source: Bloomberg as of January 2025

At the same time, utilities are typically a portfolio's most carbon intensive holdings.[6] As shown in Figure 3, the scale of this can be dramatic, with utilities contributing more than 60% of the IG index's emissions intensity as of year-end 2024.

Figure 3: Sector share of IG Index emissions intensity (%)



Source: PGIM Fixed Income analysis of MSCI data for the Bloomberg Global Aggregate Corporate Index as of 31 December 2024. The "Other" category is negligible.

If utilities are an outsized share of green bond issuance, and are also usually among the most carbon intensive issuers, simple arithmetic dictates that green bond investors should expect their portfolios to have higher emissions intensities. In this case, emissions are not useful to discern "good" or "bad"—an evaluation that requires further analysis—instead, they help identify materiality, and, at the issuer level, to confirm progress.

THE PROPOSAL

Portfolio-level emissions are still frequently used as a tool to evaluate the climate credentials of investment products. And in this context, the higher emissions of green bonds do present challenges.

[6] Throughout this paper we refer to emissions intensity and carbon intensity interchangeably. In general, these terms refer to the amount of emissions (normally measured in tonnes CO_2 equivalent) per unit of economic activity. Activity can be proxied through various metrics; unless otherwise noted, we use sales (normally measured in USD millions) and include only scope 1 and 2 emissions.

Given green bonds are meant to be linked to specific projects, one potential adjustment would be to likewise tie the bonds' reported emissions to those projects. For instance, if a utility issued a green bond to build a new solar project, rather than the green bond's accounting reflecting the emissions of the issuer as a whole—as it currently does—it would reflect only the emissions of the solar park. This is essentially what PCAF has proposed. Effectively, this would create a "synthetic operating company (opco)" by theoretically segregating certain activities from the rest of an issuer for emissions reporting.

While at a high level this proposal offers an elegant solution, a deeper dive into its practical details—which this paper turns to next—shows its theoretical basis diverges from reality in some key areas, with unintended consequences. In addition to the potential to be misleading, this also means the calculations would depend mainly on subjective choices and assumptions, rather than statistical facts. These decisions are mostly left up to individual investors and could be susceptible to bias. In some instances, this could even result in material amounts of emissions "vanishing" from reported figures. That would not improve transparency, nor comparability.

Delving next into a handful of the specific technical concerns with the proposal will help illustrate why.

NO GROSS UP = VANISHING EMISSIONS

Attributing lower emissions to an issuer's green bonds does not mean the issuer's total emissions have actually gone down. Combining the emissions assigned to the issuer's green bonds with those assigned to its other securities should still add up to the issuer's total emissions. Otherwise, emissions will have "vanished" on paper when they haven't in reality.

The PCAF proposal seeks to address this by recommending that non-green bond investors essentially "gross up" their emissions to make up the difference. As we shall see later, this raises several issues. More concerning, though, is that the proposal does not require consistent application of this gross up. Investors "should" adjust their non-green holdings' emissions upwards, but only if this would not be too technically challenging. And it is up to each investor, to determine when this is the case.

In practice, "grossing up" emissions usually does present technical difficulties, so there are regularly opportunities for investors to avail themselves of this flexibility. Similar difficulties arise for calculating the downward adjustment to green bond emissions, but the proposal permits the use of estimates in such cases, which we expect most investors applying the proposal would do. More importantly, though, the proposal does *not* explicitly require symmetry between green bonds and other securities on the "too technically challenging" point. In other words, an investor could deem it technically feasible to estimate lower emissions for an issuer's green bond, and yet still too difficult to calculate the upward adjustment for its non-green securities. In fact, in a worst case, this could even happen with the same portfolio. There could well be cases where investors apply downward adjustments to nearly all their green bond holdings, but few or no upward adjustments to non-green securities of issuers that have green debt.

