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The Fine Print of Indexation Volume II: The Limitations of Passive Investing to Achieve a Net-Zero Outcome

Faced with the challenge of building net-zero-aligned portfolios, it may be tempting simply to track or refer to one of the climate benchmarks currently available or being developed by index providers and climate data vendors.

Yet for all the ease and convenience climate indexation ostensibly affords, we believe low-carbon-intensity indices—such as “Paris-Aligned” or “Climate Transition” benchmarks—suffer from flaws due to incomplete data and poorly conceived, government-mandated parameters within the indices. We also believe “transition” indices, which seek to assess climate transition risks and opportunities, have key shortfalls as well.

This paper continues our closer examination of the potential limitations of passive equity investing. Our first installment, [The Fine Print of Indexation](#), highlighted how index providers tweak the construction of their benchmarks to enhance liquidity; we argued that, while these maneuvers helped index fund managers accommodate massive asset flows, they also potentially crimped investors’ returns.

In this second installment, we show how passive investing to achieve a net-zero outcome invites its own set of challenges, potentially resulting in unintended consequences. At this early stage of net-zero adoption, we believe investors should instead take a more active, tracking-error-controlled approach toward discerning companies’ true progress on their unique paths toward reducing real-world emissions.

Executive Summary

We believe the many new “Paris-Aligned” or “Climate Transition” indices are flawed, forcing emissions reductions through blunt and inherently subjective tools. Specifically:

- **Climate indices often come with a dizzying array of disclosures.** We believe rules-based benchmarks—despite their theoretical transparency—remain formidably complex, thereby inviting potentially unanticipated outcomes, from tilted exposures to rising tracking error risk.
- **Pure data-driven approaches have their limitations.** In our view, climate indices tend to rely on backward-looking metrics, incomplete climate reporting by companies and conflicting signals from a variety of sources.
- **Innovative third-party climate data solutions offer promise, but are not available at scale.** In our view, climate indices employ subjective company-selection criteria, which often limits the universe of covered companies. At this early stage in the climate transition, we believe investors must make their own assessment of companies’ net-zero alignment—and that those assessments should be fortified by fundamental research to fill the gaps in real time.
- **Exclusionary approaches risk starving essential industries of capital.** We believe many climate indices employ subjective portfolio-weighting schemes that can lead to sub-optimal outcomes for investors and potentially poorer progress on reducing real-world emissions.
- **Lack of targeted and structured engagement.** We believe every company is on a different journey to net zero, and therefore requires targeted engagement on issuers’ specific areas of transition weakness. The insights gained through engagement should be incorporated into investment decisions, creating a dynamic feedback mechanism that helps ensure true asset stewardship and continued progress toward overall climate transition.

In light of climate-indexation’s potential limitations, we believe investors are better served taking a more nuanced, systematic and active approach to meeting their specific climate-investing goals.

The Limitations of Passive Investing to Achieve a Net-Zero Outcome

As more investors have sought to add a climate tilt to their portfolios, the massive passive-investing complex—now with 60% of assets under third-party management¹—has expanded to include index funds that claim to achieve a variety of climate outcomes.

Specifically, an increasing number of investors have sought to align their investment portfolios with the transition to net zero. In equity and fixed income markets, this shift has prompted the development of a range of index funds based on climate-related benchmarks, which come in two broad categories:

- 1) **Carbon intensity² reduction indices:** These seek to reduce exposure to issuers with high emissions and thereby reduce the carbon intensity of the index versus the investable universe.
- 2) **Transition indices:** These seek to vary emissions exposure based on an assessment of risks and opportunities associated with the transition to a low-carbon economy.

We believe both categories come with their own drawbacks, starting with a dizzying array of ground rules and regulatory disclosures. This daunting thicket presents a choice for investors: either a) allow a rules-based benchmark to select and weight securities based on a complex and inherently subjective methodology that may not produce desired outcomes, or b) rely on skilled human analysts who can influence benchmark construction and be held accountable for their results.

In our view, the first path—despite its theoretical transparency—could lead to unintended consequences, from tilted exposures to rising tracking error risk, while the second path offers a clearer way to assess companies’ net-zero journeys and ultimately build net zero-aligned portfolios.

Now for a closer look at some other crucial limitations, in our view, of both carbon intensity reduction indices and transition indices.

¹ Morningstar, as of May 31, 2023.

² Carbon intensity is a measure of carbon emissions normalized by EVIC, which equals enterprise value including cash.

Carbon Intensity Reduction Indices: Paper Decarbonization With Questionable Tracking Error Risk

Concerned about greenwashing, the European Commission in 2019 regulated labels for low-carbon-intensity benchmarks using the terms ‘EU climate transition benchmark’ (CTB) and ‘EU Paris-aligned benchmark’ (PAB). In 2020 the EU stated that by regulating minimum technical standards, the labels would help “improve transparency and comparability” and “reallocate capital towards climate-friendly investments”.³

EU regulation requires that a new benchmark must exhibit a 50% reduction in carbon intensity versus its broad index to qualify for the PAB label, and a 30% reduction to qualify for the CTB label, alongside a host of other criteria and baseline exclusions (see figure 1).

FIGURE 1: MINIMUM TECHNICAL STANDARDS FOR PTB- AND CTB-BASED INDICES

Minimum Standards	EU CTB	EU PAB
Risk-Oriented		
Minimum Scope 1 + 2 (+3) carbon intensity reduction compared to investable universe	30%	50%
Scope 3 phase-in	Up to 4 years	Up to 4 years
Baseline Exclusions	Controversial Weapons Tobacco Societal Norms Violators*	Controversial Weapons Tobacco Societal Norms Violators*
Activity Exclusion	No	Coal (1% + revenues) Oil (10% revenues) Natural Gas (50% revenues) Electricity producers with carbon intensity of lifecycle GHG emissions higher than 100g CO ₂ e/kWh (50%+ revenues)
Opportunity-Oriented		
Year-on-year self-decarbonization of the benchmark	At least 7% on average per annum: in line with or beyond decarbonisation trajectory from the IPCC’s 1.5°C scenario (with no or limited overshoot)	
Minimum green share/brown share ratio compared to investable universe (Voluntary)	At least equivalent	Significantly larger (factor 4)
Exposure Constraints	Minimum exposure to sectors highly exposed to climate change issues is at least equal to equity market benchmark value	
Corporate Target Setting	Weight increase shall be considered for companies which set evidence-based targets under strict conditions to avoid greenwashing	
Disqualification from label if 2 consecutive years of misalignments with trajectory	Immediate	Immediate
Relevance-Oriented		
Review Frequency	Minimum requirements shall be reviewed every three years to recognize market development as well as technological and methodological progress	

*Societal norms include UNGC Principles and OECD Guidelines for Multinational Enterprises.

