PLEASE MR. POSTMAN!

10 MESSAGES ON PORTFOLIO ALIGNMENT & IMPLIED TEMPERATURE RISE

Discussion Paper July 2021

2° Investing Initiative

PACTA
Paris Agreement Capital Transition Assessment

Contents

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Introduction

From June 7 to July 18 the TCFD held a consultation on forward-looking metrics, targets, and transition plans. As part of that consultation, the TCFD also released a Technical Supplement on Measuring Portfolio Alignment, written by the Portfolio Alignment Team involving private sector representatives and the COP 26 Private Finance Hub and led by David Blood.

2DII welcomes the paper, which puts alignment methodologies squarely on the agenda. As the lead developer of the Paris Agreement Capital Transition Assessment (PACTA) methodology, 2DII was engaged extensively by the Portfolio Alignment Team (PAT) over the past few months and had the chance to explain our view on alignment and to explain how 2DII's open source and free-of-charge PACTA methodology works. We want to thank the PAT for their open and constructive manner in engaging with alignment methodology providers.

This memo provides our feedback on the paper and its recommendations. It is intended to serve as further food for thought in the upcoming alignment discussions that are likely to follow in the coming weeks and months ahead of the COP26 and to create public transparency on 2DII's position.

Key Messages and Recommendations

This paper shares 10 key messages and 5 recommendations. These are for consideration by the PAT in particular and the wider alignment community more general. They are as follows, and we explain them in more detail in the paper below:

On alignment approaches

1. Two broad approaches to alignment exist ('global, economy-wide decarbonization rates' versus 'sector and region specific decarbonization rates') and each approach has different pros and cons.

2. Both can theoretically be turned into an Implied Temperature Rise (ITR) by translating the alignment results into carbon budgets – albeit with compromises on scientific integrity – but the more important question is: what for?

On the use cases of alignment metrics

3. Alignment metrics can be used for different reasons (such as for disclosure, steering and pursuing climate impact,...), and these require different methodological choices.

4. Aggregated alignment metrics, such as an ITR, are mostly of value in supporting high level disclosure given the ability to communicate results in a single indicator, while alignment results that stay on the sector level on metrics related to the economic activity are more actionable.

5. Moreover, using production and capital stock alignment metrics at sector level where possible is more actionable, more comparable, and more scientifically robust than using emission intensities or absolute emissions.

2DII Recommendations

1. *The PAT and the wider alignment community should consider developing tailored recommendations in regard to which methodologies or methodological choices serve which use cases and users, and aim to bring a minimum harmonization to that area rather than trying to come to uniform recommendations for aggregated ITRs.*
2. *The final PAT paper should recognize the importance of production and capital stock metrics more explicitly, in particular in Judgment 3,[1] and Recommendation 9, where the paper concludes that single-scenario based alignment metrics should only be expressed in emission intensity.*

On the downsides of ITRs

6. Aggregated ITRs at sectoral or portfolio level are less scientifically robust than sector-level alignment metrics related to the economic activity.

7. Aggregated ITRs could also be considered misleading and suffer from similar comparability issues as general ESG metrics.

8. It's moreover too soon to tell whether aggregated ITR's are incentive-optimal (in the words of the PAT) to drive real world emissions reductions in particularly climate critical sectors.

9. While ITRs are aggregated, they can in any event not be calculated on the level of an *entire* portfolio in a way that is compatible with the approach recommended by the PAT.

2DII Recommendation:

3. *The final PAT paper should recognize that aggregated ITRs are not necessarily scientifically more robust than alignment approaches that stay on the sectoral level, and that expressing alignment in the form of a precise temperature score could potentially be misleading.*
4. *The final PAT paper should also recognize the fact that an ITR cannot be meaningfully calculated on the level of an entire financial institution as well as that it's too soon to tell whether they are incentive-optimal*

On alignment versus impact.

10. Finally, it is important to distinguish in alignment metrics the extent to which metrics improved due to corporate emissions reductions or portfolio composition changes;

2DII Recommendation

5. *FI's measuring alignment should show year on year whether alignment improvements were the result of companies improving real world climate outcomes (e.g. emissions reductions, increase in green products) or portfolio composition changes (e.g. buying existing assets, divestments).*

[1] "Where it is possible, it is also preferable to use intensity metrics with denominators expressed in physical units"

Areas of agreement

The conceptual starting point of the PAT paper is that alignment approaches require two crucial inputs. As the PAT writes: "measuring how a given company aligns with a specific warming outcome requires two kinds of information 1) forward-looking projections of the emissions that a company will produce and (2) a normative benchmark that describes the decarbonization pathway a given company needs to follow to achieve a specified warming outcome, given assumptions about how the rest of the world is progressing on their own decarbonization trajectories."

We agree with the PAT that these are two crucial inputs. As the Paris Agreement is the expression of a future objective (limiting global warming to well-below 2 degrees Celsius), measuring climate alignment by financial institutions requires a forward-looking assessment of the portfolios' constituents with forward-looking scenarios.

