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Climate Change Benchmarks: The Passive Pretenders

By Lauren Juliff and Henrik Wold Nilsen, November 2022.

Summary

There has been an explosion in climate-aware index investing as investors respond to both regulatory and financial risks from climate change by replacing market-cap indices with new climate benchmarks in their passive portfolios.

There is no universally accepted metric for assessing company or portfolio climate risk, making climate index-creation subjective and opaque. This observation is being picked up in recent academic research and comments from the regulator.

The evolving nature of climate science, policy and data availability means that delivering a systematic portfolio aiming for Paris-alignment requires climate specialist expertise, oversight and accountability.

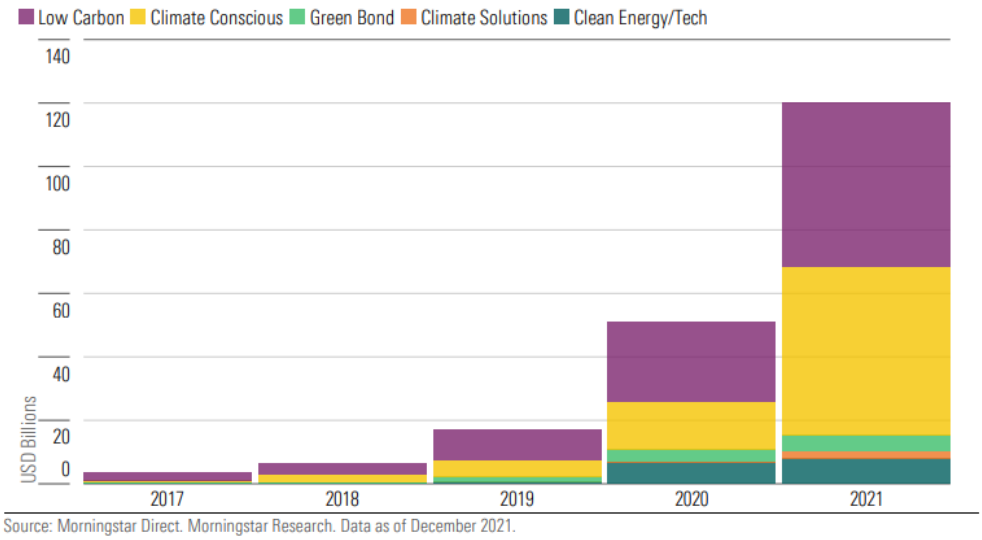
Systematic annual decarbonisation is not a robust standalone proof statement for 'Paris Alignment'. Climate benchmarks fail to appropriately manage the risks and offer the opportunities associated with the transition to a Paris aligned economy, and even introduce new, unexpected sources of risk.

There is no such thing as *passive* Paris alignment.

Growth in climate-aware index investing has exploded over the last couple of years. Morningstar research, in Figure 1, shows assets in climate index funds in Europe reached over $120bn at the end of 2021, more than doubling in one year[1]. There is now an abundance of strategies available for climate-conscious passive investors with 50 'passive' funds tracking the new EU climate benchmarks within just 12 months of their launch[1].

Figure 1 – Growth in Climate- Conscious Index Funds

Assets in European Passive Climate Funds



Source: Morningstar Direct. Morningstar Research. Data as of December 2021.

This growth is set to continue in response to **increasing investor demand**, with two thirds of institutional investors planning to switch their passive equity exposures to ESG or climate benchmarks over time[2]. A recent survey by FTSE Russell showed that 86% of asset owners globally are now integrating sustainable investments into their portfolios, with the main drivers being risk mitigation and the potential for improved long-term returns[3]. The latest Mercer asset allocation survey reported that 26% of European Pension Funds have already made use of a low carbon/climate-related index and this proportion is expected to continue growing[4].

Regulation is also an increasingly powerful driver behind the shift to climate-aware investing[5]. The UK government has introduced new governance and reporting legislation and guidance to ensure that climate change is at the top of the agenda for pensions trustees[6]. The Department for Work and Pensions (DWP) has emphasised climate change as a material financial risk that trustees must measure, monitor and manage. The Pensions and Lifetime Savings Association (PLSA) highlighted that trustees may use climate-risk indices as "*part of an approach to manage climate-related risks and integrate them into the investment process*"[7]. The government's guidance also includes that trustees

[1] Morningstar. Investing in Times of Climate Change, 2022.
[2] Based on a survey by State Street Global Advisors, quoted in Capital Monitor, March 2022.
[3] FTSE Russell, 2022
[4] Mercer European Asset Allocation Insights 2021 Sustainable Investment Survey
[5] FTSE Russell, 2022
[5] Mercer European Asset Allocation Insights 2021 Sustainable Investment Survey
[6] Governance and reporting of climate change risk: guidance for trustees of occupational schemes, October 2022
[7] PLSA Climate Indexes Made Simple, 2020

might consider "*a shift in passive investments to low carbon benchmarks rather than tracking a market-capitalisation weighted index*[8]".

