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The Investment Engineers

Measuring Investors' Sustainability Preferences through UN SDGs & Climate Beta

by Joop Huij, Robeco Indices and Erasmus University
joint work with Dries Laurs, Remco Zwinkels, and Philip Stork

Specifically prepared for 2024 Assembly of Investment Chairs, Auckland

Sustainable Investing Expertise by
ROBECOSAM

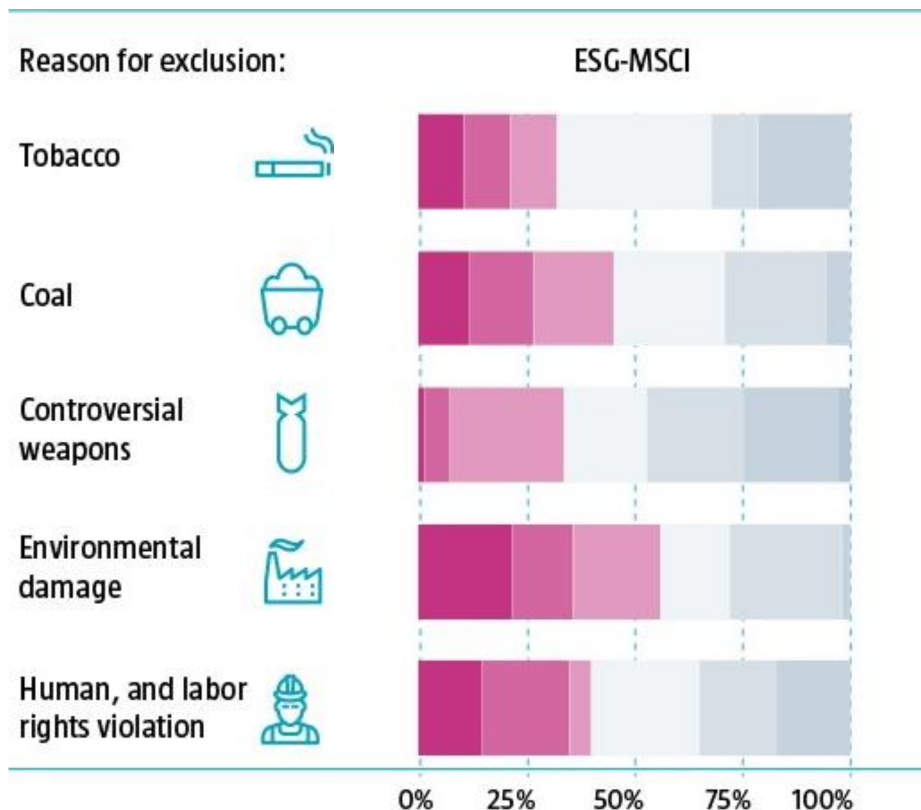
How sustainable do you perceive these companies to be?

This case is used as an example; it is not intended to be and does not constitute an investment recommendation.

How to define sustainability?

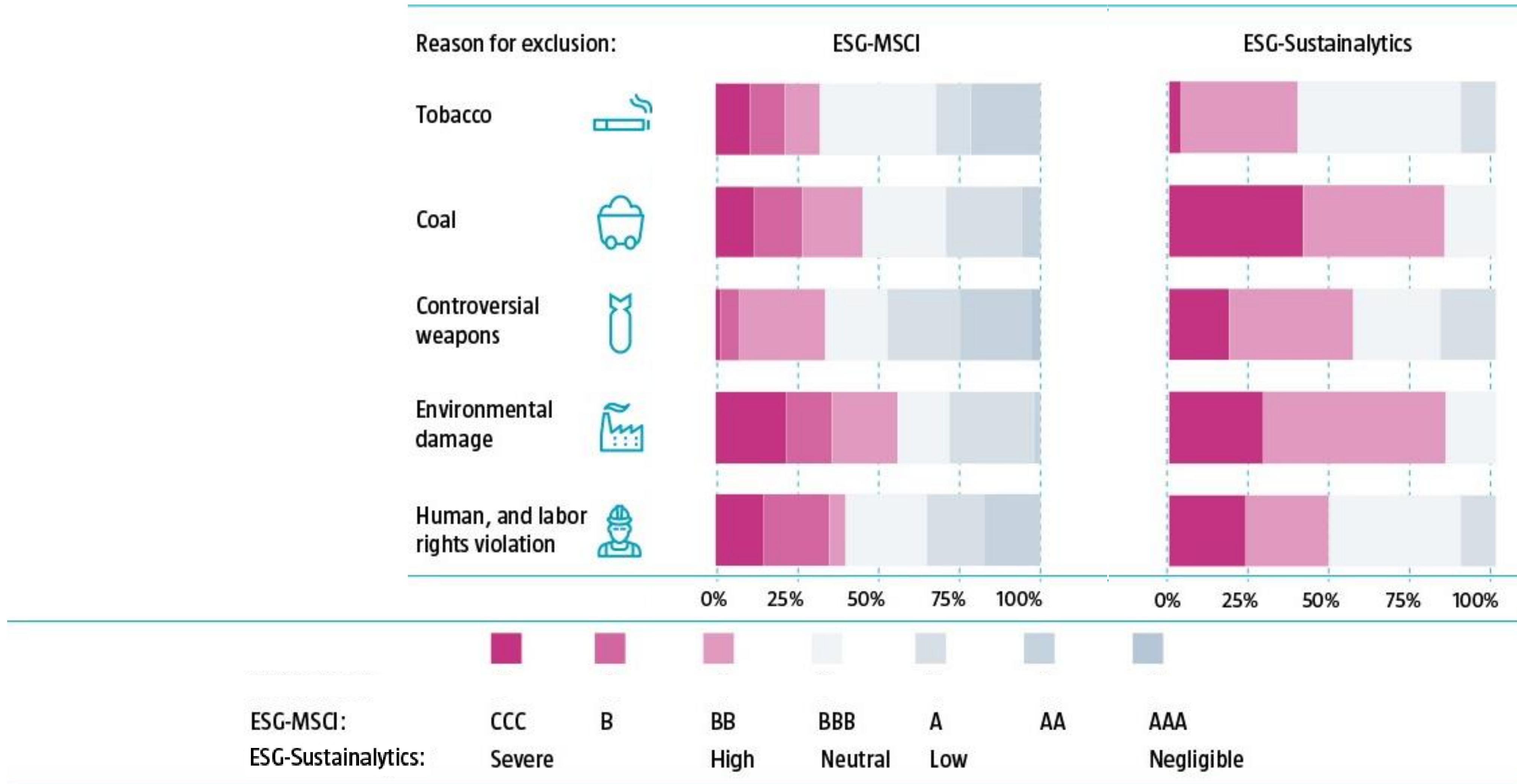
Finding a common language to express sustainability preferences