We further agree with the following recommendations:

It is better to use where possible single scenario benchmarks in order to target the same climate goal equation among economic sectors while measuring alignment (PAT Recommendation 5). If you are using one scenario-provider for the power sector and another for the automotive, they are likely not to achieve the same climate goal in the same way (one might allow more coal power in the beginning with a fast growth of electric cars, and vice versa). Using both scenario providers may create inconsistencies. However, two caveats do need to be made here. First, one scenario-provider might only cover power, automotive and fossil fuels, with another provider covering steel, cement and aviation. In those cases, it does make sense to use multiple scenario providers to cover more sectors. Second, comparing sector alignment across several scenarios with the same climate goal, e.g. different net-zero scenarios, should be encourages. This can give a sense of under how many net-zero scenarios your portfolio is aligned. It can allow for the hedging of uncertainties, such as around negative emissions technologies and carbon capture, utilization and storage (CCUS). The Net Zero Asset Owners Alliance (NZAOA) net-zero scenario developers discounted CCUS, while the International Energy Agency (IEA) net-zero scenario does not.

- **Alignment metrics should be as granular as possible in terms of sectors and regions** (PAT Recommendation 7). It's important that alignment is measured per sector and region as what needs to happen to meet the goals of Paris Agreement is different per sector and region. Some sectors need to move faster than others (the power sector needs to decarbonize faster than Aviation in most if not all scenarios), and some regions need to decarbonize faster (the EU) than others (Asia). Thus, simply saying for example that each sector needs to decarbonize 7% per year, does not accurately reflect what needs to happen in these sectors or regions. This recommendation should however also have a bearing on the type of alignment metrics that can be used.

- **Reference scenarios need to be updated regularly** (PAT Recommendation 8). Currently, scenarios only exist for a few sectors, and these are not always updated regularly. Given changing climate science, changing governmental policies, and the pace of technological innovation it is important to update existing scenarios every year; an important call to the modelling community.

- **Emission intensities per unit of output are preferable over emission intensities per euro invested / revenue** (PAT Recommendation 9)**.** With the latter, financial fluctuations become

a bigger element in calculating climate metrics, which is undesirable. The benefit of emission intensities per physical unit of output, is that this fits with the needed sectoral approach.

- **For fossil fuel producers, using emission intensities is not very helpful** (PAT Recommendation 9). This is because they may lead to a focus mainly on the emissions from production sites and transportation networks rather than on the production itself of fossil fuels, which is in turn is responsible for the vast share of the emissions associated with the sector and the economy as a whole.

- **For capital allocation decisions, a portfolio or sector weighted approach is preferable** (PAT Recommendation 21). With a portfolio or sector weighted approach, the company that is your largest exposure within a sector or portfolio has the biggest impact on your alignment score. This makes the calculation more risk-based and it is a better reflection of your capital allocation decisions. It is worth noting however that for other types of analyses, other allocation rules may make more sense.

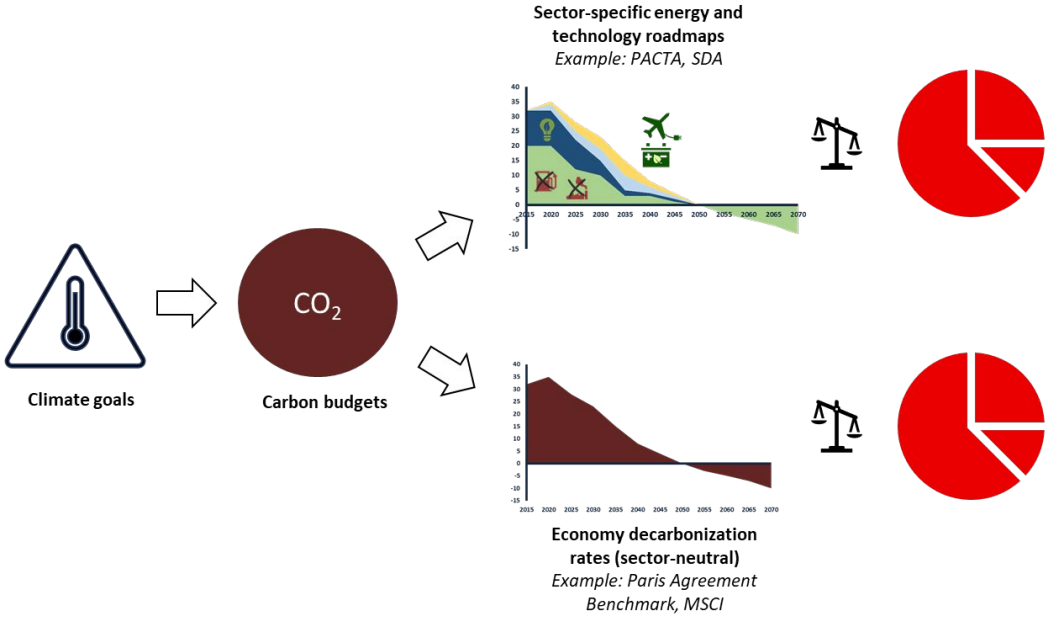
SECTION 1: On alignment approaches

1. Two broad approaches to alignment exist ('global economy-wide decarbonization rates' versus 'sector and region specific decarbonization rates') and each has different pros and cons;

Over the past years two types of portfolio alignment approaches have crystallized. Both currently are considered as "alignment" approaches, but they represent different philosophies:

- **Global decarbonization rate:** These approaches seek to measure alignment with *overall* carbon budgets, and try to apply global decarbonization rate requirements to financial portfolios. An example of this is the EU Paris-Aligned Benchmark approach or commercial approaches from, for example, *MSCI*.