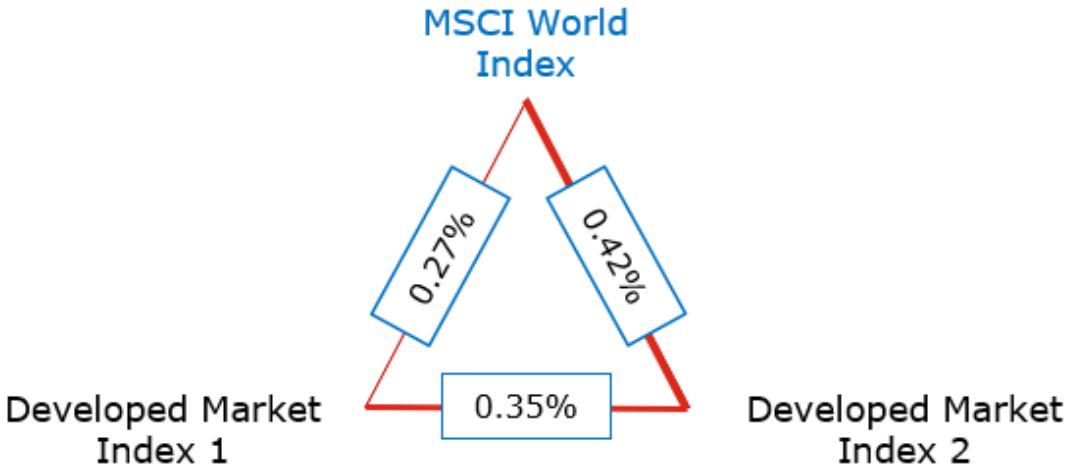
Having recognised climate change as a financially material risk, and a part of their fiduciary and legal duties, how can trustees manage and balance this against a need for low-cost solutions and the continued trend towards passive investing?

Traditionally passive investing has been viewed as a low cost, low governance option for trustee boards. It has allowed for more of the governance budget to be spent on active investment decisions, such as asset allocation and selecting active managers that deploy skill to either deliver returns above the market or manage specific identified risks.

Aside from investment choices related to geography (developed markets vs all countries), company size (large & mid vs all cap) and any exclusion requirements (weapons, tobacco etc.) the selection of which brand of global equity index to track makes little difference to the investor's risk/return profile, as illustrated in Figure 2.

Figure 2 – Market-Cap Global Equity Benchmarks - little room for divergence

Expected Pairwise Tracking Error for Three Global Developed Market Indices



Source: Storebrand, for illustration only. Calculated using an ETF tracker as proxy for each index, holdings from Morningstar, tracking error estimated using MSCI Barra, as at 30 September 2022. Removing non-overlapping countries (e.g. South Korea which is sometimes included in developed and sometimes emerging markets) from the indices further reduces pairwise tracking error to 0.2-0.3%. Even further reduction could be expected from unifying the lower market cap threshold applied to the indices.

The method for creating a market cap index is clear cut and allows for minimal deviation.

The same cannot be said for indices designed to target risks associated with the transition to a low carbon or 'Paris aligned' economy. There is a plethora of climate index strategies available. Here, the

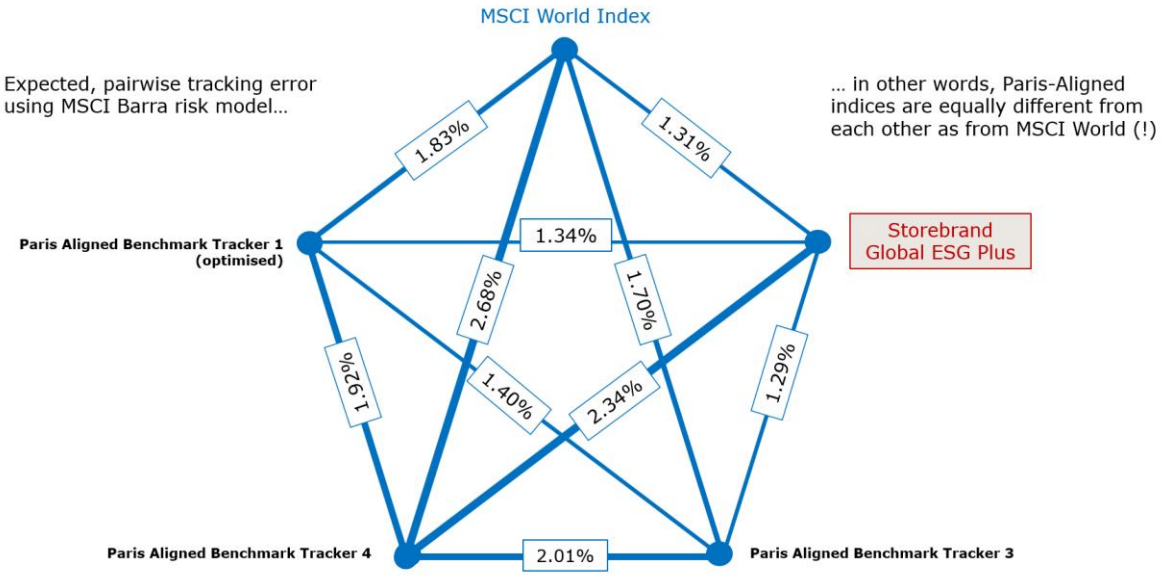
[8] The Pensions Climate Risk Industry Group. Aligning Your Pension Scheme with the TCFD Recommendations Consultation Guidance, 2020

