



# WE WERE WRONG

**A reassessment of the viability of financed emissions  
accounting and target-setting**



## About Theia Finance Labs

Theia Finance Labs (formerly 2° Investing Initiative Germany) is an independent, non-profit think tank incubating research solutions for the financial sector that help solve the climate crisis. The Theia Finance Labs name is inspired by the Greek goddess of sight, the light of the blue sky, and the value of gold, Theia, and by the Greek word Aletheia, which means “disclosure” or “truth”, literally “the state of not being hidden”. The brand mirrors our goal to develop evidence-based research and tools that shed light on the intersection of finance, climate change, and long-term risks. Theia operates as a 100% non-profit organization and currently incubates or co-convenes the following streams: *tilt*, 1in1000, Inevitable Policy Response, TransitionMonitor. Each stream has an independent research process and association with Theia Finance Labs is not an endorsement of any individual research outputs, unless mentioned otherwise.

**The paper is a technical note in response to the Austria Green Finance Alliance Consultation on the “New KPI set for decarbonisation steering”. The consultation and details on responding can be found under the following link: <https://www.bmk.gv.at/en/green-finance/alliance/consultation.html>. The consultation is open until August 16<sup>th</sup> 2024. We encourage our readers to get involved!**

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## I. Introduction

**„Financed emissions“ have become the default metric in mandatory disclosure and target-setting frameworks. However, a range of issues have been identified with them including:**

- 1) The underlying quality and coverage of the emissions data across Scope 1+2+3;
- 2) The challenge of comparing different emissions profiles across sectors and company sizes;
- 3) The difficulty of capturing assessing and targeting ‘green’ performance with emissions data;
- 4) The backward-looking emissions profile disconnected from corporate’s forward looking asset- and capex plans;
- 5) The ‘allocation’ challenge related to allocating company emissions to financial assets across asset classes and the potential financial distortions that could bias results, independent of underlying corporate performance.

Theia Finance Labs has published extensively on these and related shortcomings over the better part of the past 10 years, and concluded that the ‘financial biases’ of financed emissions accounting were insurmountable and effectively ‘unfixable’, undermining the value of financed emissions as a tool for assessing emissions performance of a financial portfolio.

### **We were wrong.**

While many challenges to financed emissions accounting exist, a recent initiative by the Austrian Green Finance Alliance introduced a novel emission performance allocation. Our assessment concludes that this approach overcomes the core critique inherent in our previous research related to specifically the issue around financial distortions and biases. At the same time, we recognize that other barriers continue to exist for the effective use of emissions performance accounting both for assessing and comparing the performance of different portfolios and steering and thus may still render other metrics preferable for the purpose of portfolio steering and target-setting.

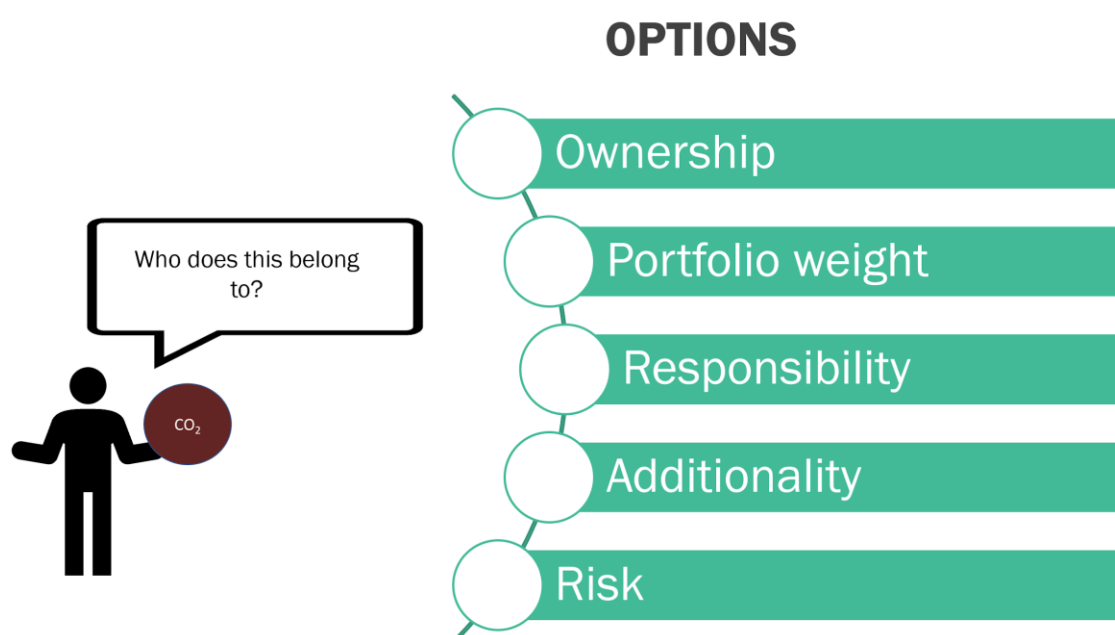
The objective of this technical note is then not to suggest all critiques around financed emissions have been resolved, nor to specifically recommend the metric. Specifically, it identifies an error in our previous assessment around one of the shortcomings and thus reassesses the viability of emissions performance accounting in the context of target-setting by financial institutions.