³ “Sustainable Finance - minimum standards for climate benchmarks”, European Commission, July 17, 2020, accessed October 25, 2023, https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/12020-Sustainable-finance-minimum-standards-for-climate-benchmarks_en.

A review of PAB index fund marketing materials reveals that some PAB funds “claim to support investors to mitigate climate risk”⁴ or are “designed for investors looking to reduce exposure to climate risks”;⁵ that PABs are “both forward-looking and [have] science-based data to back it up”⁶ and are made up of “companies which are seeking to reduce their carbon emissions in line with the Paris Agreement.”⁷

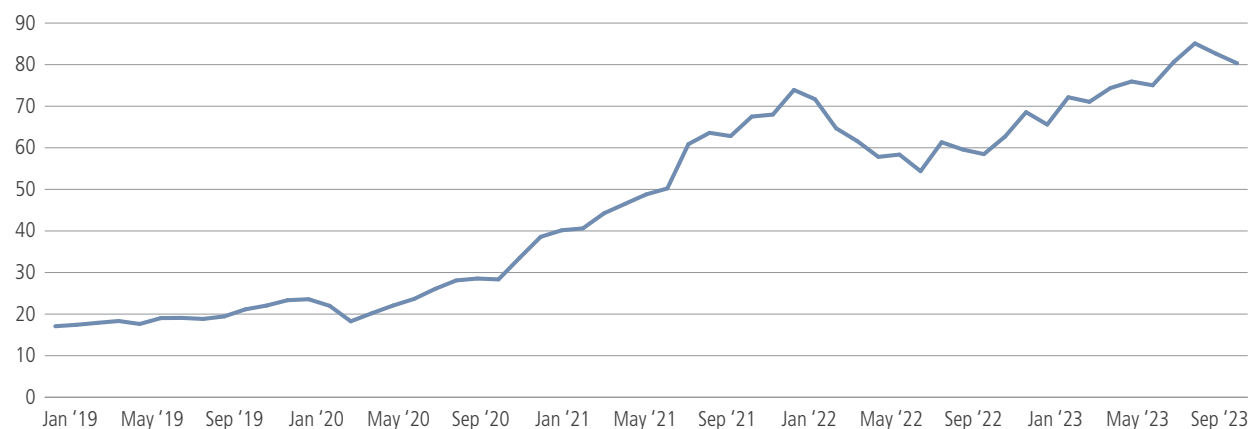
However, as the IIGCC put it in a recent paper on *Enhancing the Quality of Net Zero Benchmarks*, while this regulation has “provided a step in the right direction,” it “does not meet the full ambitions of an investor targeting net zero.”⁸

One of the most significant reasons for this is that adjusting the weighting of individual securities in the investment universe based on carbon intensity does not a) necessarily “reallocate capital towards climate-friendly investments”; b) necessarily help an investor achieve their ultimate net-zero objective; and c) account for how individual issuers might transition their business model (and curb emissions) in the future.

Hence, we believe carbon intensity reduction alone is a poor measure of climate-related risk—yet capital is potentially being misallocated towards these indices (see figure 2).

FIGURE 2: CLIMATE INDEX FUNDS HAVE ATTRACTED SIGNIFICANT ASSETS UNDER MANAGEMENT

Climate-aligned historical AUM (in \$bn)



Source: Morningstar, as of September 30, 2023.

Even if we only consider whether a carbon intensity reduction index is doing a good job of “reducing climate risk” with a “modest tracking error compared to the Parent Index”,⁹ we believe these indices still suffer from four crucial limitations:

- 1) They may rely on backward-looking data
- 2) They may not consider the macro factors that could impact a given company’s emissions
- 3) They may have sub-optimal portfolio construction
- 4) They may not track their parent benchmarks close enough to properly manage risk

All of these limitations, in our view, could prove detrimental when seeking to reduce climate transition risk, especially in the near term when companies are just embarking on their net-zero journeys. We also fear that these indices’ shortcomings could ultimately dissuade CIOs from building climate-aware portfolios.

⁴ “Paris Aligned Benchmarks: why they matter on the path to net zero”, BNP Paribas, December 20, 2022, accessed October 25, 2023, <https://cib.bnpparibas/paris-aligned-benchmarks-why-they-matter-on-the-path-to-net-zero/>.

⁵ “iShares MSCI World Paris-Aligned Climate UCITS ETF”, BlackRock, accessed October 25, 2023, <https://www.blackrock.com/uk/individual/products/318382/ishares-msci-world-paris-aligned-climate-ucits-etf>.

⁶ “Paris-Aligned Benchmarks: The Future Standard?”, NATIXIS Investment Managers, November 16, 2022, accessed October 25, 2023, <https://www.im.natixis.com/en-institutional/insights/paris-aligned-benchmarks-the-future-standard>.

⁷ “iShares MSCI World Paris-Aligned Climate UCITS ETF”, BlackRock, accessed October 25, 2023, <https://www.blackrock.com/uk/individual/products/318382/ishares-msci-world-paris-aligned-climate-ucits-etf>.

⁸ “Enhancing the Quality of Net Zero Benchmarks”, IIGCC, accessed October 25, 2023, <https://139838633.fs1.hubspotusercontent-eu1.net/hubfs/139838633/Past%20resource%20uploads/IIGCC-Enhancing-the-Quality-of-Net-Zero-Benchmarks.pdf>.

⁹ “EU Paris-Aligned Benchmark (PAB)”, MSCI, accessed October 25, 2023, <https://www.msci.com/our-solutions/climate-investing/climate-indexes/eu-paris-aligned-benchmark>.