choice of index makes a big difference to the outcome for investors and can expose trustee boards to large unintended, unmanaged and unexpected sources of risk. In stark contrast to market cap data, which allows companies to be sorted according to size, there is no universally agreed metric for 'climate risk' or 'Paris alignment' by which companies can be ranked in an index.

Early 'low carbon' indices often retained large fossil fuel, and even thermal coal, exposures[9]. Their static and simplistic methodologies, based on limited and imperfect data, led to climate risk being reallocated along the value chain, rather than effectively managed or minimised. In practice this meant that while holdings in oil and gas majors could be reduced, large positions in oil and gas supply companies remained, leaving investors with meaningful exposure to climate transition risks. Further, such strategies were unable to account for forward-looking corporate transition plans. These were superseded by various iterations of low carbon/climate aware index funds and in late 2019 the EU Commission stepped in to define both Climate Transition Benchmarks (CTB) and Paris Aligned Benchmarks (PAB) with a recipe for construction intended to bring a level of standardisation to the market[10]. Despite these initiatives, however, the deviation between the indices remains considerable.

There is too much subjectivity in index construction for these benchmarks to be considered 'passive' investment options for trustees. The outcomes vary substantially, as illustrated in Figure 3.

Figure 3 – Huge Variation in Climate Global Equity Benchmarks



Source: Storebrand, for illustration only. Calculated using an ETF tracker as proxy for each index, holdings from Morningstar, tracking error estimated using MSCI Barra, as at 30 June 2022. Not all of these indices are necessarily designed to meet the EU rules but they are all Paris Aligned or Climate Transition index trackers that we have found in Morningstar.

Our observation that "index-tracking" is not equivalent to "passive" is supported by several recent academic papers. For example, 'Closet Active Management of Passive Funds' examined the active

[9] InfluenceMap, 2019. Climate Funds and Fossil Fuels
[10] TEG final report on EU climate benchmarks and benchmark ESG disclosures, September 2019.

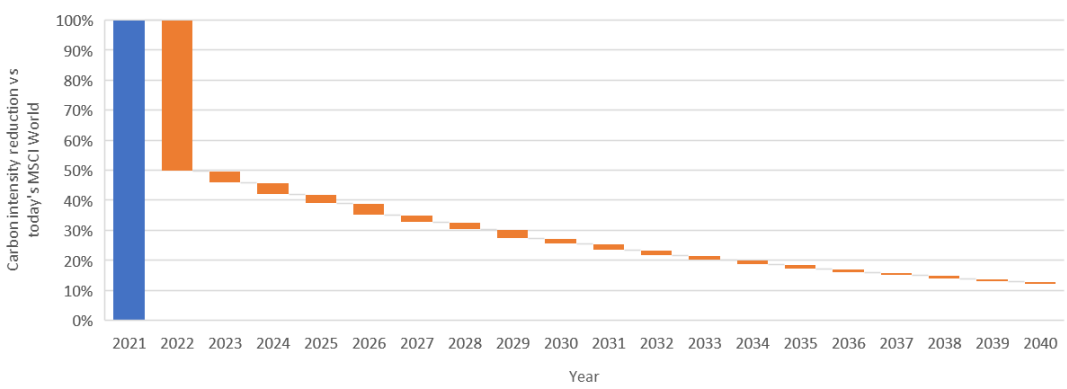
share of all US equity funds coded as index funds or ETFs in the Centre for Research in Security Prices (CRSP) database and concluded: "*A third of these funds exhibit more activeness than the median actively managed fund*". They also found that so-called 'passive' funds vary widely by style and factor exposures, even more so than active funds[11]. We have found this to be true of "passive" funds in the climate index space and present the EU Paris Aligned indices as an example.