- **Sectoral and regional carbon decarbonization rates:** These approaches also have as their point of departure the global carbon budget, but the carbon budget has been further sliced into sector- and region-specific carbon budgets, technology and capital stock pathways and decarbonization rates by the modelling community (e.g. Inevitable Policy Response Required Policy Scenario, IEA). They model the evolution of the capital stock (e.g. installed power capacity by fuel) and the associated market evolution of products and services for a discrete set of climate-relevant sectors. Alignment models using these scenarios mirror these sector-specific variables, providing for a series of sector-specific alignment scores or measurements. Examples of this approach include PACTA and the SDA developed by the Science-based Targets Initiative.



The benefit of a global decarbonization rate approach is that it is intuitively easier to apply across all types of sectors and asset classes. One could try to apply such an approach to all parts of the portfolio and assume all parts need to decarbonize in a similar way, such as for example is the case with the EU Paris Aligned Benchmarks that apply a 7% decarbonization rate.

A problem with global decarbonization rate approach is that it ignores sector and regional specificities. Different sectors and different regions need to decarbonize at different rates, depending on a range of factors. Ignoring this context can lead to a situation where portfolios decarbonize 'too slowly' in relation to the necessary ambition level that their sector-regional allocation would suggest. Moreover, over-alignment in one sector can only to some extent offset under-alignment in another sector. Put differently, you cannot "drive" a windmill.

Sector- and region-based alignment approaches are more conducive to portfolio steering and transition risk measurement. They have the ability to consider portfolio-specific features (geography, sector) and avoid incentivizing the re-allocation of capital in ways that avoid the problem (divesting from cement and into health). The link to economic activity also more intuitively lends itself to risk modelling involving stress-tests and aligning with decision-metrics of companies.

A downside of a sector and region specific approach, is that alignment can only be measured in sectors and regions for which scenarios have been developed. At the moment this is the case for about 8-10 sectors, representing more than 75% of global CO_2 emissions.

2. Both can theoretically be turned into an Implied Temperature Rise (ITR) by translating the results into carbon budgets – albeit with compromises on scientific integrity – but the more important question is: what for?

Both approaches can theoretically be turned into an ITR. Turning an alignment calculation into an ITR will however requiring calculation the emissions associated with your portfolio (or the part of the portfolio you are covering) and estimating what part of the carbon budget you are responsible for.

It is intuitively easier to translate the global carbon decarbonization approaches into an overall ITR. Sector agnostic approaches can make portfolio-wide calculations easier since they simply compare the portfolio at large to the global carbon budget at large.[2] One must nevertheless still make assumptions regarding what part of the carbon budget your portfolio is responsible for and crucially – as outlined above – this exercise requires assuming the portfolio is equivalent to the global economy, which even for asset owners that call themselves "universal owners" is an ambitious assumption, given the asset class limitations that constrain them. An example of this is MSCI's Warming Potential methodology.

Sector-specific approaches lend themselves less to aggregated scoring since these scenarios do not tend to model explicitly all sources of emissions and are generally focused on particularly climate-relevant sectors. Aggregating sector-specific alignment results into an overall performance scores requires either 'reverse engineering' to make the sector-approach fit with the desired overall rate of decarbonisation, or it requires simplified calculations that are not necessarily consistent with the underlying climate science. Moreover, even sector results simplify the diversity of company activities.

But the most important question is: what is the goal your are aiming to achieve by calculating an ITR? The next section discusses the different use cases of alignment metrics.

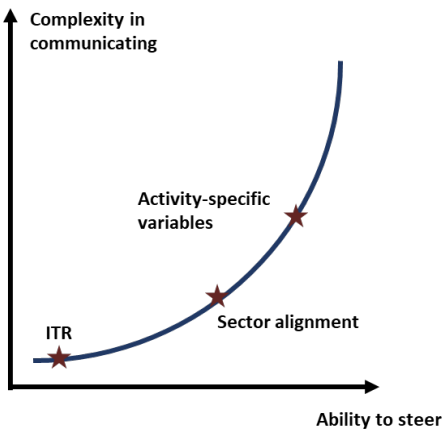
[2] As prescribed by a decarbonization scenario, taking into account assumptions around negative emissions technologies.

Section 2: On the uses cases of alignment metrics

3. Alignment methodologies can be used for different reasons (disclosure, steering, pursuing climate impact), but these require different methodological choices, and efforts should go towards identifying which use cases require which methodological choices.