Backward-looking Data

While traditional measures such as carbon footprint and carbon intensity are useful, in that they are comparable across companies and portfolios, we believe there are major pitfalls associated with relying heavily on them for net-zero alignment assessments.

Even as our climate continues to change, the PAB and CTB indices remain primarily based on estimated carbon-intensity reduction—an inherently backward-looking yardstick with arguably limited predictive insight.

Example: Ecolab, which provides water, hygiene and energy technologies and services, appeared in the MSCI World Climate Paris Aligned Index in 2021 and 2022 before being dropped in late 2022, after its carbon intensity appeared to grow by about 20%. However, as Ecolab continued to refine its Scope 3 emissions¹⁰ estimation capabilities, it switched to a more accurate methodology, which upon restatement showed much lower emissions in 2021—yet it did not regain its place in the index.

Meanwhile, our analysts consider Ecolab a leader in its field in terms of climate transition. The company has set ambitious science-based targets and articulated a decarbonization plan that includes a goal to collaborate on climate transition with suppliers representing 70% of its Scope 3 emissions by 2024. More recently, in 2022, Ecolab invested \$65 million in capital expenditures and spent another \$6 mn to operate environmental projects. Based on these investments, we expect Ecolab's emissions to decline in the future, with the understanding that it may not be a linear path.

Scope 1 and 2 carbon emissions,¹¹ we find, are often unreported or published with a lag. A close look at the MSCI World Index reveals that, as of August 2023, about 22% of constituents had not reported their Scope 1 and 2 emissions, and nearly half had last reported in 2021.

The problem is more severe for Scope 3 reporting: According to MSCI, 63% of MSCI ACWI IMI constituents have not reported their Scope 3 emissions, as of May 2023; meanwhile, PAB and CTB indices use estimation models to calculate companies' unreported emissions. All of this, we fear, may incentivize higher-emitting companies to not report their Scope 3 emissions if they believe their actual emissions are higher than those estimated by the index providers—potentially increasing their chances of being included in the indices.

And of course, different providers of estimated emissions may come to diverging conclusions, particularly for Scope 3 emissions. This puts the onus on investors to understand the complex emissions estimation methodologies of the index providers.

Lack of Macro Context

A second challenge for passive climate investors, in our view, is that economic and other macro shocks can change emissions metrics without changing a company's overall emissions profile—for example, think of how a recession lowers carbon-intensive manufacturing, or even how a pandemic can decimate air travel. Delta Airlines and Carnival Cruise Lines saw their emissions plummet during the COVID-19 shutdown, only to watch them take off as the economy reopened. Some companies that had previously been dropped from some low carbon intensity indices entered them again, without any changes to their long-term decarbonization trajectory and thus to climate-transition-related risk. For example, one CTB index dropped Carnival in 2021 when its data reflected its pre-COVID carbon intensity, but allowed the company to re-enter the index in 2022 when its data reflected significantly lower carbon intensity during the COVID trough.

There can also be divergences between different types of relative carbon metrics, which are based on different denominators. A company's carbon intensity can be normalized either by revenue or by "enterprise value of invested capital" (EVIC)—sometimes referred to as *carbon footprint*. During the pandemic, companies' carbon intensities normalized by EVIC shrank comparably more than their carbon intensities normalized by revenues—for example, cruise liners raised debt to stabilize operations, increasing the cash on their balance sheets and, as a result, pushing up EVIC.

We believe these rules-based approaches lack macro context and may lead to higher portfolio turnover—and thus greater tracking risk—to meet the 7% annual carbon intensity reductions required for PAB- and CTB-based indices. This is clearly evidenced by the fact that turnover for PAB/CTB indices tends to be substantially higher than their parent indices. For example, as of Sep 29, 2023, several PAB/CTB-aligned MSCI indices we analyzed had a 12-month turnover in the range of 10%-19%, while the MSCI World Index turnover has been 2.2% over the same period.

¹⁰ Scope 3 emissions encompass those (other than Scope 1 and 2) associated with a company's operations that are not directly owned or controlled by the company. Therefore, Scope 3 emissions include several sources of indirect emissions in both the company's supply chain and downstream from the company's owned or controlled operations.

¹¹ Scope 1 emissions are from directly emitting sources owned or controlled by a company. Scope 2 emissions are from the consumption of purchased electricity, steam or other sources of energy generated upstream from a company's direct operations.

Sub-optimal Portfolio Construction

Now let's wade a bit further into how passive climate funds are constructed—and the challenges, in our view, that those methodologies can introduce.

Broadly speaking, building an equity portfolio involves two decisions: 1) which companies to include, and 2) how much weight to give each one. Climate indices, we believe, fall short on both—and that can lead to sub-optimal outcomes for passive investors.

Selection Criteria

Climate index providers exclude companies from their benchmarks for a host of reasons. For example, indices that merit the EU PAB label—which were designed to align with achieving a 1.5-degree warming scenario—must not include companies that derive more than certain percentages of their revenue from fossil fuels (1% for coal, 10% for oil, 50% for gas and 50% from electricity generation with a carbon intensity greater than 100 g CO₂ e/kWh).

This is a choice that the EU regulators made, and which is clearly disclosed in marketing materials for most PAB index funds. The IEA's 2023 Net Zero Scenario states:

"In the updated net-zero scenario, a huge policy-driven ramping up of clean energy capacity drives fossil fuel demand 25% lower by 2030, reducing emissions by 35% compared with the all-time high recorded in 2022. By 2050, fossil fuel demand falls by 80%. As a result, no new long-lead-time upstream oil and gas projects are needed. Neither are new coal mines, mine extensions or new unabated coal plants. Nonetheless, continued investment is required in some existing oil and gas assets and already approved projects. Sequencing the increase in clean energy investment and the decline of fossil fuel supply investment is vital if damaging price spikes or supply gluts are to be avoided."¹²

Our interpretation of the IEA's statement is that it may be appropriate to continue to hold equity securities in *some* energy companies—particularly those that have credible net-zero transition plans. Consider TotalEnergies SA, a global oil, gas and renewable-energy producer headquartered in France: Despite the company's demonstrable commitment to reducing emissions and increasing green capex, TotalEnergies' sizable fossil fuel assets disqualify it from inclusion in PAB indices.