## I. An overview of climate attribution options

One of the core challenges of 'climate accounting' for financial portfolios is the technical question of how to 'allocate' or 'attribute' the real-world climate or emissions footprint of economic actors to financial instruments.

A range of different approaches have been explored over the past near 20 years, of which only two are applied in practice. The following outlines the range of options with a specific emphasis on 'financed emissions' and emissions performance accounting.

FIG 1: Financial allocation options for emissions (Source: Authors)



- **Ownership approach (or balance-sheet approach)** allocates emissions based on the share of the financial asset in the liability side of corporate accounts. This can be a narrow, actual ownership (i.e. shares in company / shares outstanding) or a broader metric (e.g. \$ value of financial instrument / \$ value of enterprise value). The ownership approach is endorsed by PCAF and the EU Climate Benchmarks.

**For listed companies:**

$$\text{Attribution factor}_c = \frac{\text{Outstanding amount}_c}{\text{Enterprise Value Including Cash}_c}$$

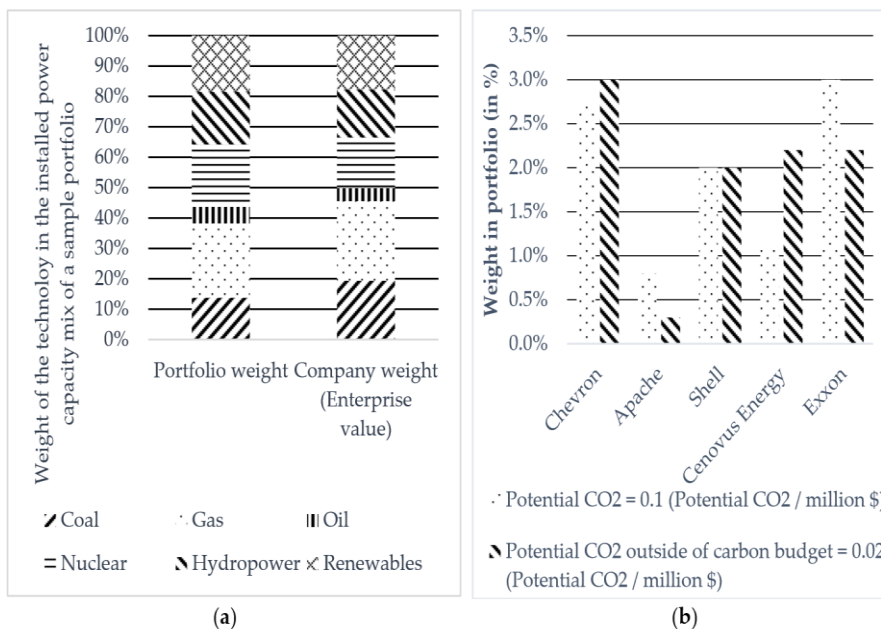
**For bonds to private companies:**

$$\text{Attribution factor}_c = \frac{\text{Outstanding amount}_c}{\text{Total equity} + \text{debt}_c}$$

(with  $c$  = borrower or investee company)

- **Portfolio weight approach** allocates emissions based on the share of the financial asset in the portfolio (i.e. \$ value of the financial asset / \$ value of the portfolio). This approach has only been considered for carbon intensity approaches (e.g. Weighted Average Carbon Intensity – WACI) and was recommended by the TCFD, but has not been considered in target-setting frameworks (e.g. SBTi), nor is it labelled as useful for target-setting in the PCAF emissions accounting standard. The portfolio-weight approach is, however, popular in other assessment frameworks, notably RMI-PACTA<sup>1</sup> for credit instruments and in the context of portfolio ESG scoring (e.g. Climetrics). The image below shows the implications of using the portfolio vs. balance-sheet approach for a sample corporate bond portfolio (Thomä et al. 2018).