When discussing any ESG metric, the users or developer must always ask themselves the question: why would I want to measure or disclose this indicator? Different goals require different metrics or methodologies, and no one metric can serve all purposes. External reporting to certain audiences (e.g. retail investors) may require simpler metrics than to a more sophisticated professional community. Granular metrics might be better in driving investment decisions, but are difficult to explain and communicate on more widely. General sustainability indicators may furthermore be less relevant to those looking for information on specific risks or impacts. As a general rule, aggregated metrics tend to be more simplified and therefore less helpful in investment decisions, while more granular and bespoke metrics are better for investment and engagement decisions, but harder to communicate on as the metrics are usually tailored and different per sector.

The same considerations are true when it comes to alignment approaches and alignment metrics. As explained above, sectoral-based alignment approaches are more helpful for capital allocation decisions, and give you a more detailed assessment of where alignment or misalignment may occurs and the risks associated with that. But as results differ per sector, it may be more difficult to communicate on the results.



Note that it is also possible that different users require different methodologies. Can or should an alignment methodology for corporate loans be the same as for bonds or project finance, and should methodologies that work for banks be the same as for insurers or a fund manager, and the one for fund managers the same for an active or passive fund?

Each user may be able to take different climate actions, influence different parts/decisions of a company, adopt different investment strategies and may thus need to look at alignment differently. It is likely therefore that each user would make different choices about the alignment methodology.

2DII Recommendation 1: the PAT should consider developing tailored recommendations regarding which methodologies or methodological choices serve which use cases and users, rather than trying to come to uniform recommendations for aggregated ITRs.

4. Aggregated alignment metrics, such as ITRs, are mostly of value in supporting high level disclosure given the ability to communicate results in a single indicator, while alignment results that stay on the sector and asset level are more actionable.

Regarding the PAT paper in particular, an aggregated ITR in our view is mostly of value in supporting high level disclosure given the ability to communicate results in a single indicator. If you want actionability, results on sectoral and company level are more important and may be expressed using a different metric than an ITR. Informed capital allocation decisions require insights into the evolution of market segments, the associated capital stock, and production/technology pathways.

The PAT recommendations do reflect this premise in the discussion at the end of the technical supplement on allocating company-scores to portfolio for "impact reporting" (noting that the PAT's understanding of 'impact' is not explained further and so may be have the potential to be *misleading when considering the scientific definition of impact as provided by Kölbel et al. 2019 and as used by initiatives such as the Impact Management Project)* or "capital allocation" use cases. It notes that the first would need to use an aggregated budget approach, while the second would need to use a portfolio-weighted approach to aggregated company alignment scores. Both would lead to a very different ITR however, as the PAT technical supplement also shows. From our perspective, the role of different use cases should play a bigger role throughout the paper as it might also affect other choices, such as which metric to use (emissions versus production-based metrics).

Sectoral alignment approaches, as explained above, are more conducive for steering portfolios. They provide sector-specific pathways and targets and therefore have the ability to consider portfolio-specific features (geography, sector). They consider the actual economic activity of companies. The results can directly be translated into necessary action and engagement points for decarbonization.

5. Moreover, using production and capital stock alignment metrics at sector level where possible is more actionable, more comparable, and more scientifically robust than using emission intensities or absolute emissions.

Because the focus of the PAT paper is on calculating an aggregated ITR, it significantly underplays the value of production alignment approaches. The desire of the PAT to calculate an aggregated ITR becomes apparent from PAT Judgment 7 onwards where the paper's recommendations are exclusively focused on (and also exclusively relevant to) *aggregated* scores, such as recommendations 17-20. Calculating an ITR however, inevitably means translating alignment results into a comparison with a carbon budget. As such, the paper has a very strong "emissions" paradigm. The PAT paper explicitly argues for the benefits of production approaches in Judgement 3, but then ignores the use of production metrics when it comes translating a company's alignment into a metric where it only recognizes emission intensities or absolute emissions for the purpose of calculating an ITR. ´

It is both possible and in fact a market standard across a large universe of banks and investors (pension funds, insurance companies, asset managers) to measure alignment by using production-based metrics. Sector-specific climate scenarios, can be roughly divided into two types of scenarios: those with clearly defined technology roadmaps and those with decarbonisation pathways defined by metrics such as emissions intensities.

For certain sectors, such as power and automotive, there are clear low- or zero-carbon technologies available. In the Automotive sector it's clear that the production of cars with internal-combustion engines needs to decline and the production of cars with electric drive trains needs to increase, and the scenarios prescribe how fast that technology shift needs to happen to meet a certain climate goal. Using a metric that measures exposure to the capital assets linked to each sector (and the amount of output) allows you to measure to what extent the technology shift (or a decline in production combined with diversification into clean technologies for fossil fuel companies) required in the sectors you are financing is happening fast enough. For example, you can measure alignment in the power sector by looking at the MW capacity of installed renewable power and coal power, and in the automotive sector by looking at the volume of electric and ICE vehicles produced.

