
White Paper

**Environmental, Social
& Governance (ESG)**

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Understanding Paris-Aligned Indexes

A Guide for Investors

As investors progress on their journeys to net zero and decarbonization in general, Paris-Aligned Benchmarks (PABs) are becoming more critical to investors everywhere.

We outline some of the differentiators between PABs and the Climate Transition Benchmarks (CTBs) which are being developed by index providers to align with the EU Technical Expert Group guidelines. We then examine in more depth some of the differences between two key PAB indexes: those from MSCI and Solactive.

What are the Key Differences Between CTB and PAB?

Both CTBs and PABs pursue the same objective of decarbonization, however the PAB specification may be considered more ambitious and stringent. For example, companies involved in coal, oil & gas exploration are excluded from PABs but tolerated in CTBs.

With CTBs, the European Commission is aiming to create market-maker climate benchmarks. While index providers have been developing a wide range of indexes aimed at capturing sustainability and climate considerations, their significance in overall portfolio allocation remains limited as they are little used. The Commission is aiming to level the playing field and mainstream climate finance prerequisites via ESG disclosure requirements.

Figure 1 Who Uses Them?

Climate Transition Benchmarks (EU CTB)

The benchmark portfolio is on a decarbonization trajectory.

The main users of EU CTBs are intended to be institutional investors such as pension funds and (re)insurance companies with the objective of protecting a significant share of their assets against various investment risks related to climate change and the transition to a low-carbon economy, labelled as transition risks by the Task Force on Climate-Related Financial Disclosures.

Paris-Aligned Benchmarks (EU PAB)

The benchmark portfolio's greenhouse gas emissions are aligned with the long-term global warming target of the Paris Climate Agreement.

The main users of EU PABs are intended to be institutional investors who wish to display more urgency than CTB investors and want to be at the forefront of the immediate transition towards a +1.5°C scenario.

PAB Climate Indexes in More Detail

Figure 2
The 8 Key Criteria of
PABs

All PABs must meet six defining criteria (and there are also a further two voluntary criteria):