In our view, such blanket exclusions do not distinguish between companies that would use capital to accelerate their climate transitions and those that won't. Taken to an extreme, we worry that excluding companies with relatively large carbon emission profiles—regardless of their climate plans—could threaten to starve entire industries, like the energy sector, of the precious capital they need to introduce more renewables, build carbon-capture infrastructure or make their entire operations more carbon-efficient.

We also believe that blanket exclusions can impair returns and potentially introduce unintended style bets. For example, when the energy sector rallied following the Russian invasion of Ukraine in 2022, the MSCI World Climate Paris Aligned Index—which excludes many energy companies—lagged its parent benchmark, the MSCI World Index, by 3.43% over the course of the year. In addition, the PAB-aligned index appears to have assumed a more growth-oriented profile, with a price-to-earnings ratio of 22.7 versus 19.5 for the broader benchmark, as of September 29, 2023.

Subjective Weighting

In addition to blanket exclusions, we believe other, arguably subjective index-construction methodologies can present two underappreciated consequences for investors.

Our first concern is that climate indices can challenge asset managers' risk budgets. By design, PAB- and CTB-based indices are committed to certain carbon-reduction schedules: Specifically, PAB indices must decrease their collective carbon intensity by 50% relative to their parent benchmarks, while CTB indices must do so by 30%; once they hit those initial marks, they must keep reducing the size of those intensities by 7% a year until 2050, the global net-zero target date. (The EU also requires that "companies involved in the cultivation and production of tobacco" be excluded from PABs and CTBs, a decision which some investors may welcome, but is presumably unrelated to climate.) We believe these rules have the potential to introduce unintended style and sector tilts, as well as excessive tracking error risk, versus their parent indices.

Consider the table in figure 3, which gives valuation metrics and sector exposures for the MSCI World Climate Paris Aligned Index (a PAB-aligned index), the MSCI World Climate Change Index (a CTB-aligned index), and the MSCI World index as of September 29,

¹² "The path to limiting global warming to 1.5 deg C has narrowed, but clean energy growth is keeping it open", IEA, September 26, 2023, accessed October 25, 2023, <https://www.iea.org/news/the-path-to-limiting-global-warming-to-1-5-c-has-narrowed-but-clean-energy-growth-is-keeping-it-open>.

2023. As the table shows, the climate indices have both growth characteristics and significant sector tilts away from carbon-heavy sectors (such as Energy and Materials) and toward carbon-light sectors (like Information Technology).

FIGURE 3: CLIMATE INDICES CAN EXHIBIT UNWANTED SECTOR AND STYLE TILTS VERSUS PARENT BENCHMARKS

		MSCI World Index	MSCI World Climate Change Index (CTB)	MSCI World Climate Paris Aligned Index (PAB)
Sector Weights	Information Technology	21.7%	30.0%	26.5%
	Financials	15.0%	14.0%	17.1%
	Health Care	12.8%	15.0%	14.5%
	Consumer Discretionary	10.9%	13.8%	9.7%
	Industrials	10.8%	9.6%	12.7%
	Communication Services	7.3%	6.7%	6.6%
	Consumer Staples	7.2%	3.5%	2.6%
	Energy	5.2%	0.3%	0.0%
	Materials	4.1%	2.1%	2.2%
	Utilities	2.6%	1.7%	2.9%
	Real Estate	2.3%	3.3%	5.3%
Valuation Metrics	P/E	19.45	24.08	22.70
	P/B	2.89	3.45	3.30

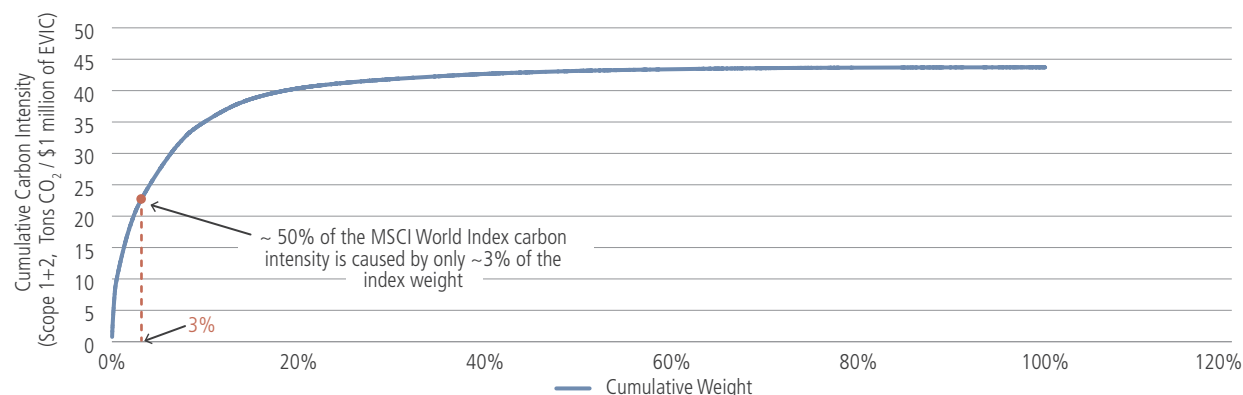
Source: MSCI, as of September 29, 2023.

We fear these style and sector tilts inadequately support the economy's climate transition, and may likely get worse as these indices are forced, by design, to decarbonize at the prescribed rate over time.

For example, consider that only 3% of the MSCI World Index now contributes roughly 50% of the basket's Scope 1 and 2 emissions (see figure 4). Eliminating exposure to such a small fraction of the broader index may not introduce much additional tracking error *today*, but that story could change over time as the curve in the chart flattens and further targeted reductions get harder to find.

The implication: Unless companies throughout the *entire* climate index decarbonize at the prescribed rates, the highest emitters (regardless of their progress on reducing their own carbon intensities) will be incrementally kicked out of the index. We think that trend could gradually saddle climate investors with more active risk than they ever intended to take through significant sectoral bets against the broad market. Further, it would eliminate the ability to engage and effect change at these carbon-intensive companies, thereby reducing the potential to accelerate real-world transition.