**FIG. 2: The impact of different allocation rules on the performance metric for different portfolios (Source: Thomä et al. 2018)**



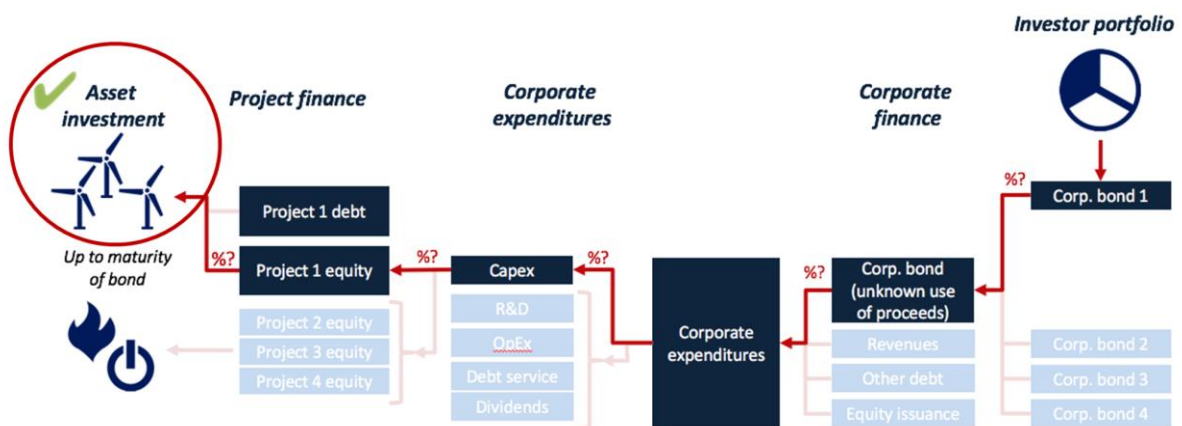
**Figure 6.** (a) The power mix of a sample corporate bonds portfolios based on two different allocation rules, based on Bloomberg and GlobalData; (b) The differences in portfolio weight associated with a consistent carbon footprint of the portfolio for five different oil and gas companies, based on Carbon Tracker Initiative (2017) and Bloomberg data.

- **Responsibility approach** is currently not applied to our knowledge in the market, but seeks to allocate emissions based on notions of ‘responsibility’. Such an approach would for example adjust the ‘ownership’ approach to represent voting shares (i.e. an investor who owns 1% of a company but 10% of the shares would be allocated 10%). There is no established methodological framework for such an approach and of course while there is some intuition to this approach for equity investors, distinguishing responsibility across asset classes is even more complicated. We are not aware of any applications of this approach currently in the market.

<sup>1</sup> Disclosure: The author of this technical note previously led the technical development of the PACTA methodology

- **Additionality approach** is also not applied currently in the market but extends the responsibility logic to identifying the ‘impact’ of investors and allocating emissions accordingly. For example, it may differentiate between investors who voted against or in favour of a climate shareholder resolution and would also seek to trace the ‘financing footprint’. It is why we use the term ‘financed emissions’ in quote marks as technically it does not measure the *emissions that were financed by the financial institution*, but creates some sort of emissions attribution system. As the figure below highlights, financed emissions accounting if it was actually going to represent the emissions financed would have to consider the corporate balance sheet, expenditure profile, and of course the final financing structure of an asset.