A feature of EU PABs is that emissions reduction is defined as an initial 50% drop in carbon emissions relative to the market cap index, followed by an annual cut of 7%[12]. A recent paper, by Osmosis, illustrates the problems this rigid approach presents for fiduciaries[13]. The 7% p.a. emissions reduction is based on an IPCC Paris aligned pathway for 1.5ºC with no or low overshoot. In the real world, however, policy is failing to move us towards climate goals in this systematic fashion, meaning that these benchmarks can become increasingly detached from reality. They do not take an informed approach to climate risk management – where data, policy and science continue to evolve. Active risk exposures relative to the market are largely ignored – hence the large tracking error figures relative to the MSCI World Index illustrated in Figure 3.

The use of carbon emissions reduction is a useful tool for managing risk exposures but not sufficiently robust as a standalone proof statement for 'Paris Alignment'. We can illustrate this with a simple example.

Figure 4 – Aligning MSCI World with the PAB Methodology in Two Simple Steps

Step 1 – we start with MSCI World and sort the companies by carbon intensity, highest to lowest.
Step 2 – we iteratively remove companies, starting with most CO_2 intensive, until the carbon intensity reductions match those of the PAB guidelines in size. In 2022, a 50% reduction is modelled, followed by 7% year-on-year thereafter until 2050.



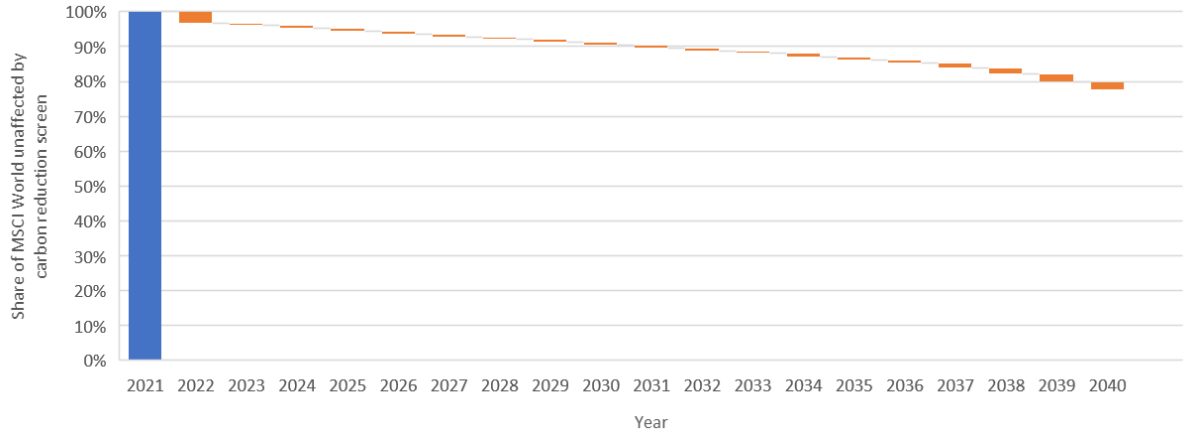
Source: Storebrand, for illustration only. Method: Sort companies in MSCI World by Carbon Intensity, highest to lowest and screen out companies in that order until PAB-sized reductions are met each year (50% initial reduction followed by 7%p.a.). Remaining companies are scaled to 100% so market cap weighting remains unchanged. Note – this is a simplified example modelling only a Scope 1 and Scope 2 CO_2 intensity reduction (based on Weighted Average Carbon Intensity, WACI, scaling by revenue), which differs slightly from the method used by PAB based on enterprise value. Further, other PAB requirements are not enforced, such as fossil fuel production exclusions and introduction of scope 3 emissions reductions after year 4. Additionally, it is assumed that the companies themselves do not contribute to the portfolio's decarbonisation. In reality, one hopes that the companies themselves will deliver a large share of the required decarbonization at the portfolio level. In that case, the required changes versus MSCI World to claim Paris alignment are even smaller than shown.

[11] Akey, P., Robertson, A. and Simutin, M., 2021
[12] SSGA, Understanding Paris Aligned Indexes, February 2022
[13] Steffen, Paris Aligned Benchmarks. Are They On Target For 1.5 Degrees? (osmosisim.com)

Figure 5 – The Reality of PAB-aligned Emissions Reduction

This second chart shows the % weight of MSCI World that must be removed in order to meet the annual emissions intensity reduction above.

By simply screening out less than 5% of the index constituents it could be considered Paris aligned for three years, to 2024. By 2030 only 10% of the index would need to be screened. However, this would not be aligned with the economic decarbonisation required to achieve the interim 2030 Paris goals and certainly at odds with the required transition in terms of technologies, products and services.



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Sources of Difference

There are many reasons why climate indices differ from one another so greatly, despite many following the EU rulebook for either PABs or CTBs.

