

STAYING ON TRACK: PARIS-ALIGNED BENCHMARK DECARBONISATION

PARIS-ALIGNED DECARBONISATION OVER TIME

EU Climate Transition Benchmarks were introduced in 2019, aiming to provide investors with standardised climate index objectives related to greenhouse gas emissions reductions and the transition to a low carbon economy.

Five years on since the EU Climate Benchmarks Regulation¹ was formalised, and with increased recognition that climate change can represent a significant systemic risk for investment portfolios, there is continued significant investor demand for climate strategies, which comprise ~20% of the global sustainable funds market².

In this paper, we review recent research insights into the feasibility of aligning a benchmark to the IPCC's Net Zero by 2050 scenario, in line with the Paris Agreement goal of a 1.5°C temperature rise above pre-industrial levels by 2050.

We examine the emissions reduction scenario-testing by MSCI Research on Northern Trust Asset Management (NTAM)'s customised PAB indices, highlighting the implications of the PAB framework decarbonisation requirements. This shows that across both developed and emerging markets, the PAB decarbonisation objectives of these indices remain achievable for the future investment horizons assessed of up to 10 years, with only a relatively modest impact on other targeted strategy objectives, including concentration and tracking error.

EU PAB REQUIREMENTS: A REFRESH

The minimum standards of the PAB framework include a mandatory decarbonisation of 50% vs. the investable universe (30% for Climate Transition Benchmarks), built in by the EU Technical Expert Group³ as a failsafe parameter to achieve Paris Alignment, and self-decarbonisation at an average annual rate of 7% per annum in line with IPCC's 1.5°C scenario⁴. This rate of decarbonisation is synonymous with a 50%

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¹ [Commission Delegated Regulation \(EU\) 2020/1818 of 17 July 2020 supplementing Regulation \(EU\) 2016/1011 of the European Parliament and of the Council as regards minimum standards for EU Climate Transition Benchmarks and EU Paris-aligned Benchmarks \(EU Low Carbon Benchmarks Delegated Acts\)](#)

² [Investing in Times of Climate Change: November 2024, Morningstar Sustainalytics](#)

³ [EU TEG Final report on Climate Benchmarks and Benchmarks' ESG Disclosures, September 2019](#)

⁴ [IPCC Special Report on Global Warming of 1.5c, October 2018](#)

reduction over a 10 year period, and also serves as a base for corporate interim decarbonization targets, including those set in line with the SBTi (Science Based Targets Initiative) methodology.

The full requirements are set out below:

EXHIBIT 1: EU CLIMATE BENCHMARK CRITERIA SUMMARY

EU CTB	EU PAB
Decarbonization trajectory aligned with 1.5°C by 2050 scenario target	
Carbon intensity reduction vs. investable universe of 30% (EVIC denominator)	Carbon intensity reduction vs. investable universe of 50% (EVIC denominator)
Scope 3 phase-in by 2024	
Do No Significant Harm (DNSH), including avoidance of: <ul style="list-style-type: none"> • Significant harm to environmental objectives • Non-compliance with UN Global Compact or OECD Guidelines for Multinational Enterprises <ul style="list-style-type: none"> • Controversial weapons • Tobacco production 	
	DNSH extra activity exclusions: <ul style="list-style-type: none"> • Thermal coal (1% revenue) • Oil fuels (10% revenue) • Gaseous fuels (50% revenue) • Electricity generation with GHG intensity more than 100g CO₂e/kWh (50% revenue)
Green revenue / brown revenue ratio vs. universe: >100% (voluntary)	Green revenue / brown revenue ratio vs. universe: x4 (voluntary)
Exposure to High Climate Impact Sectors at least equal to benchmark	
Year-on-year self decarbonization of benchmark at least 7% (EVIC-based carbon intensity, with inflation adjustment)	

With assets of passive EU Climate Benchmark products accounting for almost three quarters of the Climate Transition funds category², PAB-compliant benchmark indices implementing these requirements range from those that simply adhere to the minimum standards such as the MSCI EU PAB Overlay indices, to others which go beyond the minimum requirements to provide for varying investor climate investing preferences.