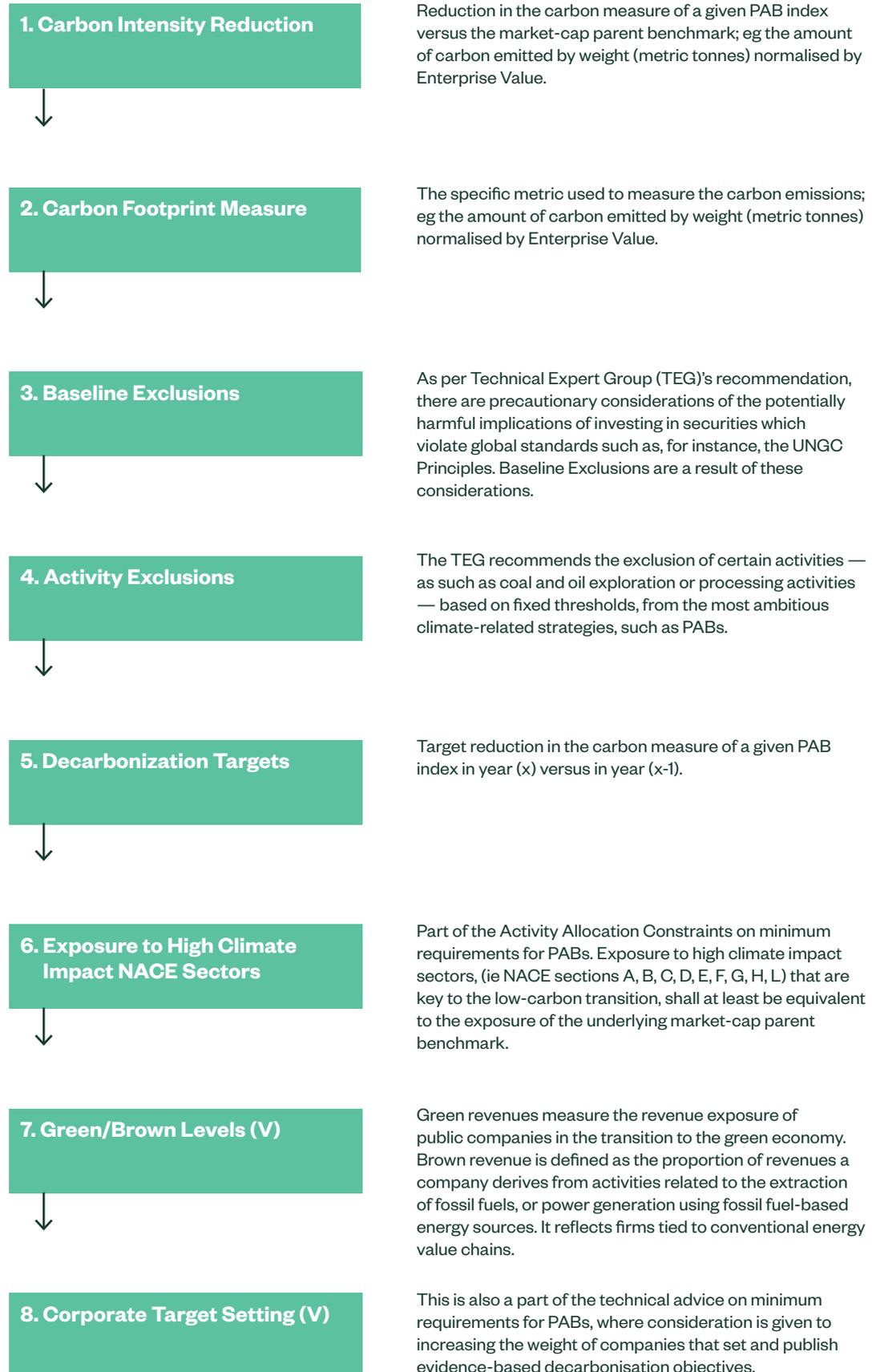


Figure 3

Overview of 4 PAB Climate Indexes versus PAB Requirements

Criteria	PAB Requirement	Indexers' Implementations			
		MSCI ACWI Climate Paris Aligned Index	Solactive ISS ESG Screened Paris Aligned Global Markets Index	S&P PAB Offering	Stoxx PAB Offering
1. Carbon intensity reduction	50%	50%	55%	50% + PAB buffer	60%
2. Carbon measure	Scope 1+2 (+3) normalized by enterprise value (EV)	Scope 1+2+3	Scope 1+2+3	Scope 1+2+3	Scope 1+2+3
3. Baseline Exclusions	Controversial Weapons Societal Norms Violations	Controversial Weapons ESG Controversy Score of 0 Tobacco Environment Controversy Score of 0	Controversial Weapons Est. norms violators Tobacco SDG 12, 13, 14, 15 violators Military Equipment Pornography Gambling Alcohol Cannabis	Controversial Weapons Global Standards Screening Public Controversies Military Weapons Tobacco Small Arms Gambling Alcohol	Controversial Weapons Global Standards Screening Tobacco SDG 13 Violators
4. Activity Exclusions	1% Coal 10% Oil 50% Natural Gas 50% High Lifecycle GHG power generation	1% Coal 10% Oil 10% Natural Gas 50% High Lifecycle GHG Power Generation	1% Coal 10% Oil 10% Natural Gas 50% High lifecycle GHG power generation 0% Oil Sands	1% Coal 10% Oil 50% Natural Gas 50% High lifecycle GHG power generation 5% Thermal Coal power generation 5% Shale Energy 5% Oil Sands	1% Coal 10% Oil 10% Natural Gas 50% High lifecycle GHG power generation 10% Thermal Coal Power Generation
5. Decarbonization	7% per year, adjusted for EV inflation	10% per year, not adjusted for EV inflation	7% per year, not adjusted for EV inflation	7% per year, adjusted for EV inflation	7% per year, adjusted for EV inflation
6. Exposure to High Climate Impact NACE Sectors	At least equal to benchmark	Yes	Yes	Yes	Yes
7. Green/Brown Levels (Voluntary)	4x ratio relative to benchmark	Yes;	Partially; 10% weight increase for companies with green revenues	Yes	Yes
8. Corporate Target Setting (Voluntary)	Weight increase for companies with science-based targets	Yes; 20% weight increase	Yes, 10% weight increase	Yes, group of companies with SBT (Science-Based Targets) increased weight by 20%	Yes
Data Provider		MSCI	ISS ESG	Trucost, Sustainalytics	ISS ESG, Sustainalytics
Methodology Overview		Optimization-based approach seeking to minimize ex-ante tracking error subject to constraints	Optimized to minimize tracking error to parent index	Optimized; unique objective function which somewhat minimizes % deviation from benchmark	Optimized; minimize deviation to "target" weight, which is based on carbon budgets, carbon risk rating and company target setting
Rebalance Frequency		Semi-Annual	Semi-Annual	Semi-Annual	Quarterly