Data sources

Widespread adoption of the Taskforce on Climate-Related Financial Disclosures (TCFD) framework has gone some way to standardising carbon emissions metrics by stipulating a methodology for calculating carbon intensity and absolute emissions. However, there are multiple sources for the raw company emissions data used as inputs to these metrics, and they differ by provider. Large gaps remain in company reported data; around 40% of the constituents of the FTSE All-World Index "*do not currently disclose*" their Scope 1 and Scope 2 emissions "*requiring the use of estimated data instead*"[14]. There are even more missing data points for Scope 3 emissions which account for 85% of total emissions[15]. Further, estimated carbon emissions data is inaccurate; a FTSE Russell study found that "*almost half of estimated values diverge from reported data by 100%*", substantially impacting the accuracy of carbon intensity in a global equity portfolio[16].

Data discrepancies are particularly challenging when benchmarks rely on complex scores or ratings in portfolio construction. The CFA Institute studied ESG scores from different providers and found they present vastly disparate results for the same companies[17]. The European Fund and Asset Management Association (EFAMA) has urged the European Commission to regulate ESG ratings[18]. Implied Temperature Rise (ITR) scores and transition alignment metrics are increasingly popular but hugely methodologically dependent and often 'black boxes'. A study by the Louis Bachelier Institute concluded that ITR metrics "*hide layers of analysis, assumptions, and uncertainties*" and demonstrate little comparability or correlation in results. They cautioned that few ITRs could be considered suitable for assessing "*compatibility with the temperature objective of the Paris Agreement*"[19]. We believe it is questionable to consider any products constructed using highly subjective, opaque and inconsistent metrics, data sets and methodologies as 'passive' index funds. The FCA appears to agree – it recently issued a warning on ESG benchmarks, stating "*We believe that the subjective nature of ESG factors, and how ESG data and ratings are incorporated into benchmark methodologies, give rise to an increased risk of poor disclosures in ESG benchmark statements*"[20].

[14] Decarbonization in equity benchmarks: Smoke still rising
[15] Paris Aligned Benchmarks. Are They On Target For 1.5 Degrees? (osmosisim.com)
[16] Mind the Gaps, Clarifying Corporate Carbon
[17] https://blogs.cfainstitute.org/investor/2021/08/10/esg-ratings-navigating-through-the-haze/
[18] Funds Europe, October 2022
[19] Institut Louis Bachelier, The Alignment Cookbook
[20] FCA 8 September 2022 letter. Reported in FT Moral Money, 14 September 2022

Portfolio construction

The way in which data is used to construct a portfolio is arguably more important than the choice or source of data inputs. For example, the index designer / portfolio manager must decide how to weight and prioritise backward-looking reported carbon emissions metrics, company green revenues and forward-looking ITR scores in portfolio construction.

The method used for position sizing has a meaningful impact on risk. The investment universe for a climate index is typically a broad, market cap-weighted benchmark. Portfolio weights are then determined either by scaling the index positions up or down according to their input scores (such as CO_2 intensity), or through portfolio optimisation, whereby an optimiser will systematically weight companies according to the selected data inputs while aiming to minimise risk relative to the investment universe. Either of these methods can lead to unintended risks without the oversight of a portfolio manager who can continuously refine the model.

For example, in delivering products that generate green revenues, companies will generate Scope 1 and 2 emissions. A climate solutions company may subsequently be underweighted in optimisation, based on its carbon intensity data, unless the strategy is holistically managed by a skilled portfolio manager. For mega-cap companies, scaling a company's market cap weight by a factor of e.g., three can lead to large individual stock risks, such as systematically overweighting Tesla due to its green revenues. Indices tend to be rebalanced infrequently, meaning that the portfolio will drift, often substantially, from the optimal climate-risk balanced index design.