In fact, there are various reasons why measuring alignment in production metrics, where possible, is better than using emission intensities or absolute emissions.

- **More scientifically robust**: The scenarios provide for production levels in certain technologies/fuels and you can measure your alignment to them directly. The scenario modellers, such as the IEA, take the carbon budget and then translate that into production figures for Oil, Gas and Coal. This already takes into account assumptions on population growth, economic growth, behavioural changes, modal shifts, etc. Using emission-based metrics require more additional modelling, calculations and assumptions. To know how much CO_2 a coal power plant in any country emits, you have to develop an emission factor model, taking into account the type of fuel used, the primary efficiency etc. This inevitably leads to more estimates, assumptions, and therefore more risks of errors or the use of data points that are not representative of reality.

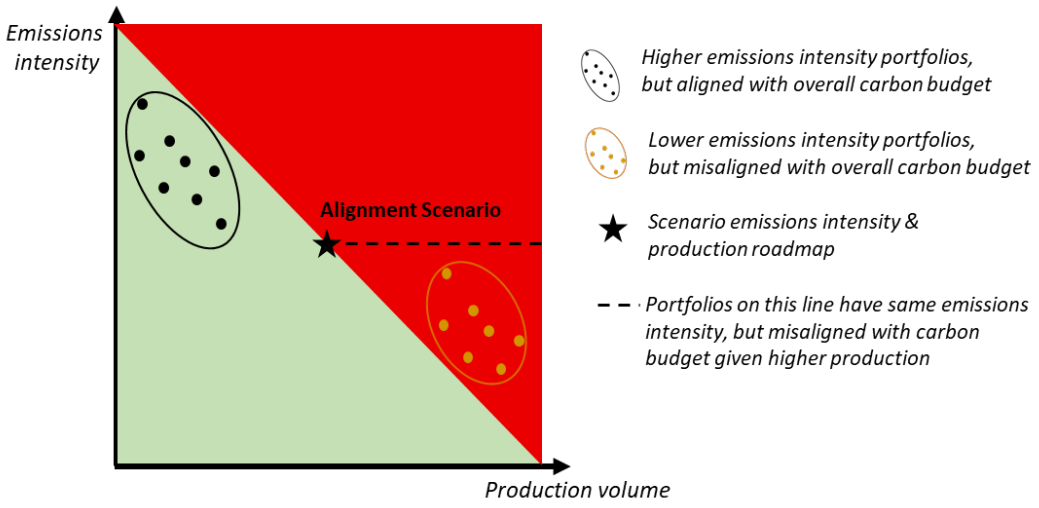
- **More useful for capital allocation decisions:** there is more practical application in measuring alignment for capital allocation purposes using output per fuel or technology rather than emission intensities or absolute emissions. This is because it provides a clearer outlook on which technologies a portfolio will need to be exposed to – both now and into the future – thereby ensuring that decisions are less abstract and are based on the very real intentions, plans and commitments of companies.

- **Easier to obtain information**: It is easier to obtain information on the production of companies in terms of technologies or fossil fuels (electric cars, renewable power, oil or coal) than it is to obtain emission factors/emission intensities. And where companies do disclose emissions information, it is often unclear how comparable that is, which scope they cover, what the boundaries are, etc.

- **Avoids the issue of double counting and Scope 3 emissions:** as alignment can be measured directly based on the production figures, there is no need to obtain emissions information, which for some sectors, such as automotive, can be rather challenging, as you would need to somehow model Scope 3 in-use information to be climate-relevant. There is also no issue of double counting.

- **Supports improved comparability**: As it requires less assumptions/modelling, it is potentially more comparable between companies. Comparing the amount of electric cars produced between two car manufacturers is easier than comparing their Scope 3 emissions, as emissions measurement requires complex estimates of the actual use of cars by the population in terms of efficiency of driving style, distance driven, actual car configuration & weight of passengers, etc.

- **Controls for the carbon budget**: With a narrow focus on emission intensities, it is possible that the carbon budget is still breached. If all companies in a sector meet the emission intensities targets but produce significantly more than is calculated under the scenario, the carbon budget would still be breached. The figure below illustrates this point. Scenarios require a combination of changes to the *volume* of the production (in the case of high-carbon products a reduction in supply (1)) and change to the *product characteristics* (i.e. emissions intensity or share of high-carbon inputs). Only solving for one without the other does not create scenario consistency



All of this is not to say that there is no value in using physical emission intensity as a metric, even for sectors with clearly defined technology pathways. Emission intensities normalised to units of production or service are easier to understand than technology level metrics, in particular on the company level. It might also be easier to communicate on your results expressed as emission intensity, than on the volume trajectory of each technology. However, limiting the notion of alignment to emissions eliminates a range of important scenario indicators against which alignment can be measured and which are not expressed in emissions.

2DII Recommendation 2: It is important that the PAT recognizes the importance of production metrics in Judgment 3,[3] and in particular in Recommendation 9, where the paper concludes that single-scenario based alignment metrics should only be expressed in emission intensity.