Do ESG ratings align with the values of large investors?



Source: Huij, J., Lansdorp, S., and Van Zanten, J., February 2022, "Indices insights: Do ESG ratings align with the values of large investors?", Robeco article.
The figure shows that more than half of the tobacco producers that are excluded from the portfolios of large asset owners receive an average ESG rating or are even considered ESG leaders by MSCI. By the same token, more than 50% of these companies are assessed as having neutral or even low ESG risk according to Sustainalytics. By contrast, all of these firms receive the lowest Robeco SDG score of -3 in line with the harmful products they produce. For stocks that are avoided for other reasons that are deemed important by large asset owners, we similarly find that the SDG scores are seemingly more aligned with the negative impact they inflict on society.

Do ESG ratings align with the values of large investors?



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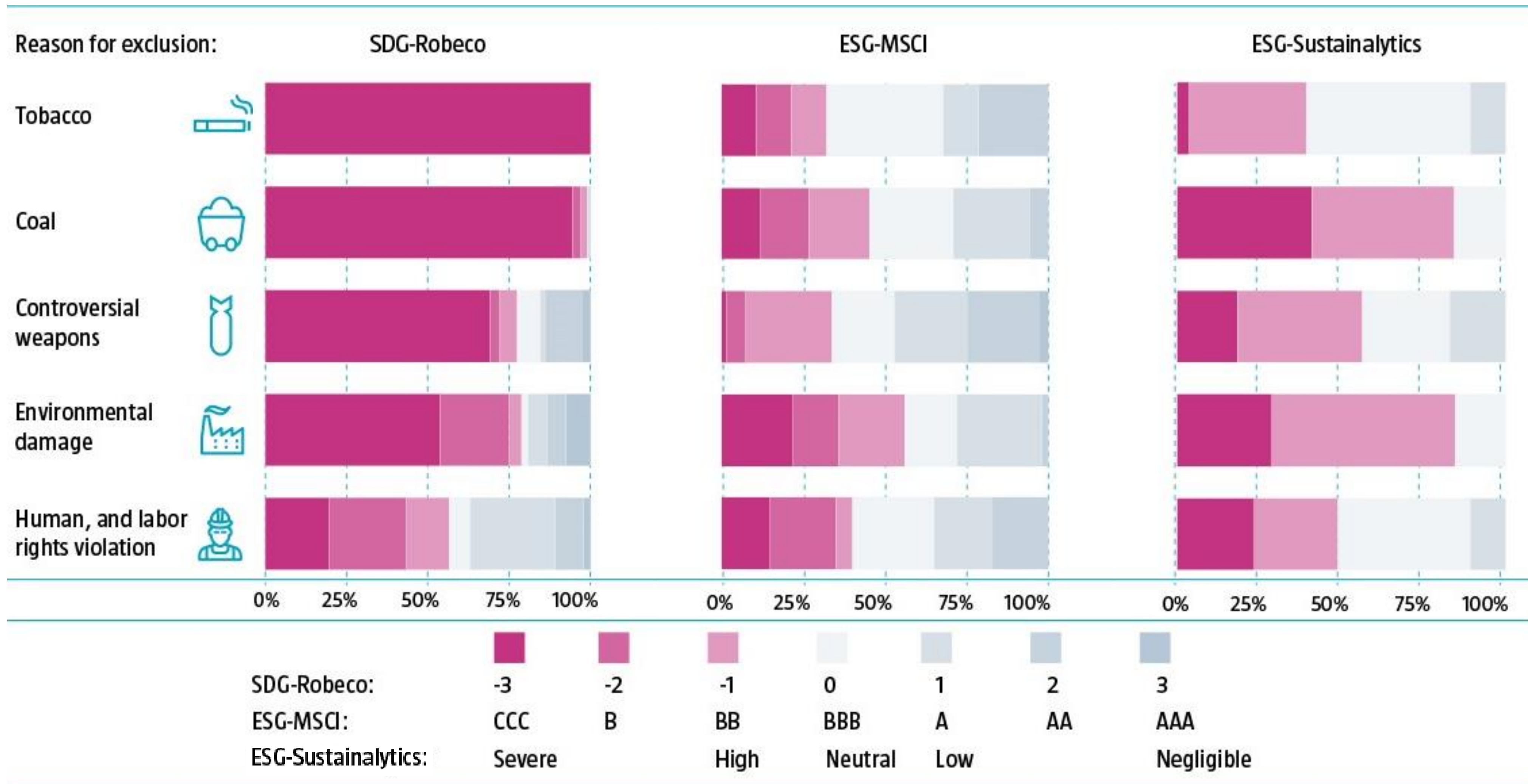
Do ESG ratings align with the values of large investors?