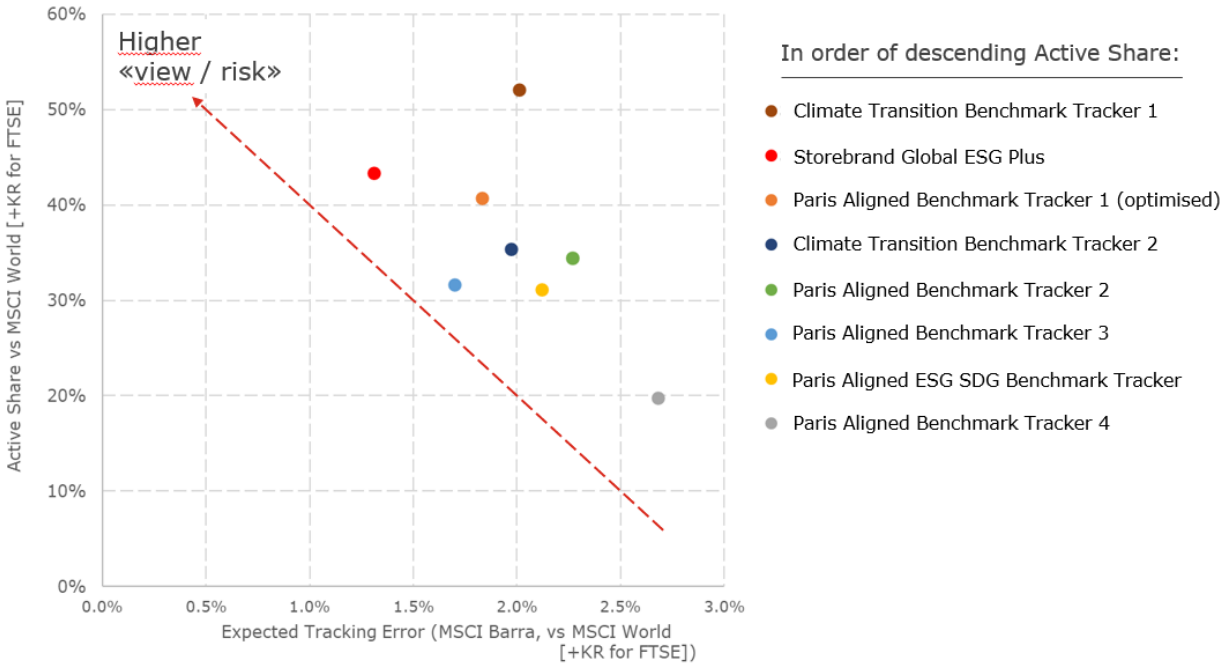
The outcome of the methodological choices and data inputs used in portfolio construction can be judged using active share (defined as the absolute value of the difference between the portfolio and the market-cap index starting point) and tracking error (also versus the market-cap index starting point). As investors concerned about climate risk in the broader index, we should be comfortable with a level of tracking error and active share – we want our portfolios to differ from the carbon-heavy benchmark – but, crucially, we want the differences to be attributable to our climate-related goals. We should also be mindful of taking on any unintended, unexpected and unmanaged sector, country or individual stock risks that might impact relative returns.

Figure 6 charts the active share and tracking error of a variety of 'Paris aligned' and 'Climate Transition' index trackers, showing us how much active share each fund achieves per unit of risk (tracking error), relative to the MSCI World Index. A fund in the top left corner would demonstrate high active share per unit of risk. Provided the sources of risk (differences from the index) are attributable to climate-related factors, then this would be considered a strong climate view for a low relative risk.

Assessing tracking error and active share versus the market cap weighted index offers a better way to understand active versus passive than whether or not a strategy is created by an index provider or an asset manager. This is discussed in a recent academic paper called 'The Active World of Passive Investing'[21].

[21] Chapter 3 - The Active World of Passive Investing, August 2021

Figure 6 – Climate view per unit of risk



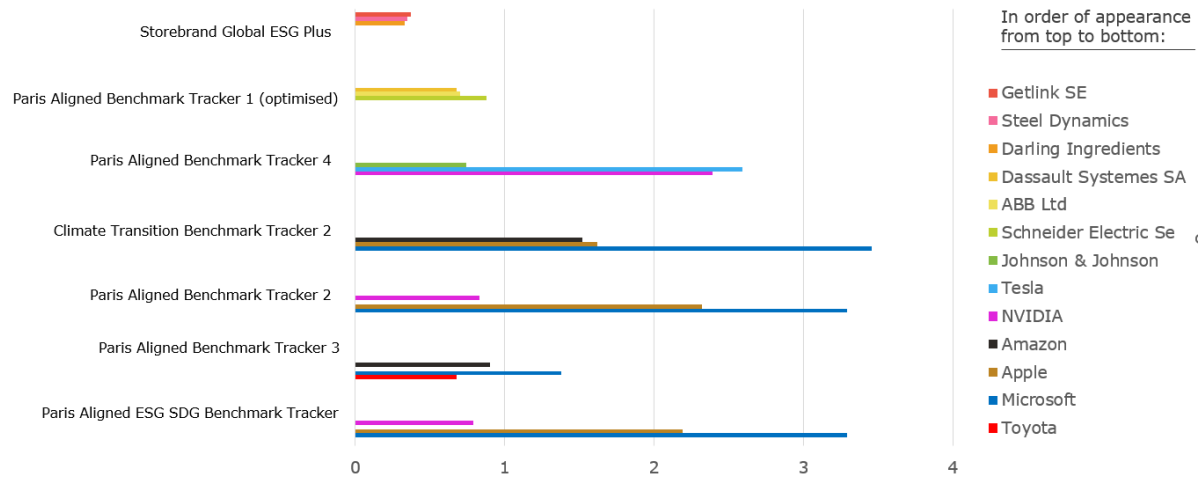
Source: Storebrand, for illustration only. Calculated using an ETF tracker as proxy for each index, holdings from Morningstar, tracking error estimated using MSCI Barra, as at 30 June 2022. Tracking Error and active share are relative to MSCI World (FTSE is vs MSCI World + Korea part of MSCI ACWI). Not all of these indices are necessarily designed to meet the EU rules but they are all Paris Aligned or Climate Transition index trackers that we have found in Morningstar.