**FIG. 3: Tracing capital from a portfolio to asset investment (Source: Authors).**



- **Risk approaches** take a pure risk perspective on accounting. Arguably, some variation of risk approaches are covered by the examples above. However, one would reassess the corporate emissions in scope and consider the internal corporate boundaries, allocation rules (e.g. from subsidiary to parent company) and of course hedges, insurance, and related instruments that may isolate the investor from the ultimate risk linked to the corporate footprint. We won't explore this approach further here as it is like the previous two at the moment at least a hypothetical one. In addition, as demonstrated by other research (e.g. Lucas-Leclin et al. 2018), financed emissions are not a relevant risk metric, but should be seen as a ‘sustainability performance metric’ in terms of its use case. As a result, there isn't a neat intuition for using risk- based allocation rules here.

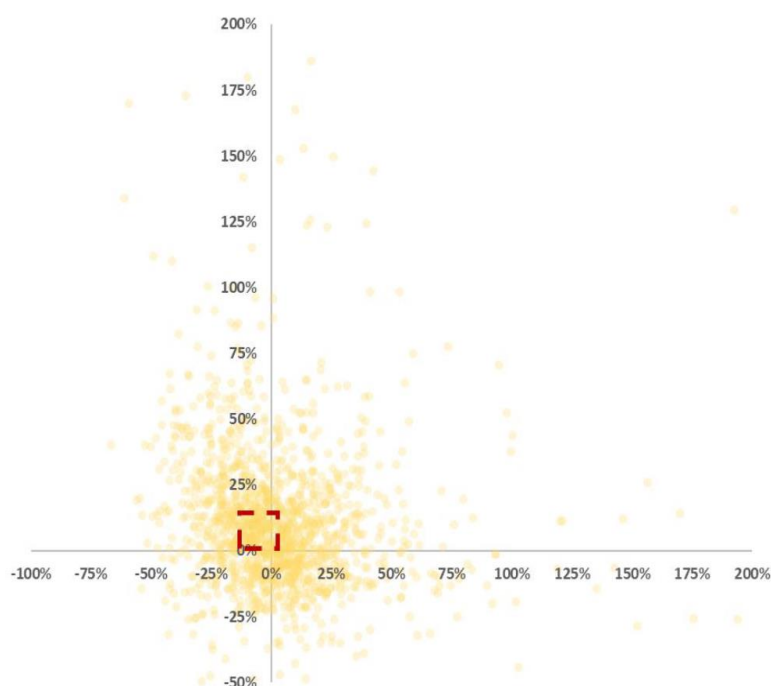
## II. Shortcomings of the ownership approach

The ownership approach – while currently universally applied – is fundamentally, and we have argued in the past, fatally flawed. Our previous research has concluded that its limitations are effectively insurmountable. Crucially, it introduces a financial factor in the approach that is disconnected both from the financial institutions decision-making / allocation practice and from the corporate climate performance.

The most popular factor in the market is EVIC (Enterprise Value including Cash), recommended by PCAF and by the EU Climate Benchmarks Regulation. The two biggest issues with this approach include:

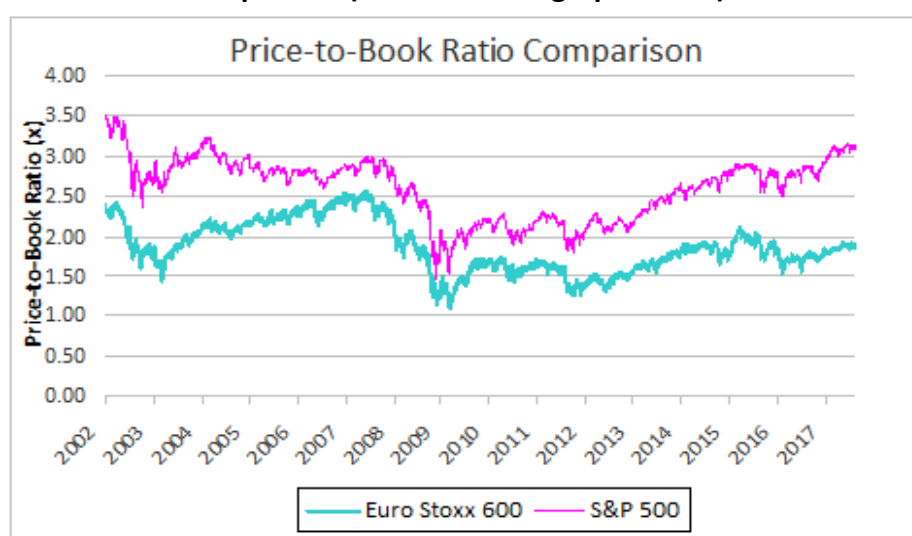
- a) **The volatility of EVIC / revenues / financial normalization factors.** As outlined in a number of different studies (Granoff and Lee 2024, Thomä et al. 2020, Thomä et al. 2018), using ‘financial normalization factors’ can create significant biases given their underlying volatility (see Fig. below). Revenues are distorted by price effects, currency effects, as well as sector-specific effects (e.g. revenues in the banking sector are low compared to the total financing volume and the associated emissions). Enterprise value in turn is distorted by valuation effects, changes to corporate balance sheets related to debt issuance, and other underlying drivers. While there have been some proposals to ‘control’ for these effects in among others the EU Climate Benchmarks framework, notably by taking into account “EVIC market inflation”, these are both imprecise and do not address the underlying dispersion of EVIC fluctuations that may be due to purely financial factors.