VANISHING EMISSIONS SCENARIO

Consider a scenario where a bond fund invests in multiple issuances of a utility that is using green bonds to add renewables capacity, but is also still issuing non-green debt to maintain and expand its gas generation. Some of the bonds the investor holds in this company are green, but others are not. The investor reports much lower emissions on the green bonds—essentially 0—based on an estimation. But the investor states that it's too challenging to carve out the green projects from calculations for its non-green bond holdings. The vanilla bonds in the fund therefore also benefit from the emissions savings. If the company issues half its bonds as green and half as vanilla, and the investor also holds a roughly 50/50 split of these, its portfolio should reflect the total emissions of the company. But due to asymmetrical application of adjustments, it would instead show a small fraction of the total.

Unfortunately, this is not a theoretical problem. We have already seen one of the most widely used ESG data vendors adopt elements of this proposal to reduce emissions associated with green bonds. However, the vendor has not made equivalent increases to non-green securities. This type of cherry-picked application of the methodology is, in our view, to be avoided at all costs. If the proposal were to be adopted, it should be clear that no downward adjustments should be used except where upward adjustments will also be implemented across all of an investor's AUM.

Even still, given it is up to individual investors to make these determinations, there will still be inconsistencies. Investors heavily invested in green bonds will likely put in the effort to calculate downward adjustments, but investors with less interest in green bonds (including equity investors, who would also need to gross up their emissions for this proposal to work) may not. So, even if a "symmetry" requirement is added, this would only apply at the individual investor or product level. Thus, comparing different financial products, or aggregating data across managers, would still suffer from vanishing emissions.

This risk of vanishing emissions is a shortcoming of the proposal that merits serious consideration.

DISCONNECTS BETWEEN THEORY AND REALITY

A broader issue is that many assumptions underpinning the proposal are not always accurate reflections of reality. A core source of this disconnect is the "synthetic opco" construct.

Firms are sometimes legally segregated into distinct operating companies. These opcos can each issue their own debt. Due to the legal separation in such structures, bondholders in an opco typically have first claim to the opco's assets as collateral, and only indirect and subordinate claims on assets of the parent's other subsidiaries. The opco often has its own operations, staff, equity and books and records. It must normally pay for its operating expenses out of its own cashflows. If the current debt of the opco matures, it must issue new debt or equity to refinance itself. In these cases, it's usually entirely sensible that the securities of the opco—debt and, if applicable, equity—be assigned emissions reflective only of the opco, rather than the broader enterprise.

The proposal seeks to afford a similar treatment to green bonds. However, with green bonds, there is no legal separation, which creates a number of complications.

For one, green bonds' terms allow a certain amount of time—most commonly 2 years—for their proceeds to be invested. In the meantime, those proceeds are rarely physically ring-fenced; they're mixed with the issuer's general funds. Over the next 2 years, they can be used for anything, so long as the issuer ultimately funds green projects of an equivalent amount.[7] In a true opco, this wouldn't be a problem, because bondholders would report emissions based on its entire operations. When attributing lower emissions to a green bond, though, it's a serious concern, because even if the "interim" uses for the proceeds are emissions intensive, **the proposal attributes all green bonds zero emissions until their proceeds are deployed**. In reality, the longer it takes to fund the projects, the more likely it is that some proceeds are being spent on brown activities (and the longer it will take the issuer to transition). But under this proposal, the longer it takes to allocate proceeds, the better it makes an investor's emissions appear.

HIGH EMISSIONS FROM UNALLOCATED PROCEEDS SCENARIO

Imagine a steel company issues a green bond, supposedly to fund construction of an Electric Arc Furnace (EAF). However, nearly 2 years passes before the furnace requires the funding. In the interim, proceeds from the green bond are deposited in the issuer's general account and mixed with other funding sources, which are then used for operations at its coal-based blast furnace facilities. Later, the company issues vanilla debt that partially replenishes the green bond proceeds spent over the 2 years, meaning that it is this new cash that actually funds part of the EAF. During the 2 year period where some green bond proceeds were in reality being spent on blast furnace operations, the green bonds would nonetheless be attributed 0 emissions. This is even lower than the emissions they are later assigned once the EAF is funded, making it in investors' interest for the EAF to take as long as possible to be completed (obviously, longer delays are not ideal for the real-world transition, though). Meanwhile, the vanilla bond that partially replenished green bond proceeds and effectively funded part of the EAF would not be attributed any of the EAF's emissions savings—conversely, its investors would show higher emissions than they would have absent this proposal because they would need to gross up the emissions savings now attributed to the green bonds.