[3] "Where it is possible, it is also preferable to use intensity metrics with denominators expressed in physical units"

Section 3: On the downsides of ITRs

6. Aggregated ITRs are less scientifically robust than sector-level alignment metrics

Building on the previous key messages, aggregated ITR's are less scientifically robust than alignment metrics that stay on the sector level. For the PAT, there are three broad categories of forward-looking alignment tools: binary, benchmark divergence, and ITR models. It notes that ITR models are more sophisticated and that moving along the spectrum of sophistication improves the scientific robustness and enhances the understanding of the consequences of misalignment. Our analysis suggests that the evidence suggests otherwise.

First, as explained above, measuring alignment in general using production metrics where possible stays closer to what is given in the actual decarbonization scenarios. As this requires overall less further steps and less assumptions and estimates, it is more scientifically robust and consistent with the scenario used than using emission intensities or absolute emissions.

Second, an aggregated ITR, whatever alignment metric it is based on, itself involves further steps that introduce additional assumptions, calculations and estimations. One has to, as the Technical Supplement developed by the Portfolio Alignment Team itself shows in PAT-Judgements 8 and 9, after having calculated company level results, aggregate these up to an overall ITR which involves defining a relationship between carbon budgets and temperature outcomes.

The extent to which this relationship is probabilistic and climate change scenario dependent is still the subject of scientific research and debate, a complexity not captured by simplified deltas between one or more carbon budgets based on the use a single assumption about the relationship between carbon and temperature warming. The weighting of the resulting company ITRs then requires further additional calculations, assumptions, estimations. Sometimes linking these elements involves rather simple assumptions, such as assuming that your portfolio is representative of the economy.

There is another way to understand that ITRs are not more scientific than alignment results that stay on the sector-level. The sectoral decarbonization scenarios take as their point of departure the global carbon budget and then develop sector-specific, granular, detailed and concrete pathways. These are based on complex integrated assessment models and already take a great deal of factors into account. As explained above, alignment can be measured directly at that level.

To then make the additional step to an aggregated ITR the financial community must then take the carbon budget starting point and concrete analysis of decarbonisation pathways done by the scientific community, and through further assumptions and simplifications determine the carbon budget over/undershoot. Thus, we take an output from a non-linear and complex modelling exercise (such as IPCC physical climate scenarios), turn this into actionable scenarios based on an economic model (IEA technology roadmaps for example), and then the financial sector adds another layer of complexity and assumptions to get to an ITR that needs to relate back in a methodologically sound way to the original physical climate outcome. While there may be reasons to do so, this arguably makes them less scientific.

7. ITRs could potentially be considered misleading and suffer from similar comparability issues as general ESG metrics

It is possible that aggregated ITRs, and in particular ITRs claiming to cover an entire portfolio, could be considered misleading. Both the communications around 'temperature scores' and their representation as a precise temperature metric themselves suggest to consumers of this information that the portfolio in some form delivers consistency with and possibly even contributes to a specific climate outcome. For the range of reasons outlined above, this likely overstates the explanatory power of the metric, notably the simplification of suggesting the portfolio mirrors the economy, the probabilistic nature of carbon budgets, and the estimates and assumptions underpinning the measurement and aggregation exercise. Representing probabilistic climate outcomes as single indicators to a decimal figure hides the uncertainty of the climate science and the probabilistic distribution of the associated climate outcomes.

Finally, most aggregated ITRs are likely to suffer from the same lack of comparability as ESG metrics. A range of studies have highlighted the lack of comparability of ESG portfolio and fund scores across data providers. Early analysis by the Bank of England and others have similarly shown large divergence in ITR scores. They conclude that "Relatively minor methodological variations using the same portfolio produced alternative estimates ranging from <1.75°C to 4°C."[4] The recommendations of the PAT are unlikely to meaningfully close the gap, given the significant degrees of freedom that remain.

2DII Recommendation 3: The PAT paper should recognize that aggregated ITRs are not necessarily scientifically more robust than alignment approaches that stay on the sectoral level, and that expressing alignment in the form of a precise temperature score may be misleading.

8. It's too soon to tell whether aggregated ITR's are incentive-optimal in driving real world emissions reductions in particularly climate-critical sectors.

The PAT paper claims that ITRs are "incentive optimal", but we consider that there is not enough scientific evidence to assess whether this is in fact true given how recent aggregated ITRs are. In fact, as the use of ITRs increases, this will be a crucial area of research to track very closely. Some of the developments seen regarding measuring the carbon footprint of an entire financial portfolio underscore this point. As financial institutions start to measure the carbon emissions associated with their *entire* portfolio, FI's are pressed to reduce their overall emissions exposure (i.e. overall carbon footprint), which can result in FIs reducing exposure to existing hard-to-abate sectors such as steel and cement and to overinvest in sectors such as health and IT. Our working hypothesis is that that alignment approaches that stay on the sector-level might be more incentive-optimal.