Not really, they align much stronger with the SDG Scores



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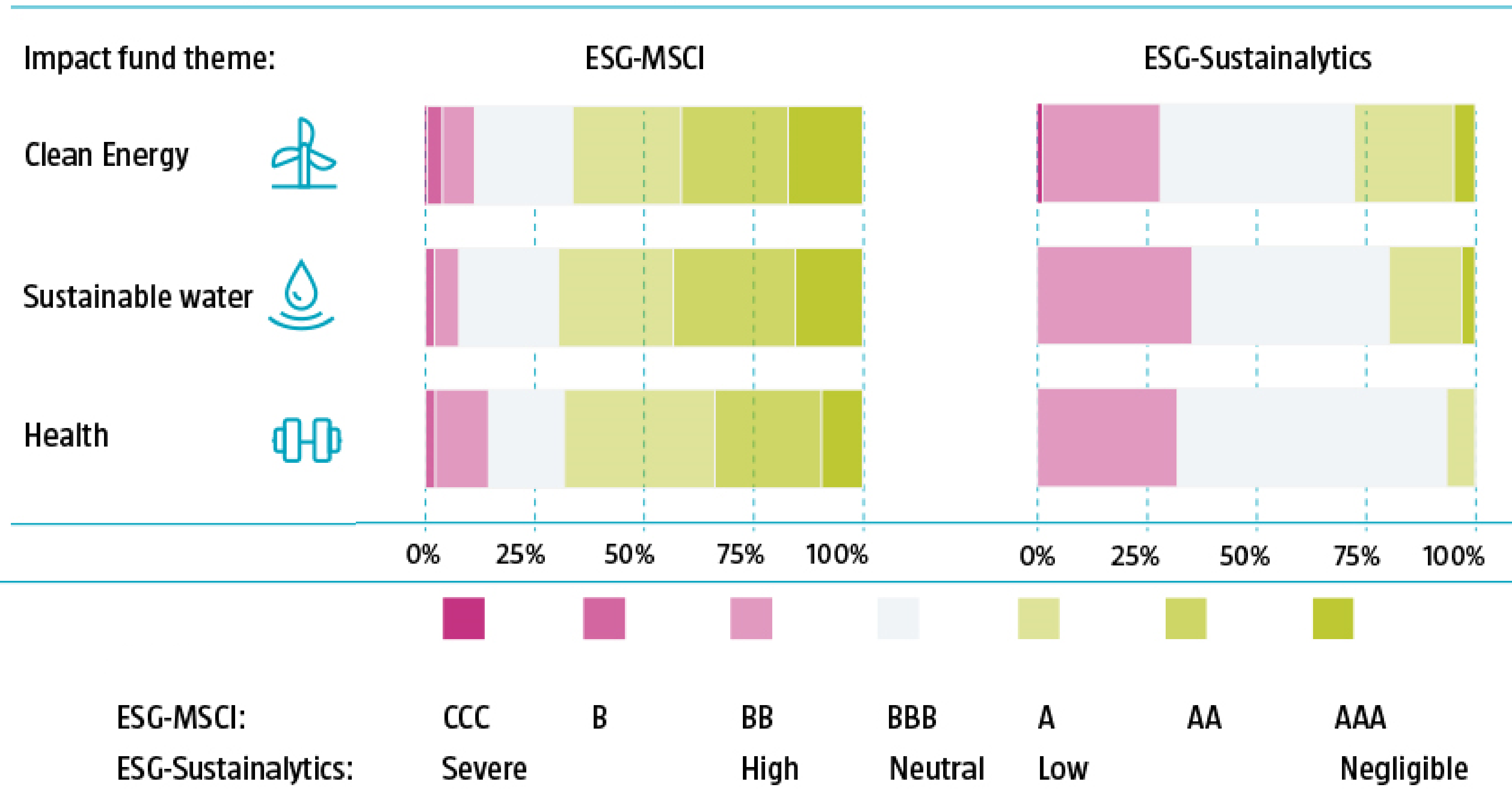
Do ESG ratings align with holdings of popular thematic impact funds?