Maturing green bonds illustrate a second departure from reality. The attribution factor for a green bond under the proposal is based on principal outstanding. So, as a green bond gets repaid, the emissions savings previously attributed to it transfer back to non-green investors. In the case of a bullet bond (which most green bonds are), this would happen all at once. That would introduce volatility in emissions reporting. It also highlights flaws in the proposal's theoretical construct. A true, legally distinct opco does not cease to exist when its current debt matures. Instead, it refinances maturing debt with new debt that gets attributed the same emissions at the time of closing. But under the proposal's theoretical framework, the "synthetic opco" in which projects are theoretically "held" suddenly disappears when the green bonds are paid down.

[7] Indeed, the language in a green bond's terms usually clearly disclaims that only an "equivalent amount" to the proceeds must be spent on green projects, not the actual proceeds themselves.

PERVERSE INCENTIVES

A bigger implication of drawing factitious lines around certain activities is that it could unintentionally incentivise investors to overlook negative activities of the issuer's larger business.

Imagine an oil and gas company that uses green bonds to fund a biofuels refinery. The refinery is a legitimate green project. But it represents only a small part of the issuer's capex, with the vast majority still going towards fossil fuels. Further, the company may be lobbying against more ambitious climate policies. In assigning the green bond lower emissions, there is a risk the proposal would lead to these important issuer-level considerations being overlooked.

Add to the scenario a utility that has been meaningfully transitioning from fossil fuels to renewables and has ambitious plans to continue doing so. Because it has some legacy fossil fuel assets, its emissions are still high. It may have chosen not to issue green bonds—many generators fund at least part of their renewables build outs using regular debt and equity, and there are decisive regional differences in green bond uptake. **The proposal would inadvertently strengthen incentives to avoid this climate leader since its bonds would be attributed high emissions, and conversely, to buy green bonds in the oil and gas company depicted above**.

In a worst case, **the proposal may even encourage laggards to increase their green bond issuance to take advantage of this green "loophole," watering down the quality of green bonds.**

That is the risk of assuming theoretical separation where it doesn't formally exist.

MORE EVIDENCE NEEDED TO JUSTIFY ADJUSTMENTS

The hypothetical example above reiterates that, intentionally or not, the proposal implicitly takes a stance that green bonds lead to more effective transition outcomes than other instruments. While we believe green bonds play a role in reinforcing issuers commitments to their transition plans, we feel more empirical research is needed to demonstrate that they are sufficiently different from other funding sources at driving those transitions before such a material adjustment can be fully justified.[8] There is empirical research showing that the vast majority of green bonds fund activities that an issuer had already been involved with before it first issued green debt.[9] And anecdotally, we have seen numerous cases of issuers undertaking significant decarbonization efforts without issuing a green bond.

Structurally, there are few major differences between green bonds and other forms of debt. They have the same collateral and the same seniority as vanilla bonds—if they didn't their borrowing costs would be much higher. Similarly, they have the same economic exposure—spreads on an issuer's green bonds will tighten just as much as its vanilla bonds if its brown assets outperform. Further, a meaningful greenium on green bonds is rare, again emphasizing they have identical credit exposure to vanilla bonds. The green projects are even dependent on the broader business for general overhead and other costs not included in the green bonds' use of proceeds (e.g. marketing, staff, and, ironically, accounting functions—if a company wanted to separately report

[8] There has been some research indicating a degree of correlation between green bond issuance and emissions reductions, but this does not show causality. Recall that that utilities are by far the most prolific green bond issuers. Utilities also have some of the most readily available, scalable decarbonisation solutions, which are often the most economical generation sources as well. Few utilities are not making some progress on decarbonisation. And in many markets, they wish to highlight their efforts, which green bonds help them to do. So, decarbonisation efforts are likely driving green bond issuance, rather than the other way around. At the same time, there is a growing body of research questioning the effectiveness of green bonds at creating real world outcomes.