FIGURE 4: PAB/CTB CLIMATE INDICES COULD INTRODUCE MORE TRACKING RISK OVER TIME



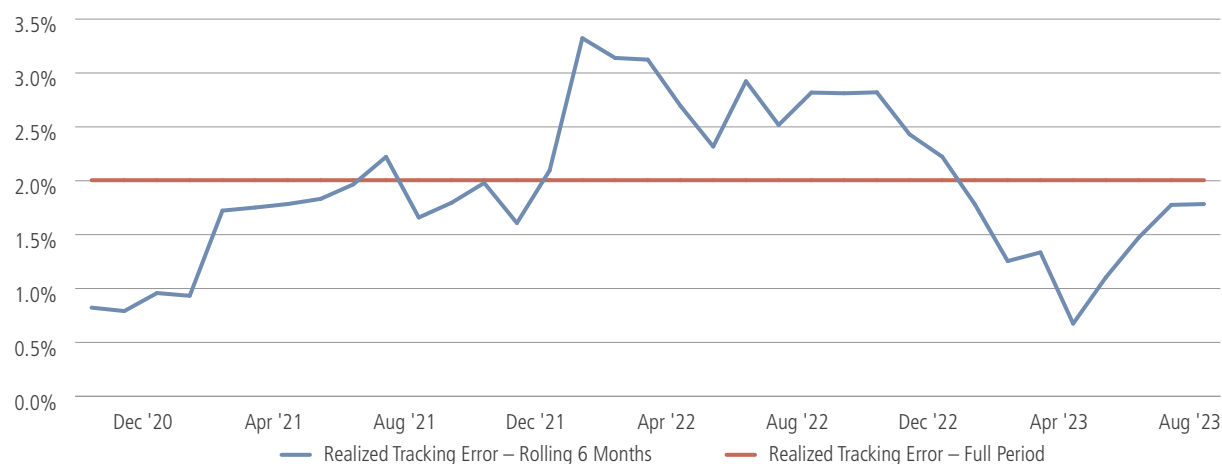
Source: S&P Trucost and MSCI ESG Research LLC.

Note: Carbon intensity is a measure of carbon emissions normalized by EVIC, which equals enterprise value including cash.

Indeed, we worry that climate indexing may *already* be negatively impacting investors' risk budgets. As shown in figure 5, the realized tracking risk between the MSCI World Climate Paris Aligned Index and its parent benchmark fluctuated significantly—from 0.8% to 3.3%—between October 2020 to August 2023. This inconsistency, we believe, is the result of constructing portfolios within the confines of pre-defined carbon-reduction targets—and argues for a more active approach that begins with setting a tracking-error budget *first* and thoughtfully adjusts carbon exposure to meet specific climate goals and risk appetites.

FIGURE 5: CLIMATE INDICES EXHIBIT INCONSISTENT ACTIVE RISK

MSCI World Climate Paris Aligned Index: Realized Tracking Error (Rolling 6 Months, w.r.t MSCI World)



Source: Bloomberg.

Lastly, we think that a crude cut-off based on carbon intensity can exclude companies across sectors that are leaders in decarbonizing their businesses and their value chains.

For example, as of June 2023, the MSCI World Climate Paris Aligned Index excluded General Motors (GM), but we believe the company has significant transition potential.

First, GM has committed to reach net zero across its products and operations by 2040, or 10 years ahead the global 2050 deadline. Second, it has followed up this commitment with a science-based target to reduce its Scope 1 and 2 emissions by 72% by 2035, and Scope 3 category 11 emissions (tied to the use of its sold products) by 51% during the same timeframe. Finally, GM has earmarked significant capital in an effort to achieve its long-term goal to transition all U.S. light-duty vehicles to EVs by 2035.

Of course, the achievement of these targets—especially in the short term—depends on a number of factors, including supply chain and labor considerations. However, encouraging investors to starve GM of capital is not, in our view, the way to support overall decarbonization.

We believe carbon-intensity cut-offs also risk excluding climate-solutions providers, such as Trane Technologies, a manufacturer of heating, ventilation and air conditioning (HVAC) and refrigeration systems. Due to increasing demand for heating and cooling—itsself a likely consequence of climate change—Trane's downstream Scope 3 emissions are quite high, a trend that will naturally continue as long as Trane's customers use carbon-based power to run the company's equipment.

However, Trane also produces innovative heat pumps that can increase energy efficiency by as much as 300% compared to legacy heating and cooling technology. Indeed, since 2019, Trane states that its products have helped customers avoid the emission of 93 million metric tons of CO₂e, and it aims to reach 1 billion tons by 2030.

Transition Indices: Active Risk Without Active Judgment

Perhaps for reasons we have already outlined, some investors have concluded that low carbon indices are a flawed means of achieving their net-zero objectives—thereby driving interest in indices that instead seek to weight exposure to issuers based on an analysis of the “risks and opportunities associated with the transition to a low carbon economy.”¹³ One transition index provider explains that this approach:

“...requires indexes that go beyond a narrow focus on carbon emissions and/or fossil fuel reserves exposure to integrate company activity within the green economy. In addition, an index aligned with the climate transition needs to capture company commitments to the TCFD, along with emissions pathways—in particular for the most carbon intensive companies globally—that are aligned with international (e.g. 2-degrees Celsius warming) targets.”¹³

We do not disagree with this intention, but we observe weaknesses in how it is actually being implemented.

First, some transition indices suffer from some of the same backward-looking data and coverage limitations as low carbon intensity indices. For example, the FTSE Russell FTSE TPI Climate Transition Indices¹⁴ are based on five signals—three are backward-facing—including fossil fuel reserve,¹⁵ carbon emissions and green revenues—and two are forward-looking: management quality¹⁶ and carbon performance.¹⁷

The management quality and carbon performance assessments are produced by academic researchers at the London School of Economics (LSE) Transition Pathway Initiative Centre, a research center within the Grantham Research Institute at the London School of Economics. We think these assessments are based on a clear methodology and offer helpful insights to investors. Indeed, we have been a research funding partner of the Transition Pathways Initiative for several years to enable both the analytical work behind the TPI’s data and for the TPI Centre to freely share their assessments with the global investor community. Yet we believe it takes significant resources and staff to build a large team of research analysts who can evaluate the credibility of company transition plans, and so the TPI Centre currently only produces these assessments on a limited number of companies.