**FIG. 4: Year on year volatility of enterprise value of 1,396 observations 2016-2017 (Source: Thomä et al. 2020)**



**b) Enterprise value approaches tend to systematically bias against non-listed companies.** The PCAF standard suggests that non-listed companies equity value when normalizing by enterprise value should be derived from the corporate’s balance sheet (i.e. a company’s ‘book value’). However, ‘book value’ is systematically lower than market price value of equity (Fig. below). This will render ‘enterprise value’ as determined through this approach systematically lower for bond vs equity investments, creating a bias in the analysis. In the EU Climate Benchmarks Handbook, the guidance recommends using market value for listed debt issuers, adding to this bias in terms of creating a systematically higher carbon intensity of non-listed companies within credit portfolios. Of course, book value for non-listed companies comes with its own data issues in terms of measurement.

**FIG. 5: Price to book-ratation comparison (Source: SeekingAlpha 2017)**



**In light of these shortcomings, our research concluded that financed emissions accounting using the ownership approach as a cross-asset class solution was not a viable metric.**

We advocated against continuing to use this metric across our research and developed alternative solutions (e.g. PACTA, now with RMI, and the “Transition Disruption Metric”, co-developed with Inevitable Policy Response).

**At the same time, we also considered that none of the other approaches outlined above were either mature enough or relevant.**

- Responsibility and additionality accounting require fundamental academic research, similar to our approach with PACTA. A PhD thesis project accompanied the more real-world focused PACTA development process, providing the academic foundation. We concluded that a similar foundational investment was necessary here.
- Risk-based approaches were not considered relevant for ‘footprinting’ and target-setting exercises. More generally, emissions have been shown to not be a good proxy for transition risk (e.g. Lucas-Leclin 2016, Howard et al. 2016).



**Portfolio-weighted approaches had only been suggested in the context of the Weighted-Average Carbon Intensity. While we applied this approach for PACTA and credit instruments, we did not think it could work for emissions for a number of reasons:**

- While the approach was suggested for intensity metrics, intensity metrics using revenues are subject to the same issues outlined above for the attribution challenge: price & currency effects, sectoral idiosyncrasies etc. It is striking that while the TCFD recommended WACI, it ultimately was not recommended by PCAF for target-setting and more generally, based on a cursive review of market practice, does not seem to be a widely used approach.
- Similarly, we did not see how absolute emissions could be applied to portfolio-weight approach, given that it to date had been only considered to effectively weigh different performance metrics (e.g. emission intensity, ESG scores, renewables vs. coal exposure). One of the key downsides of the portfolio-weight approach is that it does not provide insight into absolute exposures (e.g. aggregate footprint), a core principle of emission accounting up to that point. Consider a portfolio with \$1 value and 100% exposure to ExxonMobil. The portfolio weight approach would allocate 100% of Exxon's emissions to that portfolio, rendering an absurd value given the portfolio size.