[9] See for example Green Bonds: New Label, Same Projects by Wurgler and Lam.

emissions on its green projects as required under the proposal, this would likely be paid for by non-green investors). Indeed, if green bond proceeds are spent only on capex to build the project (as is often the case), then other investors are likely funding part of the projects' operating expenses and possibly even some of the green bond's debt service.

A more tangible distinguishing feature is green bonds' "green use of proceeds" provisions. But green bonds' terms heavily disclaim any legal obligation to follow through on these commitments, so that distinction is weaker than it appears.

In the end, the main difference seems to just be the label—green bonds are more about gaining visibility than funding. This is not as minor as it may sound. Increasing the visibility of commitments to invest in major transition projects makes it more difficult for management to later change their minds. However, visibility is still not as significant a benefit as would be unlocking capital for projects that otherwise could not do so. And there is still little evidence indicating that green bonds widely achieve this latter benefit.

In short, before affording beneficial treatment to green bonds, which could skew market incentives, more evidence is needed to confirm they generate materially differentiated outcomes. **Otherwise, lowering of green bond emissions could fuel claims of greenwashing**. Not least, because more beneficial treatment for green bonds can give rise to less beneficial treatment for other asset classes.

LOST EMISSIONS SAVINGS

As noted above, the proposal says that non-green bond investors should adjust their holdings' emissions upwards to carve out and gross up any emissions savings on the green projects where technically feasible. **These "non-green" investors may not agree that they should no longer get any credit for emissions reductions they expected from the green projects when buying into a company because it has since issued a green bond**.

Further complicating matters, **non-green investors can lose emissions savings *retroactively***. It's estimated that on average, about a third of green bond proceeds are used for "refinancing" existing green projects.[10,11] The standard look-back for this is as long as 3 years. So, an ESG investor could have bought equity in a company in anticipation of emissions reductions from new green projects, but, three years later, when the emissions savings are finally starting to materialise, if the company issues a green bond to "refinance" them, those emissions savings are then assigned only to the green bond investors.[12] The non-green investor not only loses these savings, but even has to adjust its emissions *upwards*, above the issuer-level total.

Worse still, the *construction* of the green projects can generate significant emissions. But the green bond investors "refinancing" the projects and claiming their emissions savings would not report any construction emissions—construction emissions would affect only the existing investors who then lose the projects' later emissions savings.

[10] "Refinancing" is in quotes because this practice does not always result in a specific, 1-for-1 repayment of existing debt. Even if debt is repaid, this is not necessarily the specific debt that originally funded the project. In fact, the project may not have even originally been funded through one specific debt issuance in the first place. In such cases, the cash may be used for other purposes, while still being depicted as a "refinancing."

[11] See again Green Bonds: New Label, Same Projects by Wurgler and Lam, which empirically demonstrates the lack of novelty in green bonds' underlying projects, due to reasons including (but not limited to) their significant use of "refinancing."

[12] Even absent "refinancing," an ESG investor may invest in a company in anticipation of it enacting stated transition plans, not knowing most of these plans would be attributed to green bonds that would prevent the investor from benefiting from the associated emissions savings.

LOST EMISSIONS SCENARIO

The emissions of major tech companies have been going up not just because of the rapid growth in electricity consumption from data centers, but also from their construction. Imagine a tech company that builds a number of new, highly efficient data centers fitted with onsite renewables, then "refinances" them with green bonds. Non-green investors would be saddled with the substantial construction emissions from these projects, but the green bond investors would take full credit for their subsequent emissions savings.

At a more basic level, there are valid ESG strategies that do not choose to favour green bonds. In our case, in certain transition-oriented portfolios, we prefer to assess climate performance at the issuer level, rather than the bond level. In these accounts, we would choose the vanilla bonds of a credibly transitioning climate leader over the green bonds of a follower or laggard, all else equal. Some investors—e.g. equity managers—don't even have the option to buy green bonds. The widespread adoption of this proposal would be to the detriment of investors applying a different approach, even where such an approach is credible and ambitious. In addition, because uniform adoption of the proposal would disadvantage non-green investors, it increases the likelihood of inconsistent application.