Comparing the MSCI & Solactive PAB Indexes in More Detail

MSCI and Solactive have broadly similar approaches in their PAB offerings: both employ a set of similar ESG exclusions criteria and utilize optimizations to construct their PAB indexes. However, there are differences:

- Solactive targets a 55% reduction in carbon relative to the parent benchmark, whereas for MSCI this is 50%.
- Solactive does not apply any additional parameters while MSCI utilizes additional parameters such as:
 - Fossil fuel reduction 50%
 - Aggregate Climate VaR positive and better than benchmark
 - Low Carbon Transition score increase 10%
 - Extreme Weather Climate VaR reduction 50%
- Solactive uses ISS as their ESG/Climate data provider, while MSCI use their own in-house data.
- From a sector exposure perspective, both Solactive and MSCI overweight “greener” sectors such as Information Technology, Healthcare and Financials, whereas they underweight the carbon-heavy sectors such as Utilities and Energy.

1. Overall Portfolio Characteristics

Figure 4 shows the overall portfolio characteristics for these PAB indices against their corresponding benchmarks. The number of names in the PAB indices drops materially relative to their market-cap benchmarks. This is a by-product of achieving the key climate objectives for PAB indices. The PAB indexes constitute a sub-set of the market-cap benchmark investment universe.

Figure 4
PAB Indices All Country Exposure: Characteristics

June 2021	MSCI ACWI Climate Paris Aligned Index	MSCI ACWI Index	Solactive ISS ESG Screened Paris Aligned Global Markets Index	Solactive GBS Global Markets Large & Mid Cap Index
# of Securities	1,041	2,975	2,603	3,188
Market Capitalization (\$mn)	301,015.90	296,379.80	335,078.9	347,384.4
Active Share	36.15	—	16.66	-
Dividend Yield	1.54	1.68	1.55	1.68
Price/Earnings	23.80	22.20	17.14	18.78
P/E using FY1 Est	20.91	19.03	19.24	18.91
P/E using FY2 Est	19.20	17.66	17.81	17.56
Est 3-5 Yr EPS Growth	18.26	17.06	16.9	16.85
Price/Cash Flow	14.63	13.11	12.57	12.57
Price/Book	3.39	3.04	2.94	2.92
Price/Sales	3.04	2.36	2.23	2.23
ROE	20.13	19.79	20.58	19.80

2. Climate Profile

Figure 5 shows the Climate Profile for MSCI and Solactive PAB indices compared to their corresponding standard benchmarks. Carbon Intensity is reduced by 59% and 35% for MSCI and Solactive PAB indices; respectively.

It is important to note that the carbon footprint metric used for this measurement is S&P Trucost's Direct + First Tier Indirect emissions, which is also SSGA's default measure. MSCI and Solactive use different data providers in their index construction, so, there may be discrepancies in the carbon footprint measurements.

Both achieve similar reduction levels for Brown Revenues and Fossil Fuel Reserves. MSCI gives an improvement of +109% for Green Revenues for MSCI, in contrast to no improvement for Solactive.

Figure 5
PAB Indices World
Exposure: Climate Profile

June 2021	MSCI ACWI	MSCI ACWI Climate Paris Aligned Index	Solactive GBS Developed Markets Large & Mid Cap Index	Solactive ISS ESG Screened Paris Aligned Global Markets Index
R-Factor Score (Z Score)	0.00	0.06	0.02	0.03
R-Factor Improvement (Active Exposure)	—	0.06	—	0.01
Weighted Average Carbon Intensity (Tons CO ₂ e/\$M Revenue)	209.22	84.99	206.00	134.80
Carbon Intensity Reduction (%)	—	-59	—	-35
Fossil Fuel Reserves (Tons of embedded CO ₂ e)	131.36	0.00	136.17	0.00
Fossil Fuel Reduction (%)	—	-100	—	-100
Brown Revenues (%)	1.80	0.10	1.81	0.06
Brown Revenues Reduction (%)	—	-94	—	-97
Green Revenues (%)	3.68	7.69	3.64	3.38
Green Revenues Improvement (%)	—	109	—	-7
Adaptation Score (Z Score)	0.00	-0.01	0.03	0.01
Adaptation Score Improvement (Active Exposure)	—	-0.01	—	-0.02

3. Returns

Figure 6a and 6b show the calendar year returns for MSCI and Solactive indexes compared to their corresponding market cap benchmark; respectively. As can be seen, the differences are marginal.