**Ultimately, our research to date concluded that while the ownership approach was not viable, it was not possible to apply other approaches for the purpose of emissions performance accounting.**

# **WE WERE WRONG!**

### III. A new approach to financed emissions accounting

The Austrian Green Finance Alliance (GFA) has released a new proposal for a emissions performance accounting, using the portfolio weight approach.<sup>2</sup>

The proposed “Indicators for Portfolio-weighted Emissions Performances (I-PEPs)” – developed as a solution for all major asset classes – uses the portfolio-weight approach on absolute emissions as a mechanism to track decarbonization over time. The metric is briefly introduced below by looking at the I-PEPs calculation method applied to a corporate lending portfolio.

#### Box: I-PEP methodology for corporates

*In a first step, the company specific emissions performance is determined. For this purpose, the company’s GHG emissions in the reporting year (t+1) are compared to those of the previous year (t).*

$$\rho_A = \frac{E_{A,t+1}}{E_{A,t}} - 1$$

*E<sub>A</sub>... Absolute GHG emissions from company A*  
*ρ<sub>A</sub>... Emission performance of company A*

*The company-specific emission performance is then included in the aggregated KPI for the financial portfolio according to the company’s weighting in the portfolio. As a weighting, the outstanding company-specific lending volume is compared with the total analysed lending volume to determine the relative share of the company in the portfolio.*

$$\omega_A = \frac{V_A}{V_P}$$

*V<sub>A</sub>... Outstanding portfolio volume of company A*  
*V<sub>P</sub>... Total analysed portfolio volume*  
*ω<sub>A</sub>... Weighting of company A in the analysed portfolio volume*

**The proposed methodology is free from the financial distortions associated with traditional ownership allocation rules. It does not require financial normalization factors or allocation factors. Unlike with WACI, it also does not rely on intensity accounting using financial factors that similarly distort the analysis.**

The emissions performance captured by the approach mirrors the holding’s underlying emissions performance and thus will reflect actual *emissions changes*, and not emissions changes related to some financial distortion. It also allows – through some methodological adjustment – to exclusively capture *real world emissions changes*, a core objective and criteria in the target-setting frameworks of the GFA, but also more broadly (e.g. GFANZ).

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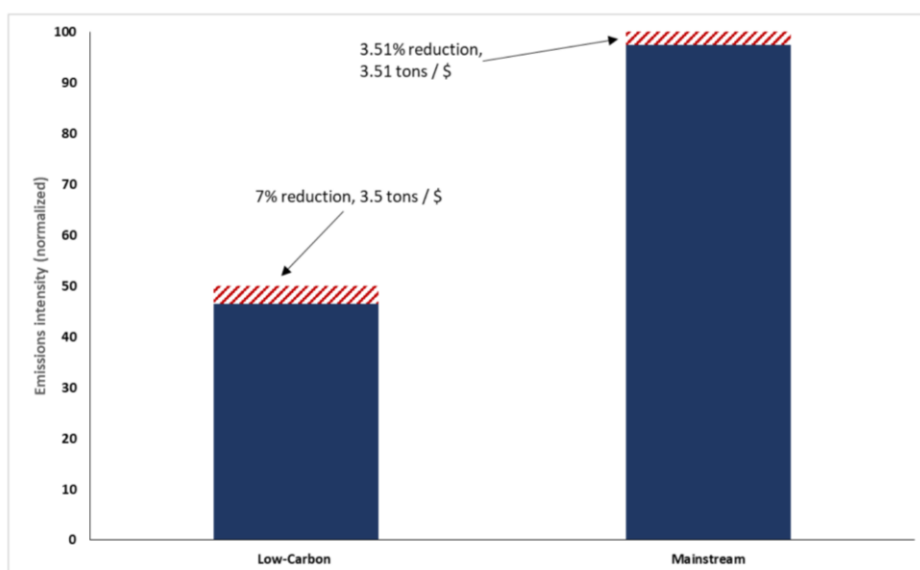
<sup>2</sup> Theia Finance Labs is on the Advisory Board of the initiative and has over the past few months supported and provided input on this development.

As outlined above, portfolio-weight approaches cannot be used to track absolute emissions or ‘financed emissions’ as the original term suggests. From that vantage point it may not be 100% accurate to describe it as emissions or financed emissions accounting, and indeed the Green Finance Alliance makes this point too, calling it emissions performance rather than footprint.