Partial coverage is fine for active managers who can complement TPI data with their own analysts’ judgement to select securities, or if they use TPI assessments as one input to their stewardship activities.

But the entire index business model is predicated on not having to support a dedicated team of experienced research analysts exercising active judgement. It follows, to us, that it is naturally more challenging for an index provider to build an index if their third-party data provider can muster only partial coverage.

In FTSE Russell’s case, as of September 30, 2023, out of about 1,510 companies in the MSCI World Index, only 290 had been assessed for management quality, and only about 140 for carbon performance. As a result, we think that it may not be possible for FTSE Russell’s indices to incorporate forward-looking metrics in an ideally comprehensive manner.¹⁸

To help understand the impact this coverage shortfall may be having in practice, we examined the FTSE Developed Ex Korea TPI Climate Index. We scored each index constituent using our own proprietary Net-Zero Alignment Indicator, a bottom-up assessment of each company’s progress toward achieving net zero, which benefits from the judgment and insights of 100+ equity and credit research analysts.

¹³ “FTSE TPI Climate Transition Index Series”, FTSE Russell, accessed October 25, 2023, https://content.ftserussell.com/sites/default/files/ftse_tpi_climate_transition_index_series_brochure_sept2021.pdf.

¹⁴ FTSE TPI Climate Transition Index Series.

¹⁵ Based on carbon reserve intensity which is defined as the estimated CO₂ equivalent greenhouse gas (GHG) emissions in metric tons through the use and combustion of the recoverable coal, oil and gas reserves scaled by full market capitalization (in USD).

¹⁶ Based on TPI management quality data which evaluates and tracks the quality of companies’ governance/management of their greenhouse gas emissions and of risks and opportunities related to the low-carbon transition.

¹⁷ TPI carbon performance scores assess how companies’ carbon performance now and in the future might compare to the international targets and national pledges made as part of the Paris Agreement.

¹⁸ We acknowledge and support the TPI Centre’s plan to expand coverage of issuers to 10,000 within the next few years with the help of automation and AI.

THE NET-ZERO ALIGNMENT INDICATOR: At Neuberger Berman, we believe investors must make their own assessment of companies' climate transition plans, with the help of fundamental research to complement reported data.

The Net-Zero Investment Framework (NZIF), developed by the Institutional Investor Group on Climate Change (IIGCC), provides a useful, forward-looking model that recognizes the challenges and nuances of various industries.

Our NB Net-Zero Alignment Indicator builds on the IIGCC NZIF by using quantitative scores that draw on multiple third-party data points, as well as qualitative inputs from specialist research analysts that may override the initial quantitative scores.

We believe this robust analytical approach creates a critical feedback loop: New insights feed into our ever-evolving Indicator scores, ultimately helping us focus further engagement on issuers' specific weaknesses.

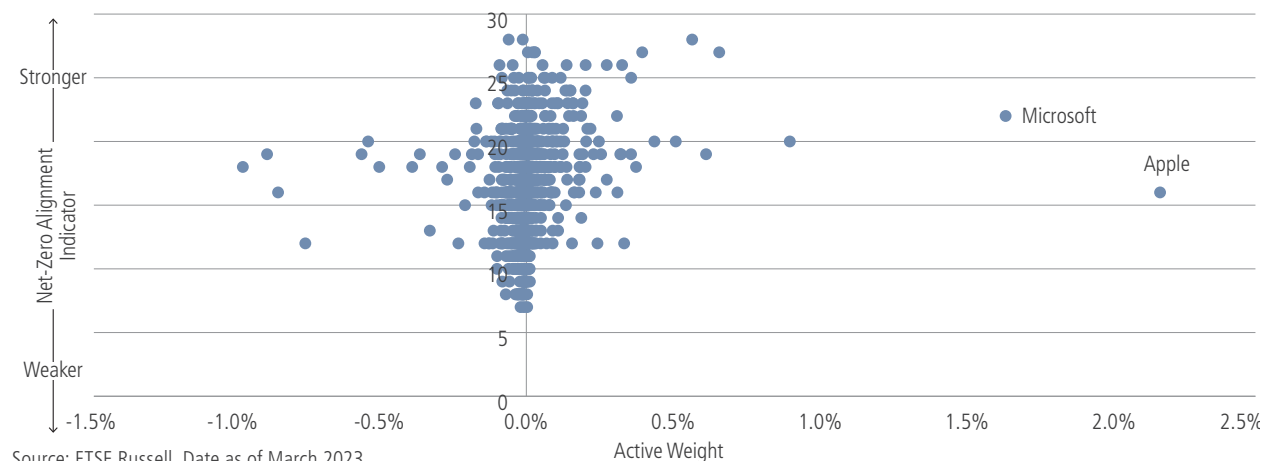
For more on the Indicator, please read: "[Net-Zero Alignment: Beyond the Numbers](#)".

Figure 6 plots each constituent company's Neuberger Berman Net-Zero Alignment Indicator score versus the company's active weight within the index. Active weights bring tracking error risk, which investors often expect an index fund to carefully manage. Unless you had read the index methodology in detail, you might have expected that the FTSE TPI Index would have assigned larger active weights to companies which are performing well on a climate-transition assessment—yet our analysis suggests that the weightings do not work out that way.

As figure 6 shows, Microsoft and Apple garner outsized active weights in the FTSE TPI index (roughly 1.6% and 2.2%, respectively), even though we assessed the companies to be "Aligning" and "Committed to Aligning", according to our Indicator.