[4] Bank of England (2021) "Options for Greening the Bank of England's Corporate Bond Purchase Scheme"

9. While ITRs are aggregated, they can in any event not be calculated on the level of an *entire* portfolio in a way that is compatible with the approach recommended by the PAT

The PAT approach does not seem compatible with a an aggregated ITR on the level of an entire portfolio. According to the PAT (and we agree) two crucial inputs are needed to measure alignment: "(1) forward-looking projections of the emissions that a company will produce and (2) a normative benchmark that describes the decarbonization pathway a given company needs to follow to achieve a specified warming outcome, given assumptions about how the rest of the world is progressing on their own decarbonization trajectories." Moreover, the PAT recommends the approaches used to be as granular as possible (PAT-Recommendation 7). In our view, this means that sector-based scenarios should be used. However, energy transition scenarios with decarbonization pathways only exist for a few sectors, such power, fossil fuels, transportation, steel and a small number of others. The reason why scenarios exist for these sectors is because they are considered by the model providers to be the most climate critical sectors in terms of GHG emissions. Unsurprisingly, these are sectors that either produce or use fossil fuels. As such, it does not seem possible technically, or meaningful as a driver of action or impact, to calculate an aggregated ITR at the level of an entire portfolio. Currently, the PAT paper does hint at this limitation in PAT-Recommendation 22, where it recommends to disclose the portion of assets covered by the ITR, but in our view it should be made more explicit throughout the paper to avoid confusion.

2DII Recommendation 4: The fact that an ITR cannot be meaningfully calculated on the level of an entire financial institution should be recognized more in the PATs final recommendations.

Section 3: On Alignment versus Impact

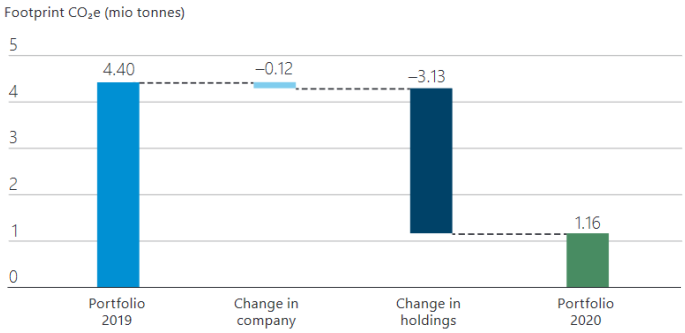
10. It is important that users of alignment approaches disclose the extent to which alignment results improved due to corporate emissions reductions or portfolio composition changes.

One of the goals of alignment tools is to help financial institutions align their portfolios with the Paris Agreement and a net-zero future and to set alignment/net zero targets. These alignment and net-zero targets are a key features of net-zero initiatives, such as the Net-Zero Asset Owner Alliance or the Net-Zero Banking alliance. These initiative also often have as a goal the desire to drive real world impact.

It's important however to bear in mind that as financial portfolios become more aligned with climate goals, this does not necessarily mean less emissions occurred in the real economy. When a portfolio becomes more aligned, it is possible that this is the result of the companies that are being financed becoming greener, or the result of portfolio composition changes (e.g. divesting from poor performing companies and investing in better performing companies.). In the latter case, it is very well possible that those high polluting companies and their assets are now being financed elsewhere and the emissions are still occurring.

It is therefore important to distinguish between real emissions reductions and what we could call "virtual" emissions reductions, as done by the AP2 disclosure in 2020. Real emissions reductions are defined here as emissions reductions measured that actually took place somewhere in the economic activity of an investee. That is not to say that these emissions were triggered or caused by the investor but simply that they took place in the real world.

GRAPH 3. ATTRIBUTION OF THE CAUSES OF THE CHANGE IN CARBON FOOTPRINT BETWEEN 2019 AND 2020



Virtual emissions reductions are emissions reductions accounted as reductions in disclosures, but in practice transferred from one portfolio or one company to another. Note while the discussion here focuses on emissions, the principle applies to all improvements in climate metrics, which can be distinguished as 'virtual' or 'real'.

The GHG Protocol Scope 3 Guidance controls for this dynamic, but this guidance is currently not applied by most financial institutions. The issue of 'emissions transfer' exists for companies and financial institutions. However, in the case of companies, climate accounting guidance requires "rebaselining" in case of asset transfer.[5]

[5] "To consistently track scope 3 emissions over time, companies shall recalculate base year emissions when significant changes in company structure or inventory methodology occur. In such cases, recalculating base year emissions is necessary to maintain consistency and enable meaningful comparisons of the inventory over time. Companies are required to recalculate base year emissions when the following changes occur and have a significant impact on the inventory: structural changes in the reporting organization, such

In a non-representative survey of market participants conducted in 2020, 41 out of 51 respondents agreed that this principle should either be applied in full or with minor adaptations to financial institutions. There is a first set of financial institutions, notably AP2, that start to apply this approach in their disclosures (see Fig. below), demonstrating potentially dramatic differences between virtual and real emissions.