Any proposal that materially favours one class of investors over another should be founded on a solid, empirical basis that shows that class of security is truly superior at delivering lower emissions. To date, this has not been sufficiently demonstrated for green bonds.

Figure 4: Theoretical impact of Green Bonds on investors' reported emissions

A. Cap stack

($M market value)	T-3	T-2	T-1	T	T+1	…	T+11
Equity	25	25	25	25	25	…	25
Vanilla debt	50	50	50	25	25	…	50
Green debt	–	–	–	25	25	…	–
Issuer enterprise value	**75**	**75**	**75**	**75**	**75**	…	**75**

B. Issuer emissions

(1,000 tCO_2e)	T-3	T-2	T-1	T	T+1	…	T+11
Green project construction GHGs	5.0	5.0	5.0	–	–	…	0.0
Green project operational GHGs	–	–	–	0.5	0.5	…	0.5
Total green project GHGs	**5.0**	**5.0**	**5.0**	**0.5**	**0.5**	…	**0.5**
Other issuer GHGs	20.0	20.0	20.0	20.0	20.0	…	20.0
Total issuer GHGs	**25.0**	**25.0**	**25.0**	**20.5**	**20.5**	…	**20.5**

C. Investor emissions

(1,000 tCO_2e)	T-3	T-2	T-1	T	T+1	…	T+11
C1. With non-green gross up							
Equity	8.3	8.3	8.3	10.0	10.0	…	6.8
Vanilla debt	16.7	16.7	16.7	10.0	10.0	…	13.7
Green debt	–	–	–	0.5	0.5	…	–

Total		**25.0**	**25.0**	**25.0**	**20.5**	**20.5**	…	**20.5**
C2. Without non-green debt gross up								
	Equity	8.3	8.3	8.3	6.8	6.8	…	6.8
Vanilla debt		16.7	16.7	16.7	6.8	6.8	…	13.7
Green debt		–	–	–	0.5	0.5	…	–
Total		**25.0**	**25.0**	**25.0**	**14.2**	**14.2**	…	**20.5**
"Vanished" GHGs due to no gross up					**6.3**	**6.3**		
C3. Without green bond special treatment								
Equity		8.3	8.3	8.3	6.8	6.8	…	6.8
Vanilla debt		16.7	16.7	16.7	6.8	6.8	…	13.7
Green debt		–	–	–	6.8	6.8	…	–
Total		**25.0**	**25.0**	**25.0**	**20.5**	**20.5**	…	**20.5**

Source: PGIM Fixed Income. Hypothetical example for illustrative purposes only.

In the figure above, green projects are developed over 3 years. As shown in box B, this generates significant construction emissions. However, once construction is completed, operational emissions are low. As shown in section C, the construction emissions are attributed to existing equity and vanilla debt. After construction is completed, a 10-year green bond is issued, refinancing general corporate debt attributed to the projects, and so cutting the value of vanilla debt in half. No construction emissions are retroactively assigned to the green bondholders. At this point, all three investor classes have equal exposures of $25 million. Absent the PCAF proposal, they would therefore also all report the same financed emissions of 6.8 ktCO2e, as shown in box C3. Under the proposal, however, the green bondholders report only the 0.5 ktCO2e operational emissions of the green projects (boxes C1 and C2). If non-green debt investors gross up their emissions to balance the lower emissions attributed to the green bonds as shown in box C1, they not only lose out on the green projects' operational emissions savings, their emissions actually increase versus if the projects had never been completed (e.g. for the equity, emissions increase from 8.3 ktCO2e before the projects, to 10 ktCO2e afterwards).[13] After the green bond matures in year 10, though, the non-green investors' financed emissions suddenly plummet. Conversely, if non-green investors do not gross up emissions, as shown in box C2, then 6.3 ktCO$_2$e simply vanish from the accounting each year the green bonds are outstanding.

IN KIND CONTRIBUTION BY OTHER INVESTORS

The proposal's treatment of green bonds as debt of a synthetic opco overlooks another critical consideration that results in lost emissions savings—the in-kind contribution from the rest of the business. If a green project costs $500 million to build, and claims this is funded through a $500 million green bond, the proposal would treat the green bond holders as the sole funders of the project. In actuality, though, the project requires additional support beyond this $500 million.