FIGURE 6: ACTIVE WEIGHTS IN TRANSITION INDICES MAY NOT BE PRIMARILY DRIVEN BY FORWARD-LOOKING TRANSITION ASSESSMENTS

FTSE Developed Ex Korea TPI Climate Transition Index Net-Zero Alignment Score versus Active Weights



FTSE Russell may have come to a different conclusion about Microsoft and Apple's transition status than we did, but if so, it was not by using forward-looking carbon performance assessments for either company, or a management quality assessment for Microsoft, because those did not exist as of September 30, 2023. This means the large active weight was a result of other data and methodology choices.

Compare this to TotalEnergies, an oil & gas company for which FTSE Russell does have a forward-looking management quality and carbon performance assessment. TotalEnergies scores well on both assessments—indeed it scores better than Apple on management quality—and we agree: Our analysts assess TotalEnergies as "Aligning" using our Net-Zero Alignment Indicator.

One might argue that the potentially higher transition risk associated with the oil & gas sector relative to the information technology sector ought to lead an index to give more credit to oil & gas companies that appear to be credibly transitioning.

Yet the index's construction rules assign Apple considerably more active weight—specifically, 220 bps¹⁹ versus TotalEnergies' 10 bps.

So why are they so different? The answer, based on the index's construction methodology, strikes us as both arbitrary and counterproductive: Apple simply carries greater proportional weight within the parent index—and thus greater tracking error risk is allocated to Apple.

In summary, although these indices are seeking to replicate broad-based index products, we believe the climate-based index construction results in forgoing significant opportunities to provide capital to—and engage with—businesses that have credible opportunities to improve their emissions performance. We agree with the IIGCC that this bias against inclusion and engagement, and toward divestment, is not “best practice” which should “aim to promote real world emissions reductions” rather than merely reduce reported emissions in portfolios.

For these reasons, we believe investors who want to include transitioning businesses as well as low-emission businesses in their portfolios cannot rely on the current indices. Instead, we encourage them to take steps to identify companies that are genuinely willing and able to reduce emissions, and carry out rigorous ongoing measurement and monitoring of their progress.

The Role of Engagement In Driving Real-World Emissions Reductions

Even the low-carbon intensity index providers would accept that, at some point, a 7% emissions decline is going to stall if companies can't deliver real-world emissions reductions. Making further progress, in our view, will require moving beyond subjective rule-setting and instead engaging directly with portfolio companies to help them meet their commitments.

The problem is that passive managers are built to track indices, and do not always meaningfully engage with companies and ultimately serve as stewards of capital. As trillions of dollars have flowed into index funds, a handful of large asset managers have amassed significant voting control over thousands of companies. While the biggest passive managers hold more than 12,000 companies, and are expected to vote at more than 18,000 meetings a year, their teams tend to include fewer than 100 people to handle the load.²⁰ We fear this structure creates a virtually insurmountable stewardship challenge by hampering the feedback loop between company engagement and the scoring methodologies underpinning the indices.

As always, we believe every company is on a different journey to net zero, and therefore requires targeted engagement to pinpoint specific areas of weakness, thereby creating a positive feedback loop to support continuous improvement. Anything less, in our view, may lead to poor target-setting and lack of asset stewardship, ultimately thwarting overall climate transition.

Proxy Voting With Purpose

Index funds, by their design, must heavily rely on proxy voting as means to influence companies. Yet there appears to be a disconnect between passive managers' voting records and the objectives of climate-focused index funds.

To begin, passive manager support for environmental and social shareholder proposals remains tepid: In 2022 Vanguard backed just 12% of those proposals; Blackrock backed 22%. These numbers have declined even further in the 2023 proxy season, with Vanguard supporting just 2% of environmental and social shareholder proposals; BlackRock backed 7%.²¹

Furthermore, we find, there is neither sufficient rationale for, nor timely disclosure of, these vote decisions. Absent this type of disclosure, we fear that companies may incorrectly interpret falling support for climate proposals as de-prioritization of climate risk by investors.

¹⁹ FTSE Russell. Date as of March 2023.

²⁰ Vanguard: Investment Stewardship, About Our Program; BlackRock Investment Stewardship (BIS) Primer, SSGA Asset Stewardship Report, 2021.

²¹ BlackRock, 2023 Global Voting Spotlight; Vanguard Investment Stewardship U.S. Regional Brief, 2023.

Hence our [NB Votes](#) initiative, through which we publish our proxy-voting intentions in advance of select shareholder meetings. Now in its fourth year, NB Votes allows our teams to share opinions on various voting topics that, in our view, have material economic consequences for companies—not least their climate-transition plans. We believe this approach can encourage management teams to improve their governance practices and deliver long-term value.

Stewardship Is a Suite of Tools

But proxy voting is just one way we believe asset holders can help support climate transition. In our view, investors can gain deeper insights into their portfolio companies' transition plans—and potentially influence them—by actively engaging with management teams and board members.

While we find that passive funds tend to engage mainly with their largest holdings, we believe there is more work to be done and potential progress to be made. Research has shown that passive managers historically under-engage with small cap companies,²² implying that significant contributors to the climate transition may not be sufficiently held to account.

We believe engagement also helps ensure that climate commitments ultimately translate into measurable progress, primarily demonstrated by tangible capital allocation decisions and their alignment with stated transition plans; in our view, active managers with deep industry expertise are better positioned to have in-depth discussions with companies on these critical issues.

The Fitful Journey to Net Zero

At this early stage in the decarbonization journey, we believe it is unrealistic to assume that most companies will trace a linear, downward path to net zero; more likely, plenty will experience fits and starts along the way. Recent announcements from the diversified mining sector provide a useful reminder of this reality and, in our view, reinforce the value of active engagement to accurately assess any company's climate-transition plan.

In June, BHP, the Australian mining giant, warned investors that its carbon emissions would likely increase in coming years before declining closer to 2030. After recent reductions in Scope 1 and purchased Scope 2 emissions (down 24% between 2020 and 2022), a combination of new growth projects and underdeveloped carbon-abatement technologies would offset that progress. As a result, BHP said that meeting its current 30% decarbonization target by 2030 would not be easy. And while BHP is currently working on climate-friendly solutions—such as electrifying its hauling trucks (now largely diesel) and installing renewable-power infrastructure at key mining locations—it is clear these efforts will demand significant time and capital.