Source: Huij, J., Lansdorp, S., and Van Zanten, J., March 2022, “Do ESG ratings align with the holdings of popular thematic impact funds?”, Robeco article.
The figure shows that about 25% of the investee companies in our sample of popular third-party thematic impact funds with a focus on clean energy are considered to have high ESG risk, according to Sustainalytics, while an additional 50% of the holdings receive only a neutral ESG risk rating. While the picture improves when using MSCI ESG ratings, most stocks still only have an average ESG score (BB, BBB or A) or are considered to be ESG laggards (CCC and B). By contrast, the majority of the underlying investments (more than 80%) exhibit a positive Robeco SDG score, in line with their positive impact on clean energy. A similar trend is also visible across the other themes when we look at our sample of popular third-party thematic impact funds with a focus on sustainable water and health.

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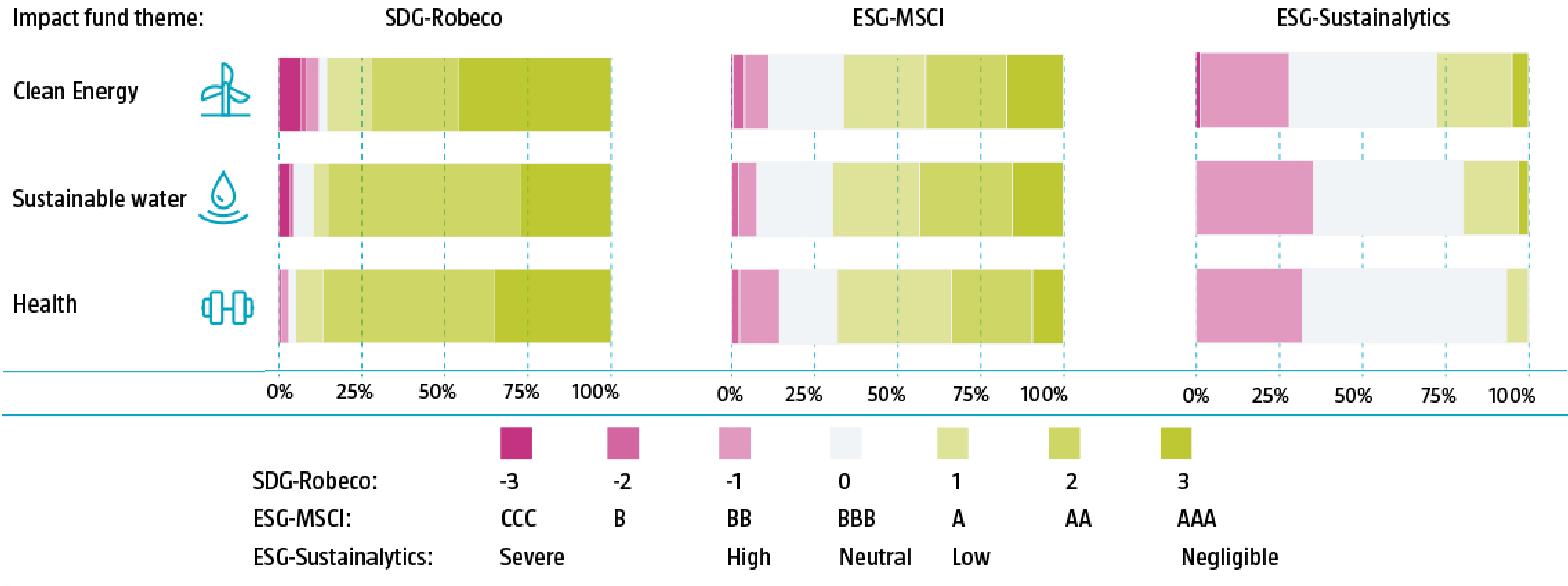

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Do ESG ratings align with the values of large investors?[1]

Indices insights

Do ESG ratings align with the values of large investors?

- There is a weak relationship between firms being on exclusion lists and their ESG ratings
- There is a much stronger alignment with SDG scores
- SDGs scores are better suited than ESG ratings for investors seeking to avoid negative impact

This is the first article of a new series, Indices insights, in which we focus on some of the flaws of ESG ratings. Compared to the UN SDGs, the use of ESG ratings have some shortfalls. Indeed, it's possible for firms that typically appear on asset owners' exclusion lists to have decent ESG ratings.

Many investors either incorporate sustainability considerations in their portfolios or plan to do so in the future. One of the key motivating factors for this adoption is that it enables investors to align with positive impact, i.e., by allocating capital to companies that are sustainable and which benefit society, while avoiding investments in those that inflict significant harm on it. To achieve this, investors often rely on readily available ESG ratings.

It is, however, important to assess whether these ESG scores appropriately measure societal impact. In our analysis, we scrutinized the ESG ratings of companies that are explicitly earmarked by large institutional asset owners as being bad for society. Surprisingly, we found a weak relationship between the firms that are on exclusion lists and their respective ESG ratings. By contrast, there was a much stronger alignment when we used a measure based on the United Nations Sustainable Development Goals (SDGs).

Article
For professional investors
February 2022

Jan Anton van Zanten, PhD
Sustainable Index Solutions Team

Do ESG ratings align with popular thematic impact funds[2]

Indices insights

Do ESG ratings align with popular thematic impact funds?