While this is an important distinction, technically the underlying objective is similar, which is to use emissions assessment in some form for portfolio target-setting. And so at least within that framework, the two approaches are replaceable. Moreover, financed emissions also arguably do not measure what they claim, specifically:

- ‘Financed emissions’ also don’t track absolute emissions. Despite their term, they don’t measure the financing footprint, but use different accounting conventions (summarized above) to represent a relationship between real-world emissions and financial assets. These accounting conventions however skew and misstate that relationship.
- More broadly, target-setting is about reducing emissions, not your emissions starting point. While there may be a range of use cases for measuring absolute emissions – assuming a method existed that meaningfully could do that – target-setting is about emissions reduction (and scaling of green solutions, depending on how it is defined and scoped). Our general view has been that measuring and optimizing against absolute emissions rather than forward-looking trends is the wrong approach. Once that is accepted, then the shortcoming of portfolio-weight falls to the wayside. Conflating decarbonization requirements and ‘baseline’ reduction of emissions exposure can have unintended consequences. As the Fig. below shows intuitively, 7% of a smaller number is less in absolute terms.

**FIG. 6: Stylized visualization of the real-world emissions reductions over time of two different benchmarks (Source: Thomä et al. 2020)**



If financial institutions and the stakeholders they are accountable to accept that the core objective is to reduce emissions towards net zero and to abandon attempts – at least in the context of target-setting – to try and optimize ‘levels of emissions’ rather than emissions trends, then the I-PEPs KPI set is indeed a solution to the problem surfaced in our research and that of others as it pertains to ownership approaches. The approach is elegant, simple, and does not suffer from the distortions that financial attribution factors have.

While there may of course still be changes to portfolio exposure that will change results, a) these are choices by the portfolio manager – even if externally driven – and so the metric in this case simply reflects these choices. And b) there are obviously a range of approaches to control for such issues, notably by considering M&A activities, not marking to market, etc. Chapter 4 and Annex Chapter 5.4 of the Austria Green Finance Alliance Consultation Paper on PEPs illustrate these convincingly. These are well established and unlike the other ‘control factors’ on EVIC, etc. are able to capture any potential bias in full.

**As a result, the proposed metric passes the first and fundamental test Theia Finance Labs applies in its research and assessment of climate metrics: DOES THIS INDICATOR MEASURE WHAT IT SAYS IT MEASURES?**

The next section will briefly review its applicability to target-setting.

#### IV. Target-setting using I-PEPs

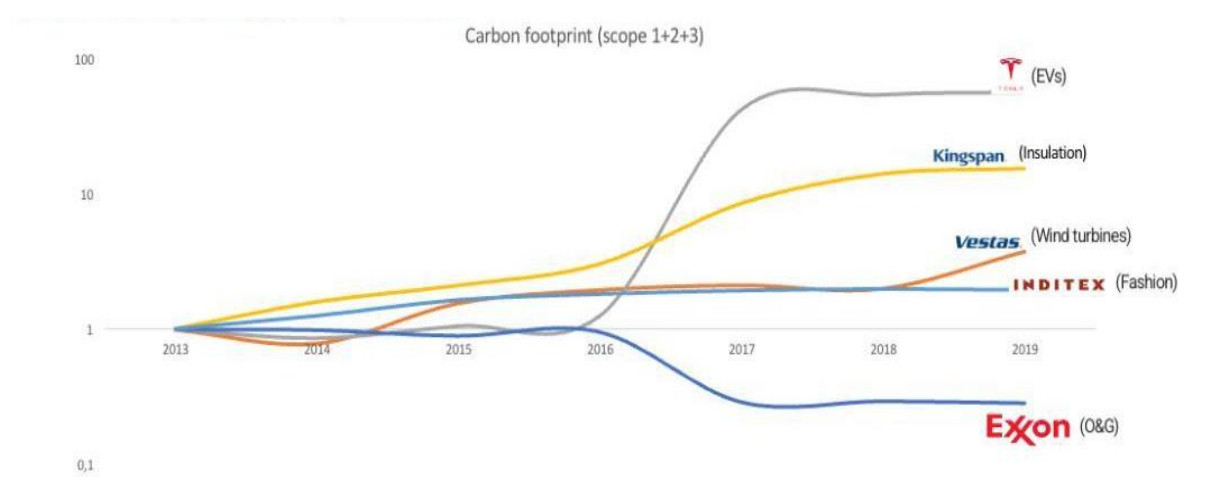
**While we consider I-PEPs to pass our first test for a viable metric – does it measure what it says it measures – key questions of course remain as to how to best use it.**