Sources of Risk

In general, investors replacing their market-cap passive global equity indices with climate index alternatives seek to retain low cost, diversified broad market exposures while addressing financially material climate risks. First and foremost, these are passive global equity index replacements and so we would expect their top ten holdings to be reasonably similar to each other and to the market-cap global equity indices on which they are based. However, we should expect their sources of active risk (difference from the index) to be aligned with the climate transition – for example having lower allocations to fossil revenues and higher allocations to green revenues and climate solutions. In Figure 7 we chart the top 3 over-weight positions for a range of climate index trackers relative to the MSCI World Index. The majority of these index trackers have large overweight positions in Microsoft, Apple, NVIDIA and Amazon. These positions can be as much as three percentage points overweight relative to the market cap universe, representing meaningful individual stock risk and high relative exposures to large cap US technology companies. This risk is particularly acute at the moment given the sector's recent volatility and uncertain outlook.

Figure 7 – Unexpected sources of risk

Top Three Active Positions vs MSCI World



Source: Storebrand, for illustration only. Calculated using an ETF tracker as proxy for each index, holdings from Morningstar, tracking error estimated using MSCI Barra, as at 30 June 2022. Not all of these indices are necessarily designed to meet the EU rules but they are all Paris Aligned or Climate Transition index trackers that we have found in Morningstar.

Research by Osmosis highlights the flaw in delivering carbon intensity reductions simply by overweighting certain sectors: "*Given where the sector exposures of PABs lie today, one might argue that overexposure to Information Technology hardly shifts the transition needle. A true hedge with real impact would offset an under-weight position in the dirtiest fossil energy electricity generator with an over-weight position in the greenest clean-energy electricity producer*."[22]

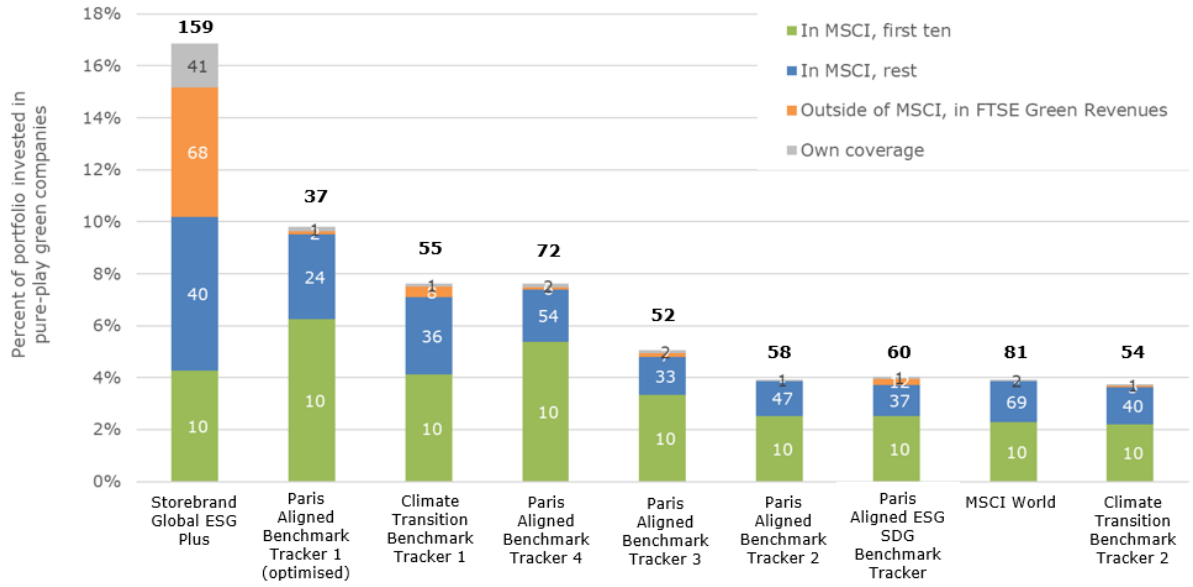
Sources of Opportunity

The EU TEG[23] and the IIGCC[24] agree that in order to be 'Paris aligned' investors should both manage the risks from transition and channel assets towards climate opportunities.