- Holdings in thematic impact funds don't necessarily have good ESG ratings
- But they exhibit a stronger link with SDG scores
- Thus for investors seeking alignment with positive impact, SDGs scores trump ESG ratings

In the second article of the Indices insights series, we shed more light on the shortcomings of ESG ratings. We find that investee companies in popular thematic impact funds often have low to mediocre ESG ratings. By contrast, we observe that the same firms perform better when assessed in terms of Robeco SDG scores.

In practice, sustainable investing is often associated with mitigating exposure to ESG risks. However, we see that our clients are increasingly shifting their focus towards impact investing. This approach enables them to avoid controversial firms that have a negative impact on the environment and society, while allocating capital to those that offer positive solutions to promoting sustainable economic growth, advancing social inclusion and safeguarding the environment. As ESG ratings are still the dominant metric used in sustainable investing, we assessed if they provide investors suitable guidance to align with positive impact, or whether there is a better alternative.

In the first 'Indices insights' article,[1] we scrutinized the sustainability ratings of companies that are explicitly earmarked by large institutional asset owners as being harmful for society. In our analysis, we found a weak relationship between the firms that are on exclusion lists and

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[1] Huij, J., Lansdorp, S., and Van Zanten, J., February 2022, "Indices

ESG to SDG, 2022 [3]

ESG to SDG: Do Sustainable Investing Ratings Align with the Sustainability Preferences of Investors, Regulators, and Scientists?

42 Pages • Posted: 12 Aug 2022 • Last revised: 8 Nov 2022

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Joop Huij
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Date Written: November 6, 2022

Abstract

Sustainable investors aim to invest in companies that contribute to sustainable development. However, there is disagreement on how best to measure corporate sustainability performance. We assess the construct validity of two types of sustainability ratings: (i) a novel score that measures companies' impacts on the Sustainable Development Goals (SDGs); and (ii) established ESG ratings that assess if companies face environmental, social, and governance risks. We develop three tests that gauge if these sustainability ratings can identify companies that investors, regulators, and scientists view as being (un)sustainable. Our findings show that, unlike ESG ratings, the SDG score: (i) captures investors' revealed sustainability preferences; (ii) aligns with the EU taxonomy regulation; and (iii) supports climate change mitigation. We conclude that, as a sustainability rating, the SDG score has high, and ESG ratings low, construct validity. While concepts like ESG, sustainability, and impact can be used complementarily, we caution against using them interchangeably.

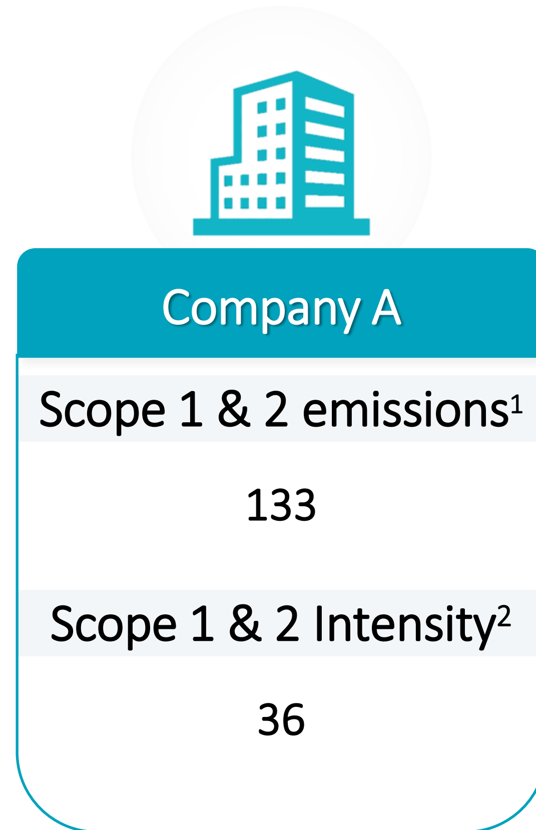
Keywords: Sustainable investing, ESG, impact investing, Sustainable Development Goals (SDGs), sustainable finance, EU Taxonomy

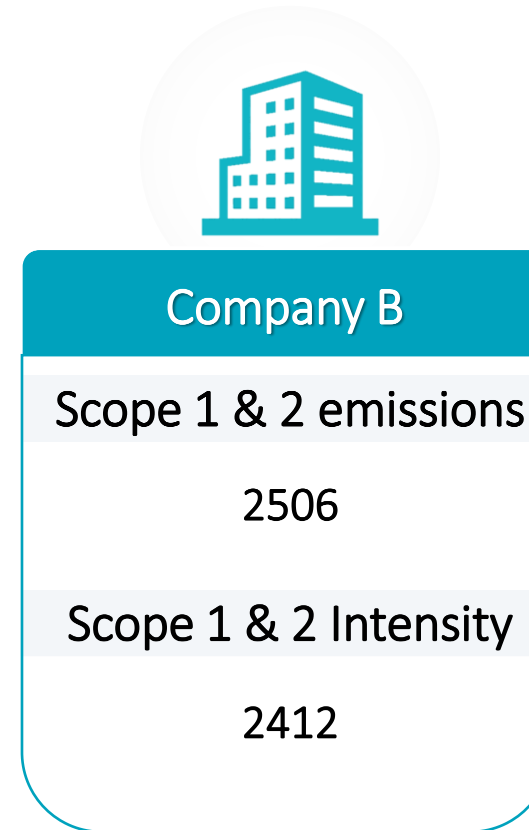
[1] Indices insights: Do ESG ratings align with the values of large investors?
[2] Indices insights: Do ESG ratings align with popular thematic impact funds?
[3] Zanten, J., Huij, J. (2022, November 8). ESG to SDG: Do Sustainable Investing Ratings Align with the Sustainability Preferences of Investors, Regulators, and Scientists?