Distinguishing virtual vs. real emissions reductions can help drive more incentive-optimal decision-making and create transparency to users what drove the underlying emissions adjustment. As outlined above, emissions rebaselining can dramatically change the results of carbon footprinting. However, the principle also holds for other types of climate metrics. Analysis of 53 Swiss pension funds' portfolios over a 3 year period showed that while the pension funds reduced their exposure to coal power capacity (compare the first blue bar to the second blue bar), the companies that were originally in the portfolio in 2017 actually significantly increased their coal power capacity (green bars) and only through divestments (final orange bar) did the portfolios become greener.

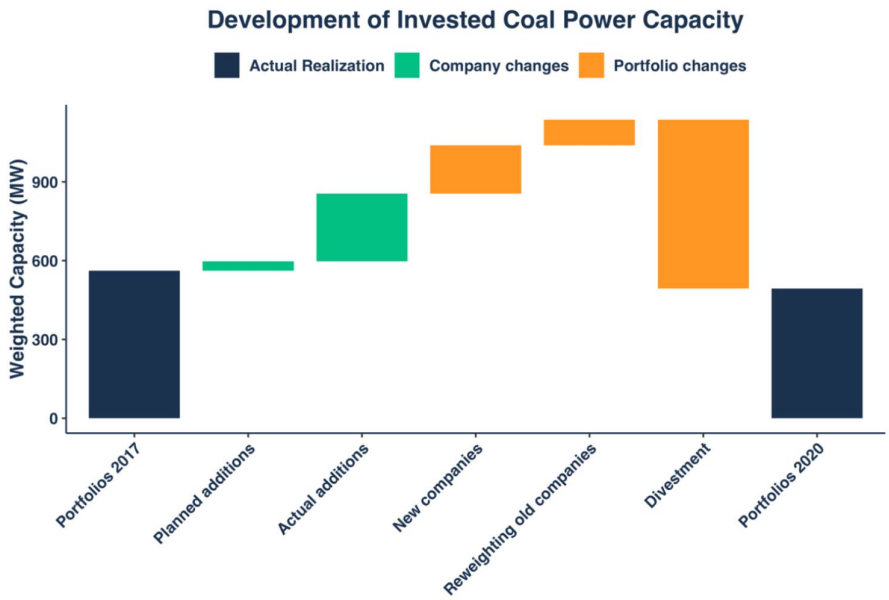


Figure 39: Development of invested coal power capacity.

2DII Recommendation 5: FI's measuring alignment should show year on year whether alignment improvements were the result of companies improving real world climate outcomes (e.g. emissions reductions, increase in green products) or portfolio composition changes (e.g. buying existing assets, divestments).

as mergers, acquisitions, divestments, outsourcing, and insourcing(...) Significant changes result not only from single large changes, but also from several small changes that are cumulatively significant. (...) Structural changes trigger recalculation because they merely transfer emissions from one company to another without any change in emissions released to the atmosphere (e.g., an acquisition or divestment only transfers existing GHG emissions from one company's inventory to another)." –Corporate Value Chain Accounting & Reporting Standard(p. 104

"Please T-C-F-D"
(originally by The Marvelettes)

Wait, oh yes wait a minute T -C-F-D
Wait, wait T -C-F-D

T-C-F-D as you take the lead
I've got some letters in my bag to read
I been waiting a long long time
To share my thoughts in a way that rhyme

There must be some things to say
About alignment's future way
Please T-C-F-D look and see
If you can this read this message from me
I been standing here waiting T -C-F-D
So patiently
For alignment to mainstream
So that climate goals realistic seem

T-C-F-D as you take the lead
I've got some letters in my bag to read
I been waiting a long long time
To share my thoughts in a way that rhyme

So many days you passed me by
See the tear standing in my eye
You didn't stop to make me feel better
By leaving me a card or a letter
T-C-F-D as you take the lead
I've got some letters in my bag to read
I been waiting a long long time
To share my thoughts in a way that rhyme

You gotta wait a minute, wait a minute
You gotta wait a minute, wait a minute
You gotta wait a minute, wait a minute
You gotta check it and see, one more time for me
You gotta wait a minute, wait a minute
You gotta wait a minute, wait a minute
You gotta wait a minute, wait a minute
Deliver my letter, the sooner the better
You gotta wait a minute, wait a minute
You gotta wait a minute, wait a minute
You gotta wait a minute, wait a minute

PACTA
Paris Agreement Capital Transition Assessment

The 2° Investing Initiative (2DII) is an international, non-profit think tank working to align financial markets and regulations with the Paris Agreement goals.

Working globally with offices in Paris, New York, Berlin, and London, we coordinate the world's largest research projects on climate metrics in financial markets. In order to ensure our independence and the intellectual integrity of our work, we have a multi-stakeholder governance and funding structure, with representatives from a diverse array of financial institutions, regulators, policymakers, universities, and NGOs.

2DII has four research streams: PACTA, MyFairMoney, Evidence for Impact, and 1in1000. This report forms part of the PACTA research stream.

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