For one, it is clear that the ‘absolute’ numbers generated by I-PEPs are not meaningful (in fact there are no absolute numbers being generated), the only thing one should look at is the trend. While this is sensible, it may be the case that some investors remain interested in absolute exposure. If you conceptualize ‘financed emissions’ as measuring the (moral) “responsibility” for emissions, this approach does not work. Of course, that is a different research question than target-setting and as outlined above, we consider that the current traditional approaches do not capture responsibility neither (e.g. engagement is not considered in the responsibility metric).

Second, the note only focuses on one challenge related to financed emissions. Other challenges remain, complicating the use of this metric for target-setting and steering, including of course underlying emissions data quality and coverage. These relate specifically to the backward-looking nature of emissions data, their scope and coverage in corporate reporting, the quality of emissions estimation models, their ability to differentiate cross-sectoral climate performance, and their disconnect from the underlying investment decision.

Third, depending on the approach, it may be relevant to adjust or alter the target-setting scope to make the metric optimally aligned to the objective. Consider the case of companies producing climate solutions that are increasing their emissions (see Fig. below). They will typically increase their emissions profile (at least in the short-term) as growth companies in energy- and / or material-intensive industries. Investors optimizing emissions performance will potentially be exposed to wrong incentives. Of course, this is a general challenge to emissions as a performance metric for the transition. Indeed, it may in this case be optimal if an investor invests exclusively in climate solutions to target maximum emissions increase, however counter-intuitive that may appear at first glance.

**FIG. 7: Carbon footprint of ExxonMobil compared to “climate solutions providers (Source: Manuel Coeslier, Mirova ESG research based on ISS data)**



An exclusive focus on emission changes will penalize these companies in the assessment. Again, however, this is true for any financed emissions approach we are aware of and not an issue intrinsic to I-PEPs.

**Ultimately, while these shortcomings remain, we consider that the I-PEP approach can be a relevant complementary metric for target-setting.**

It is clear that different metrics enhance climate target-setting and thus a portfolio of metrics and KPIs is the most relevant approach. Depending on the nature of the objective, target, and political environment, financial institutions may choose to use different approaches. Some may continue to prefer a pure sector-specific steering approach that reflects the differences in the underlying sector dynamics and of course enables financial institutions to use the most granular and appropriate metric for each individual sector.

*On the other hand, it seems more likely than not that portfolio level cross-sectoral emissions target-setting is here to stay. For those investors, I-PEP represents the first opportunity to meaningfully track emissions performance without the financial distortions that have previously rendered these metrics unusable.*

#### **V. Why didn't we think of this ourselves...after we have written 10+ reports on the topic**

It is worth briefly reflecting on why we did not think of this approach ourselves, since this for us is a lesson in improving our research. A few reasons come to mind, although they should be read not as conclusions but as propositions for potential explanations. We share these here to both reflect on improving our research process and what we hope is a public benefit. Specifically:

- a) **Narrow-mindedness.** We knew that 'levels' assessment was not the optimal way to think about targets. But we also were unable to free ourselves intellectually – speaking at least for the author of this note – from the core tenets of emissions footprinting in terms of requiring an absolute footprint. This was too narrow-minded.
- b) **Complexity vs. simplicity.** Our assumption was that addressing the shortcomings of financed emissions would require fundamental research, a PhD perhaps on developing a responsibility attribution method. This perhaps blinded us to a more simple logic.
- c) **Guilt by association.** When the WACI method was introduced, we reviewed and considered it. Given the issues described above, we concluded that it doesn't address the fundamental problem, even though it too uses the portfolio weight approach. Perhaps this caused us to abandon this line of inquiry more broadly.

- d) **Chance / Circumstance.** Not everyone thinks of everything. Research develops, cross-fertilizes and requires fresh brains and ideas. The I-PEPs approach was inspired by PACTA's portfolio-weight approach to PACTA assessment. It thus brings together different perspectives in a way that we perhaps weren't able to. The key then is not the error in the research process, but updating our research when new facts to light, something we hope to do here...and continue to do in the future.

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