Are carbon emissions data sufficient in a climate strategy?

Climate beta, a forward-looking climate transition risk measure

Which company is likely to have higher climate transition risk?





[1] Unit of measure is tonnes of CO_2 emissions
[2] Unit of measure is tonnes of CO_2 emissions divided by its annual revenues in millions USD.

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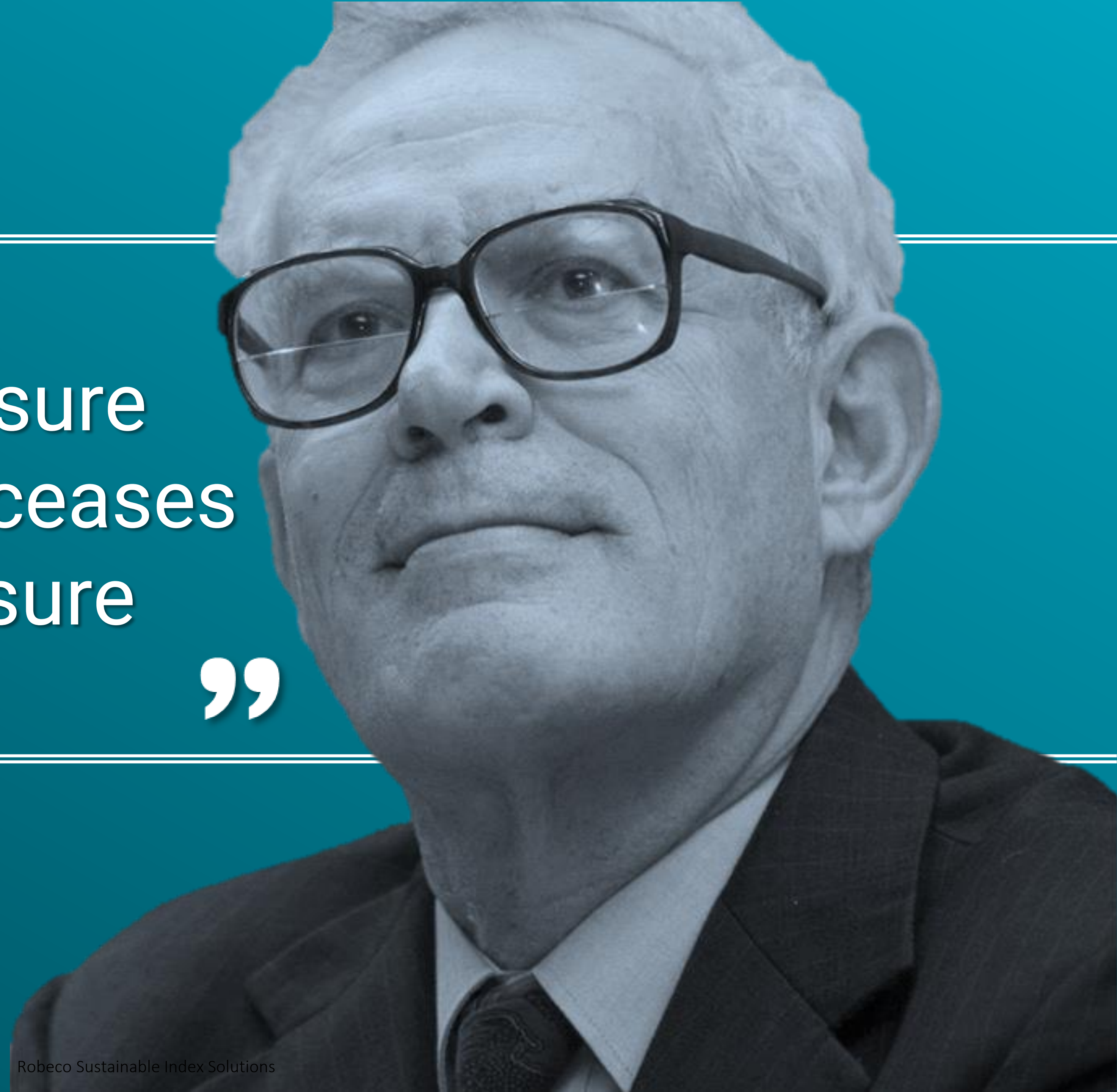
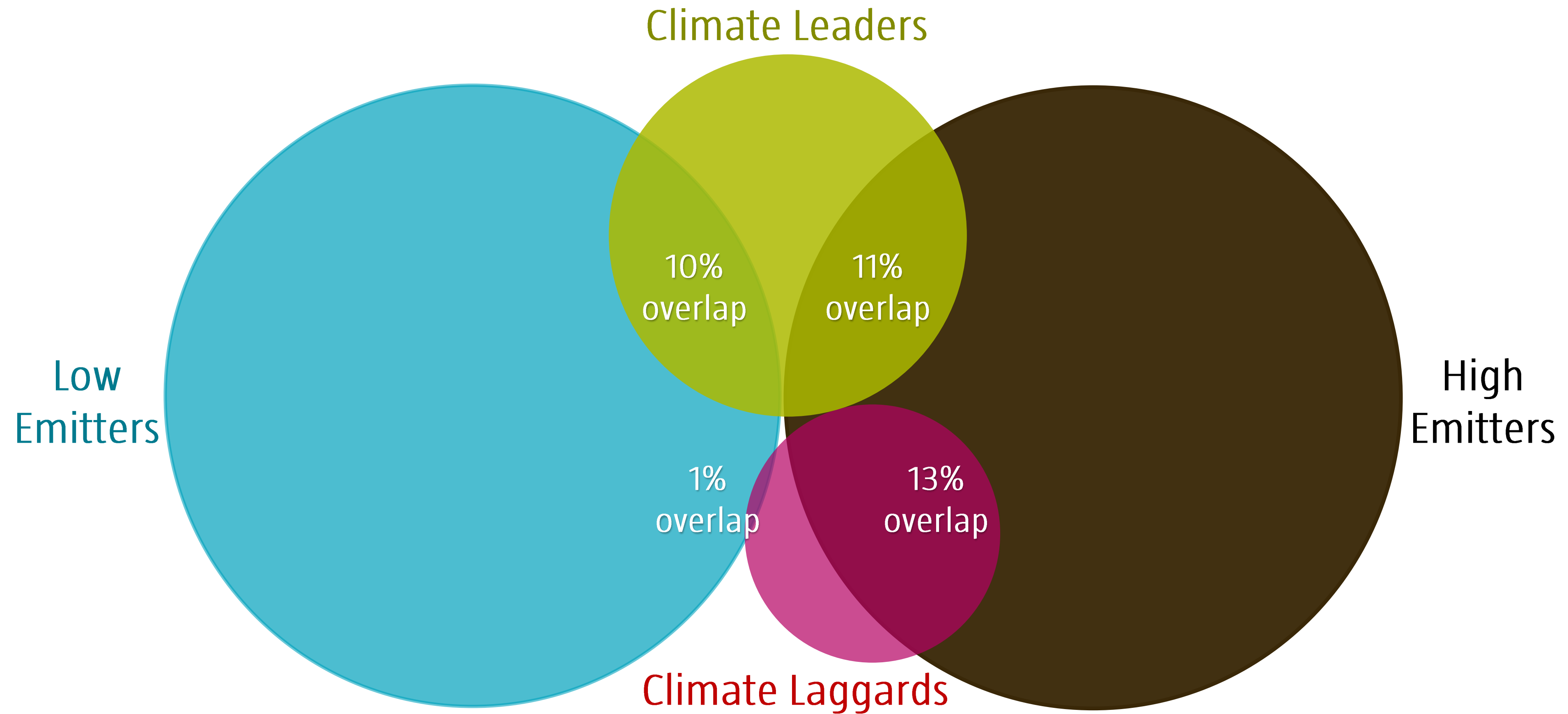
Goodhart's law