First and foremost, if the project represents only a fraction of the issuer's total assets, then it materially benefits from the financial backing of the rest of the business. Green bond holders are collateralised not just by the green assets, but all of the issuer's assets, and their debt service can similarly be paid out of all an issuer's cash flows, not just those from the project. Absent this backing, the financing cost for the project would be higher, often considerably. Theoretically this

[13] Vanilla debt emissions fall in absolute terms, but not on a per million $ invested basis, because the outstanding amount of the vanilla debt has been halved.

financial backing could be viewed as a guarantee from the rest of the issuer to the green project. However, the green project pays nothing for this guarantee—it is an in-kind contribution from the rest of the business.

In addition, green bonds may only fund the construction of a green project, but not its ongoing operations. This can even include the costs of preparing the reporting demanded by the green bond holders—a cost green bond holders don't necessarily pay for. Occasionally, this also includes debt service on the green bonds themselves, to the extent cash flows on the green projects aren't sufficient to fully meet these obligations. Again, the rest of the business provides these services and funds for free—another in-kind contribution.

Finally, the green projects rely on the issuer for general overhead activities such as marketing and sales, finance and accounting, HR, and possibly staff. These activities aren't directly tied to the projects, but are essential for their success, and so the projects' proportional share of such costs represent a third form of in-kind contribution.

In combination, the value of these various contributions could be significant, but they may be ignored when assigning the projects' emissions savings to investors. This is therefore another case of lost emissions savings.

INEFFICIENT USE OF REPORTING RESOURCES

The proposal doesn't create challenges just for investors; it also raises green bond reporting burdens for issuers. Specifically, the proposal urges green bond issuers to report specifically on the emissions of the green projects. This may sound simple, but in our experience, many issuers still struggle to provide reporting even at the true opco level, so reporting at the synthetic opco level isn't a trivial ask. Moreover, it's not just emissions reporting that's needed. Issuers are expected to report on the specific "enterprise value" of the green projects broken down between different capital sources, again as though it were a synthetic opco. If the issuer has put any equity or other non-green capital into the project, this could become especially complicated. Reporting of emissions and enterprise value isn't a one-time requirement either—it must be done annually as long as the green bonds are outstanding.

Issuers do not have unlimited reporting resources, so this will inevitably cannibalise other ESG reporting, which may have been more valuable. Green bond impact reporting—by its nature—is always positive. For it to be useful, investors must be able to put it in context, which requires additional issuer-level information (e.g. reporting on "plastic waste avoided" is much more useful if one first knows how much plastic waste is normally produced). It's important to start with basics and ensure that the issuer-level reporting on both positives and negatives is of high enough quality, before ratcheting up positive-impact-only, bond-level reporting demands.

This reporting may also introduce a bias towards larger issuers who have greater resources to compile it. Companies lacking such resources may struggle to attract ESG investors seeking lower reported emissions. That in turn could end up disadvantaging entire asset classes where issuers have leaner margins, such as high yield.

CONCLUSION AND RECOMMENDATIONS

Delving into the details of this proposal shows that it is not as straightforward as it appears. It raises serious questions about vanishing emissions, lost emissions, effectiveness, and incentives.

Rather than making financed emissions reporting more transparent and comparable, it might increase areas of inconsistency and introduce numerous areas where users must make assumptions, which in some cases could be biased in their favour (and in any case, may be unclear to end investors). The benefits of the proposal for one class of investors would sometimes come at a cost to others, including those who pursue valid ESG strategies that do not rely on green bonds, as well as those who don't have the option to buy green debt in the first place (e.g. equity investors). Alternatively, the proposal could be irregularly applied, in which case it would instead result in vanished emissions, which is an equally undesirable outcome. Finally, the proposal significantly increases reporting burdens for both issuers and investors, which would not always be the most efficient use of scarce reporting resources. As a result, our primary recommendation is that this proposal should not be adopted.