At the same time, we do not believe investors should merely chalk up BHP as the canary in the coal mining sector. Indeed, BHP and its competitors provide the critical inputs for the hardware of decarbonization, including copper and aluminum for electric vehicles, wind turbines and cables. In our view, proactive and forward-looking investors should welcome BHP's early warning as a sign of transparency—as well as an opportunity to recalibrate expectations and more effectively engage on decarbonization with BHP and its peers.

For our part, we believe the BHP briefing helped us take an even harder look at the company's net-zero transition. In future engagements, we plan to focus more on the viability of abatement technologies and management timelines, while fully recognizing the competing demands for near-term growth and scalability of longer-term transition solutions. Ultimately, we believe BHP's warning further supports our view that the challenges and nuances of decarbonization lend themselves to an active investment approach, supported by effective engagement efforts and flexible measurement tools, such as our Net-Zero Alignment Indicator.

As disclosure of climate risks and transition plans continues to improve, spurred by mandatory requirements and voluntary frameworks, we believe meaningful engagement with companies will remain an important tool in building optimal, climate-aware portfolios.

²² "The Corporate Governance Gap", The Yale Law Journal, January 2022, accessed October 25, 2023, <https://www.yalelawjournal.org/article/the-corporate-governance-gap>.

The Merits of a *Truly* Active Approach

In our view, passive investing to achieve a net-zero outcome is based on host of active decisions—made not by investors, but by the index creators—that we fear can lead to sub-optimal outcomes for investors and the world.

In light of climate-indexation's potential limitations, we believe investors are better served taking a more nuanced, and engaged approach to meeting their specific climate-investing goals.

As we have shown, we believe index providers tend to construct their benchmarks by applying fixed ground rules based on inadequate data and with potentially too little regard for real-world outcomes and unwanted exposures (including excessive tracking error risk or overconcentration in specific names or sectors).

Instead, we believe investors should set a tracking-error-risk budget for their climate portfolios and then adjust their climate transition risk relative to it, in accordance with their specific net-zero investing goals and risk appetites. Some investors, we have found, may wish to maintain a tracking error risk with a parent benchmark, while others may seek a more aggressively net-zero-aligned portfolio on day one, regardless of tracking error risk.

In calibrating their exposure, we also believe investors should apply a comprehensive, forward-looking climate-transition risk assessment—akin to Neuberger Berman's Net-Zero Alignment Indicator, which is fortified by the work of skilled research analysts able to interpret conflicting data from an array of sources.

Finally, we think that engaging with companies—rather than merely excluding them from climate indices—is a superior way to guide companies' climate-related decisions and ultimately lead to more positive real-world outcomes.

In our view, true climate-conscious investing requires a level of expertise and active engagement that passive vehicles, by their design, are not best-equipped to make.

This is the second paper in our series on the potential hidden costs of passive equity investing. For additional perspective, please see our first installment: [The Fine Print of Indexation](#).

Special thanks to Laura Kunstler-Brooks, Associate, ESG Investing; Reza Mohammadi, Quantitative Investment Analyst; and Beryl Lou, Head of Investment Engineering—all who contributed mightily to the analysis for this paper.

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The **MSCI World Index** captures large and mid-cap representation across 23 Developed Markets (DM) countries. With 1,510 constituents, the index covers approximately 85% of the free float-adjusted market capitalization in each country.

The **MSCI ACWI Investable Market Index (IMI)** captures large, mid and small cap representation across 23 Developed Markets (DM) and 24 Emerging Markets (EM) countries*. With 9,216 constituents, the index is comprehensive, covering approximately 99% of the global equity investment opportunity set.

The **MSCI World Climate Paris Aligned Index** is based on the MSCI World Index, its parent index, and includes large and midcap securities across 23 Developed Markets (DM)* countries. The index is designed to support investors seeking to reduce their exposure to transition and physical climate risks and who wish to pursue opportunities arising from the transition to a lower carbon economy while aligning with the Paris Agreement requirements. The index incorporates the TCFD recommendations and are designed to exceed the minimum standards of the EU Paris-Aligned Benchmark.

The **MSCI World Climate Change Index** is based on the MSCI World Index, its parent index, and includes large and mid-cap securities across 23 Developed Markets (DM)* countries. The index aims to represent the performance of an investment strategy that re-weights securities based upon the opportunities and risks associated with the transition to a lower carbon economy, while seeking to minimize exclusions from the parent index. The Indexes are designed to exceed the minimum standards of the EU Climate Transition Benchmark (CTB).

The **FTSE TPI Climate Transition Index Series** is designed to reflect the performance of global and diversified indices, where constituent weights vary to account for risks and opportunities associated with the transition to a low carbon economy. Constituent weights are based on five key climate considerations: company exposure to green revenues, fossil fuel reserves and carbon emissions, as well as companies' climate governance activities (aligned with the Taskforce on Climate-related Financial Disclosures' recommendations) and forward-looking commitments to carbon emission pathways (aligned to the Paris Agreement and 2DC/below 2DC warming scenarios). The indices combine data and analysis from FTSE Russell and the Transition Pathway Initiative (TPI).

The **FTSE Developed ex Korea TPI Climate Transition Index** is designed to reflect the performance of a global and diversified indices, where constituent weights vary to account for risks and opportunities associated with the transition to a low carbon economy. Constituent weights are based on five key climate considerations: company exposure to green revenues, fossil fuel reserves and carbon emissions; as well as companies' climate governance activities (aligned with the Taskforce on Climate-related Financial Disclosures' recommendations) and forward-looking commitments to carbon emission pathways (aligned to the Paris Agreement and 2DC/1.5DC warming scenarios). The index combines data and analysis from FTSE Russell and the Transition Pathway Initiative (TPI).

Tracking risk is simply the standard deviation of a portfolio's relative returns (relative to some benchmark). Whereas the standard risk measure of standard deviation measures the absolute return volatility, tracking error measures the volatility of the return differences between the portfolio and the benchmark over time. A portfolio that is actively managed in an aggressive manner would have a large amount of tracking error versus its index, whereas a portfolio that is more constrained to look like its index (an index fund being the extreme) would have smaller amounts of tracking error.

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