NORTHERN TRUST ASSET MANAGEMENT PAB SOLUTIONS

Managing USD 188bn of assets under management within our Sustainable Investing platform⁵, NTAM offers efficient index tracking solutions across several EU Climate Benchmark indices.

We have partnered with MSCI to develop the PAB Plus range of innovative custom index strategies. These utilise the MSCI EU PAB Overlay methodology to meet the minimum PAB standards, in combination with the NTAM proprietary screens and natural capital-related screens and uplifts, acknowledging that nature-related risk mitigation and adaptation can play a significant part towards achieving the Paris Agreement global warming objective.

Optimisation ensures constituent, country and sector weight diversification, and a modest tracking error is achieved compared to parent indices, with relatively low turnover.

⁵ [Data as of 31 March 2025](#)

REVIEWING PAB DECARBONISATION OVER TIME

It is interesting to consider the feasibility and implications of PAB decarbonisation over a longer investment horizon with such additional strategy objectives, especially given that in the real world, we are not on track for a 1.5°C temperature rise or to meet Net Zero by 2050⁶.

MSCI set out index construction challenges associated with PAB requirements in their recent research insight, [Paris-Aligned Benchmarks in Practice. Insights into Implementation](#)⁷. Scenario analysis to evaluate future robustness of the PAB decarbonisation target provides valuable insight, particularly regarding the 7% annual self-decarbonisation. MSCI note that index turnover towards lower-intensity emitters is key to achieve this, given that most public companies are not decarbonizing at the necessary rate. To assess the risk of this shortfall by corporates potentially leading to increased index tracking error and security concentration levels, MSCI created a series of relatively conservative three, five, seven and 10-year “forward” simulations for which the parent index had the same constituents throughout and assuming no company emissions intensity reductions occurred.

They found that all the index simulations remained feasible to implement, in line with index objectives, and PAB-compliant. In the assumed absence of company-level emissions intensity reductions, the active risk generally increased for all investment universes as the decarbonization time horizon was extended, although there is only a relatively modest increase in all broad developed markets. For all MSCI PAB indices assessed, increases in tracking error and concentration were more marked after five years.

Employing the same analysis for NTAM's PAB Plus indices – see below - yielded consistent outcomes, with the indices remaining feasible for ten years if the parent intensity remains flat. As in the broader MSCI PAB analysis, the EM simulation exhibits the largest rise in active risk, which can be attributed to its higher carbon intensity (average carbon emissions are higher and average EVIC⁸ is lower in Emerging Markets). Of course, if organic (company-level) decarbonisation was observed over this time period, there would be less reliance on rebalancing to meet the self-decarbonisation targets and hence better diversification and lower active risk than calculated.

This analysis provides reassurance that, even when stress testing out to the ten year calculation horizon, the PAB framework decarbonization requirement should not come at the expense of significant active risk – we'll have Paris (Aligned Benchmarks) for a while yet.

⁶ [PWC, Net Zero Economy Index 2024](#)

⁷ [Paris-Aligned Benchmarks in Practice. Insights into Implementation, MSCI Research Insight, June 2025.](#)

⁸ [Enterprise Value including Cash](#)

EXHIBIT 2: DECARBONISATION STRESS TEST ANALYSIS FOR SELECT SIMULATED MSCI PAB INDICES OVER A RANGE OF CALCULATION HORIZONS

Index simulations remain feasible and PAB-compliant over time

MSCI World PAB Plus Equity Select Index:

Metrics	MSCI World Index (May 2025 Index Review)	MSCI World PAB Plus Equity Select Index (May 2025 Index Review)	MSCI World PAB Plus Equity Select Index (3 years)	MSCI World PAB Plus Equity Select Index (5 years)	MSCI World PAB Plus Equity Select Index (7 years)	MSCI World PAB Plus Equity Select Index (10 years)
Active Risk (%)		1.08%	1.17%	1.27%	1.40%	1.74%
Number of Constituents	1324	690	580	507	445	327
Mcap Coverage (%)		74%	69%	65%	61%	52%
S123 Intensity (Wtd. Avg. tCO ₂ e/\$m EVIC)	290.8	70.9	57.0	49.3	42.7	34.3

MSCI World PAB Plus Equity Custom Index:

Metrics	MSCI World Index (May 2025 Index Review)	MSCI World PAB Plus Equity Custom Index (May 2025 Index Review)	MSCI World PAB Plus Equity Custom Index (3 years)	MSCI World PAB Plus Equity Custom Index (5 years)	MSCI World PAB Plus Equity Custom Index (7 years)	MSCI World PAB Plus Equity Custom Index (10 years)
Active Risk (%)		1.09%	1.18%	1.28%	1.41%	1.74%
Number of Constituents	1324	681	571	502	444	325
Mcap Coverage (%)		73%	69%	65%	61%	52%
S123 Intensity (Wtd. Avg. tCO ₂ e/\$m EVIC)	290.8	70.9	57.0	49.3	42.7	34.3

MSCI Emerging Markets PAB Plus Equity Select Index:

Metrics	MSCI EM Index (May 2025 Index Review)	MSCI EM PAB Plus Equity Select Index (May 2025 Index Review)	MSCI EM PAB Plus Equity Select Index (3 years)	MSCI EM PAB Plus Equity Select Index (5 years)	MSCI EM PAB Plus Equity Select Index (7 years)	MSCI EM PAB Plus Equity Select Index (10 years)
Active Risk (%)		1.69%	1.72%	1.84%	2.00%	2.35%
Number of Constituents	1203	610	508	466	423	354
Mcap Coverage (%)		72%	68%	65%	61%	53%
S123 Intensity (Wtd. Avg. tCO ₂ e/\$m EVIC)	564.3	131.5	105.8	91.5	79.1	63.6

Source: MSCI Research, July 2025

The three-, five-, seven- and ten-year simulations take the May 2025 index review as the base reference and model the effect of applying 7% annual self-decarbonization targets over three, five, seven and ten year periods for each equity universe. All other data is unchanged including constituent-level emissions intensity (i.e., no organic decarbonization) and static parent index composition.

SCOPE 3 CONSIDERATIONS

There are also complexities for the decarbonisation glidepath stemming from the mandated inclusion of Scope 3 emissions. As discussed in our recent paper '*Making Scope 3 Work*'⁹, Scope 3 data largely consists of estimates due to low consistency and quality of company reported data. Thus, improvements to data provider estimation methodologies over time lead to changes to backdated company Scope 3 data, a situation which is accounted for in Article 8(2)¹⁰ of the EU Regulation.

Under a new framework created by MSCI, historical glidepaths will be recalculated when Scope 3 estimation changes result in a materially different index GHG intensity, defined as a change equivalent to 3 years or more of annual 7% decarbonization (approx. 20%)¹¹. Based on an initial analysis of the NTAM PAB Plus indices and the cumulative impact of methodological enhancements since the indices were launched, the two World indices remain out of scope while the EM index meets the materiality threshold (and hence the glidepath needs to be recalculated). Whilst the impact on index constituents will be limited, investors should be aware of these considerations when integrating dynamic climate objectives.

⁹ NTAM, [Making Scope 3 Work: How Investors can Navigate Complexity and Manage Climate Risk](#)

¹⁰ ["Benchmark administrators shall use a new base year whenever significant changes in the calculation methodology of GHG intensity or absolute GHG emissions occur"](#)

¹¹ MSCI, [Consultation on Decarbonization Trajectory Adjustment for MSCI Equity CTB/PAB Indexes, February 2025](#)

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