If, however, it is adopted, a few key modifications are essential:

1. The proposal should be optional. And investors applying it should be required to report their emissions both with and without the green bond adjustments, with both values being equally clear, prominent and accessible. Ideally they should be side by side and use identical templates. This would allow investors to decide for themselves which figure is most appropriate.

2. Any investor targets for financed emissions should clearly state whether they will rely on the green bond adjustment or not. If so, there should be a clear and concise explanation of the implications if the targets did not apply the adjustment, and progress should be reported on both bases, as under point 1 above.

3. There should be an explicit requirement for symmetry. Investors applying the green bond adjustment in any of their portfolios' reporting (except where this is at the direction of a client in a separately managed account, and only for that client's consumption) should be required to also apply the gross up to non-green instruments across all of their AUM. Further, for a given issuer, an investor should not be permitted to adjust green bond emissions downwards if it cannot gross up emissions on non-green instruments.

4. The requirement under point 3 should extend to asset owners (and other investors whose portfolios are managed by different managers or sub-advisors). If they delegate their PCAF reporting to several different managers / sub-advisors, it cannot be guaranteed they will apply adjustments consistently. And where they do apply symmetrical adjustments, they will not necessarily do so under the same assumptions. This significantly raises the risks of vanishing emissions in an asset owner's accounting, as well as the possibility that the same company (or even the same position) will be assigned emissions under materially different methodologies across different sleeves of its portfolio (which may not be apparent to the asset owner if it is only reviewing aggregated reporting at the portfolio-level from each manager). Instead, asset owners (and similar) that apply this proposal should be required to gather holdings data from each of their managers and prepare the emissions reporting themselves (not delegate it) to ensure consistent and symmetrical treatment of green bond adjustments.

5. Recognizing that many users are unlikely to fully digest detailed disclosures on the assumptions and estimates used in making green bond adjustments, the scope for making such assumptions and estimates should be minimal, possibly to the extent that estimates are not allowed. A working group should determine the limited circumstances

where estimates would be appropriate, and set stricter guidelines on how assumptions are to be made. Possibly a third figure should also be required: financed emissions with green bond adjustments only where this is based on company reported figures, not estimates. This would allow investors to compare the version that includes an investor's own estimates against the purely-reported version to potentially identify bias.

6. Adjustments should not be permitted for "refinancings" of existing projects, re-labelling of existing bonds, or acquisition of existing green projects from third parties. It should also not be allowed where proceeds are not spent on long-term investments (e.g. many green bonds report that a material share of proceeds is spent on short-term activities and opex). The expected life of eligible projects should extend at least until the maturity of the green bond to be permissible for adjusted emissions.

7. Until green bond proceeds are allocated, the bonds should be attributed the issuer's company-level emissions, not zero.

8. Further enhancements should be made to the guidance for the synthetic opco concept to better approximate a true opco. Most notably:

    i. Emissions from construction and/or disposal of the projects taking place outside the tenor of the green bond should be estimated and added to the green bondholders' emissions (spread over the bond's tenor), with an analogous deduction of these emissions for the issuer's other investors.

    ii. The "in-kind" equity contribution by the issuer to the projects should also be estimated as though each was provided through an arms-length arrangement. A share of the projects' emissions savings proportional to this in-kind equity contribution should be deducted from the savings attributed to the green bonds, and instead, attributed to non-green investors. If the estimated value of the projects left after deducting this in-kind equity contribution is less than the proceeds of the green bonds, then the green bondholders must be partially allocated the issuer's overall emissions, proportionate to this shortfall. Otherwise, there will be vanishing emissions due to both green bond investors and other investors claiming credit for the projects' emissions savings.

These amendments would partially mitigate some of the concerns raised, but not eliminate them. Additionally, to implement them would be resource-intensive, further increasing the costs of this proposal. Therefore, **we stress again our opinion that no green bond adjustment would be the better and more efficient result**. Rather than try to fix the "problem" of green bond issuers' high emissions, it would be better to increase understanding on why this is not necessarily a problem, and look for more effective ways to measure an issuer's climate performance.

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Source(s) of data (unless otherwise noted): PGIM Fixed Income, as of February 2025.

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