Figure 6a
PAB Indices
World Exposure
 Back-Tested Calendar
 Year Performance as
 at 30 June 2021

■ MSCI ACWI Climate Paris
 Aligned Index Backtest
 ■ MSCI ACWI Backtest

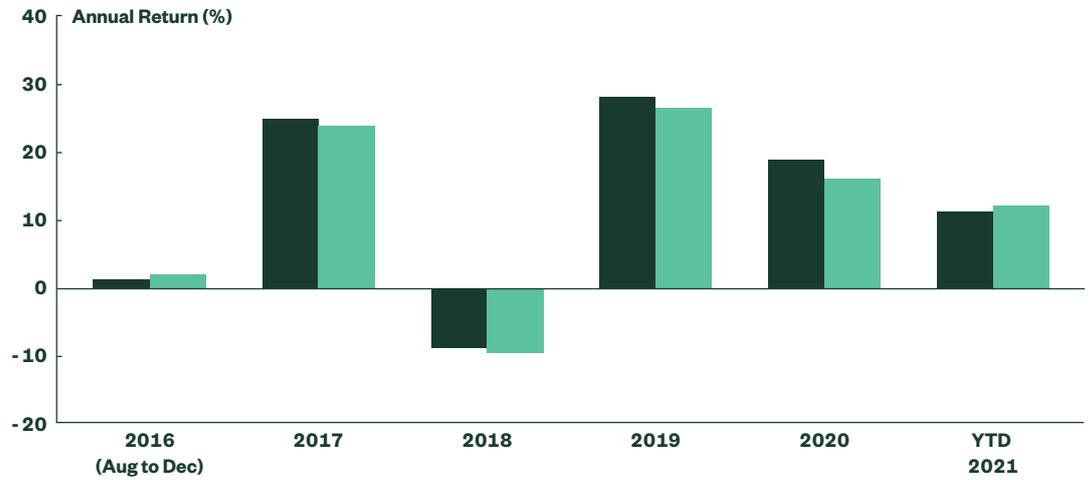
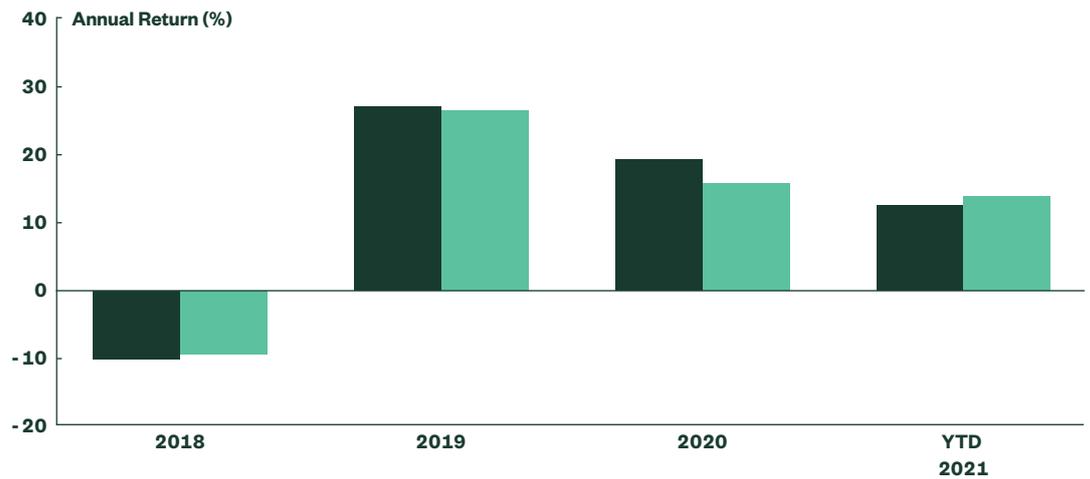


Figure 6b

■ Solactive ISS ESG
 Screened Paris
 Aligned Global Markets
 Index Backtest
 ■ Solactive GBS
 Developed Markets
 Large & Mid Cap
 Index Backtest



Source: MSCI, Solactive. MSCI ACWI and Solactive GBS Developed Markets Large & Mid Cap Index are not PAB indices and only included for comparison reasons. All returns are Net (unless indicated otherwise) and in USD. The MSCI ACWI Climate Paris Aligned Index was launched on Oct 26, 2020. The MSCI ACWI Index was launched on Jan 1, 2001. Past performance is not a reliable indicator of future performance.