A challenge for climate indices in delivering transition aligned portfolios is that the global large/mid-cap universes they track do not currently contain many companies providing pure-play exposure to climate solutions technologies. At the end of September 2022, of the 1,513 companies in the MSCI World Index only 79 (equivalent to just under 4% of the total index weight) derived more than half of their revenues from climate solutions activity[25]. This means that climate indices often have similarly low exposure to green revenues as the MSCI World Index, as illustrated in Figure 8. Also, they tend to achieve the majority of their exposures through concentrated positions in just ten companies.

[22] Paris Aligned Benchmarks. Are They On Target For 1.5 Degrees? (osmosisim.com)
[23] EU TEG on Sustainable Finance (2019)
[24] IIGCC Net Zero Investment Framework Implementation Guide
[25] Storebrand analysis using FTSE Green Revenues. See Figure 8.

Figure 8 – Pure-play allocations to green revenues



Source: Storebrand, for illustration only. Calculated using an ETF tracker as proxy for each index, holdings from Morningstar. Pure-play defined as all companies with FTSE Green Revenues representing at least 50% of total revenues, plus 'own coverage'. 'Own coverage' represents companies where Storebrand has done proprietary research to allocate to off-benchmark climate solutions companies, where green revenues represent either >50% total revenues or >50% market cap. Not all of these indices are necessarily designed to meet the EU rules but they are all Paris Aligned or Climate Transition index trackers that we have found in Morningstar.

Scientific pathway analysis shows that a 1.5ºC world requires a green economy "*boom*" – "*similar to the technology sector, with rapid growth in its size and prevalence – resulting in green products and services firmly embedding themselves throughout markets*"[26]. Growth in global green revenues has outstripped overall revenue growth by 2% p.a. since 2009 - but this level of expansion, in line with investments under Nationally Determined Contributions (NDCs)[27], only aligns with a temperature goal of 2.6ºC. If we are to meet the Paris goal of 1.5ºC then the green economy needs to grow much faster, – and the majority of that growth, replacing carbon-heavy industry, needs to happen before 2030 due to the compounding nature of carbon emissions in the atmosphere.

Yet, unlike the prescribed decarbonisation requirement for PABs and CTBs, there is currently no agreed pathway or target for green revenues or climate solutions exposure in a 'Paris-aligned' benchmark. Our analysis shows that green revenues exposure is a major source of difference among climate indices and the opportunity to access green economy growth through these products is limited (Figure 8).

[26] https://content.ftserussell.com/sites/default/files/green_equity_exposure_in_a_1.5_c_scenario.pdf
[27] United Nations, All About NDCs

Conclusion - what's the alternative?

There is a good reason behind the rapid growth in climate-aware index investing - trustees are compelled to address urgently the material climate risk in their passive equity allocations, which on average represent a growing majority of their equity assets[28].

There is no universally accepted metric for assessing company or portfolio climate risk, making climate index-creation subjective and opaque. Climate science, policy and data continue to evolve rapidly and previous attempts at creating index-based products to manage climate risk, using available nascent or imperfect datasets and static methodologies, have become quickly defunct.

Data for climate risk assessment is continuously improving and new products being marketed by a variety of specialist providers. For this reason, we do not think that climate indices can be delivered objectively based on available datasets – the large degree of subjectivity involved in climate index construction means it cannot be "passive". These datasets can, however, be important inputs for systematic portfolio construction by a knowledgeable portfolio manager with the ability to assess, select and blend the best available portfolio construction metrics as the market continues to evolve. A combination of climate expertise and portfolio risk management skill is required to avoid unintended risks from combining datasets and to align outcomes with the Paris agreement objectives.

Special attention should also be given to how such a strategy accesses the opportunities - products, services and technologies - related to the low carbon transition. Climate specialist expertise is also required to evolve the strategy over time, accounting for changes in science, policy and markets. Portfolios similarly require regular rebalancing and liquidity management.

Finally, the most important feature for climate conscious investors is accountability. Given climate benchmarks are constructed using multiple active choices, varied datasets and with divergent, and often opaque, methodologies, who is accountable for the risks resulting from portfolio construction decisions? A recent academic paper highlighted a regulatory chasm in this space and proposed that index providers, in directing huge amounts of capital, are acting as "*unregulated investment advisers*"[29].

The choice of a new benchmark for a pension fund's core equity portfolio is very much an active decision. Delivering a systematically managed portfolio to minimise climate risk requires expertise, transparency and accountability in its design, construction and ongoing management. The risks associated with transitioning to a 'passive pretender' disguised as a climate benchmark are meaningful and not well understood – there is no such thing as *passive* Paris alignment.

[28] Mercer, 2021, passive equities represent >50% pension fund equity portfolios.
[29] Mahoney, P.G. and Robertson, A.Z., 2021. Advisers by another name. *Harv. Bus. L. Rev.*, *11*, p.311

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- *AMX UCITS CCF - Storebrand - Emerging Markets ESG Plus*
- *AMX UCITS CCF – Storebrand – Global ESG Plus*