4. Ex-Post Tracking Error Comparison

Both MSCI and Solactive PAB indices appear to have a similar ex-post tracking error level of around 100bps. It is particularly important to note that in the context of Climate Indices, the tracking error against the market-cap benchmarks loses its importance. Investors increasingly realise that in order to achieve meaningful improvements in the climate profile (see Figure 5), it is implicit that one must employ a subset of the original market-cap investment universe.

Please see [ESG, Tracking Error and Long-Term Performance](#) for more on this topic.

Figure 7a
PAB Indices
World Exposure
 Back-Tested Ex-Post
 TE as at 30 June 2021

■ MSCI ACWI Climate
 Paris Aligned Index
 Backtest vs MSCI
 ACWI Backtest

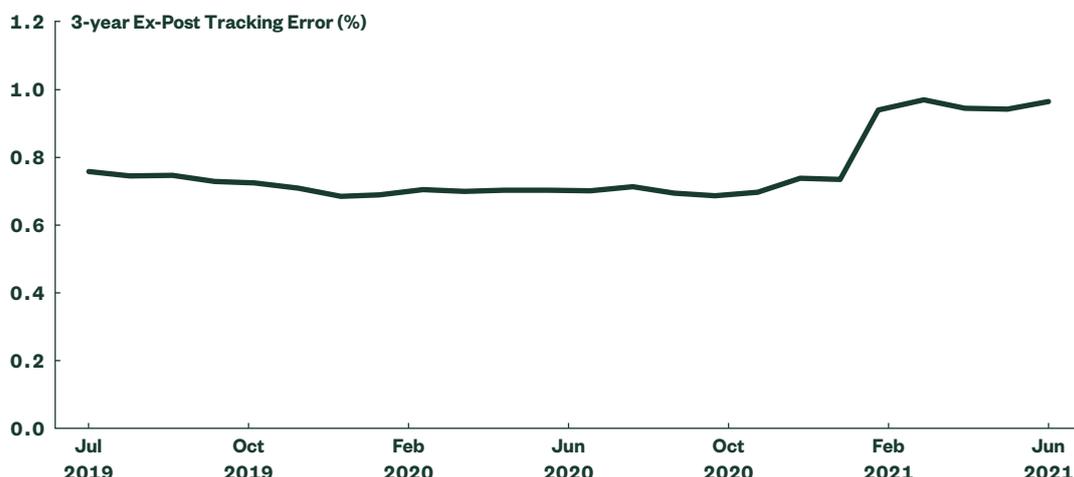


Figure 7b

■ Solactive ISS ESG
 Screened Paris Aligned
 Global Markets Index
 Backtest vs Solactive
 GBS Developed Markets
 Large & Mid Cap
 Index Backtest



Source: MSCI, Solactive. MSCI ACWI and Solactive GBS Developed Markets Large & Mid Cap Index are not PAB indices and only included for comparison reasons. All returns are Net (unless indicated otherwise) and in USD. Ex-Post Tracking error** is calculated since August 2016 for MSCI ACWI Climate Paris Aligned Index and since June 2018 for Solactive ISS ESG Screened Paris Aligned Global Markets Index. Index returns reflect all items of income, gain and loss and the reinvestment of dividends and other income as applicable. The MSCI ACWI Climate Paris Aligned Index was launched on Oct 26, 2020. The MSCI ACWI Index was launched on Jan 1, 2001. Past performance is not a reliable indicator of future performance.

June 2021	Ex-Post Tracking Error** (%)
MSCI ACWI Climate Paris Aligned Index Backtest Versus MSCI ACWI Backtest	0.90
Solactive ISS ESG Screened Paris Aligned Global Markets Index Backtest Versus Solactive GBS Developed Markets Large & Mid Cap Index Backtest	1.07

Conclusion

Paris-Aligned Benchmarks have been developed by multiple index vendors using the European Union's Technical Expert Group regulations as their guideline. The indices all adhere to the minimum standards required by the regulation and, in some instances, go beyond the minimum and deliver improvements in the criteria or incorporate additional voluntary elements.

The resultant indexes differ materially in terms of not only their methodology but also in terms of input data. As such, it is important that investors look deeply at potential allocations to understand the key differences and their impact on portfolio construction and tracking error.

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* Pensions & Investments Research Center, as of December 31, 2020.

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