"When a good measure becomes a target, it ceases to be a good measure"

- Charles Goodhart, British Economist



To what extent can carbon emissions data identify climate leaders and laggards?

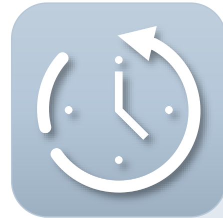


Source: Huij, J., Lansdorp, S., Peppelenbos, L., and Markwat, T., June 2022, "Can carbon emissions data identify leaders and laggards?", Robeco article.
As shown in Figure 1, we found that carbon emissions data is too crude to effectively differentiate between climate leaders and laggards on an issuer level. While 13% of high emitters are considered climate laggards, there is also a considerable share of 11% of high emitters which are viewed as climate leaders. Put differently, a low-carbon approach that relies solely on carbon footprint data for exclusions or divestments is also likely to ignore high carbon-emitting firms which, in fact, contribute positively to the climate-related SDGs and are deemed essential for the transition to a low-carbon economy.

What are disadvantages of traditional carbon emissions data?

No distinction between leaders/laggards

Self-Reported



Time Lag

Dispersion

Backward Looking

Costly

Can we develop a climate transition risk measure that addresses the pitfalls of carbon emissions data?

Climate Beta: A climate transition risk measure above and beyond traditional carbon data

1. **Climate Beta is based on stock prices**, which contain extra information

2. Create a hypothetical **climate risk factor (Polluting-Minus-Clean (PMC) portfolio)**

3. For each stock, **calculate its correlation (beta) to the climate risk factor** (correcting for other factors)

Presented at NBER conference on Climate Risk exposures

Carbon Beta: A Market-Based Measure of Climate Risk*

Joop Huij[†] Dries Laurs[§]

Philip Stork[‡] Remco C.J. Zwinkels[|]

January 2022

We propose a proxy for a climate risk factor, the pollutive-minus-clean (PMC) portfolio, which captures differences in returns to firms that have high versus low corporate emissions. By regressing stock returns on the PMC factor, we obtain estimates of asset-level climate risk exposure:

*Climate beta is in implementation phase. Source: Huij, Joop and Laurs, Dries and Stork, Philip A. and Zwinkels, Remco C.J., Carbon Beta: A Market-Based Measure of Climate Risk (November 6, 2021). Available at SSRN: https://ssrn.com/abstract=3957900.

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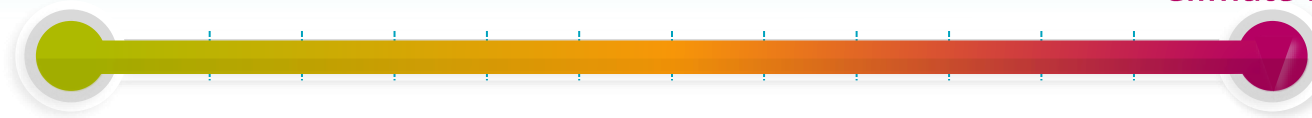
Negatively affected by climate risks:

- High temperatures
- High climate policy uncertainty



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Case study: Company with low emissions data, but high climate beta (transition risk)

Name	Description	Sector (GICS)	Scope 1+2 emissions	Scope 1+2 intensity	Climate beta
Baker Hughes Co	US international industrial service company and one of the world's largest oil field services firms.	Energy	133 Low 2nd decile	36 Low 1st decile	1.34 High 10th decile

Source: Robeco, TruCost. The universe used is the MSCI World Index. This case is used as an example; it is not intended to be and does not constitute an investment recommendation.
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Baker Hughes

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Don't waste your money drilling unnecessary wells. Find a solution that balances your drilling objectives with your economic reality. From a fast, durable bit to a rotary steerable service with advanced reservoir navigation capabilities, we'll make sure you get the drilling answer you need. Drill it, steer it, land it –precisely, safely, smoothly.

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Positively affected by climate opportunities:

- Transition to renewable energy
- Green innovation

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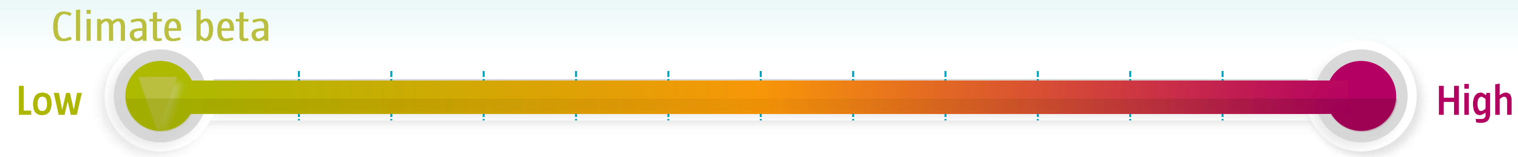

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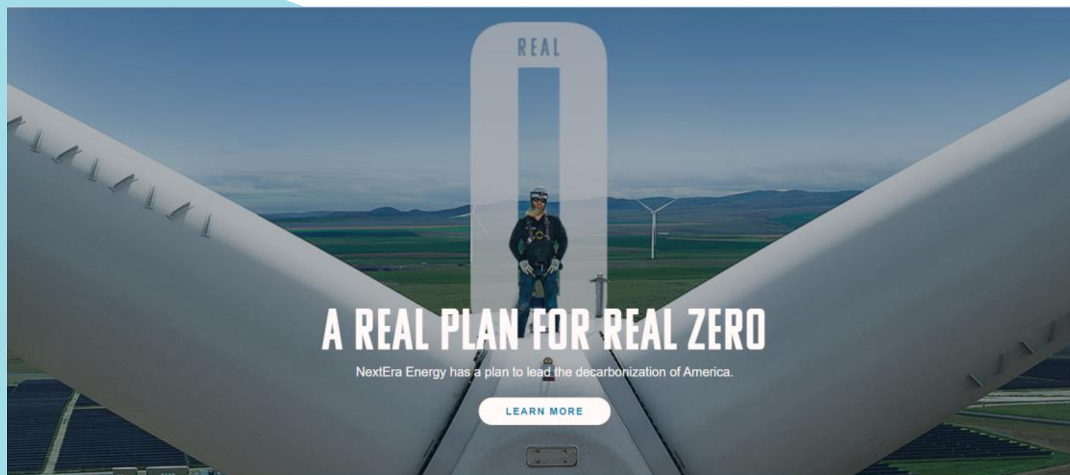
Case study: Company with high emissions data, but low climate beta (transition risk)

Name	Description	Sector (GICS)	Scope 1+2 emissions	Scope 1+2 intensity	Climate beta
Nextera Energy Inc	US energy company, offering business solutions for a path towards decarbonization	Utilities	2506 High 7th decile	2412 High 7th decile	-0.49 Low 1st decile



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NextEra Energy RANK 35

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The world's biggest utility company by market cap has invested some $100 billion in clean energy infrastructure over the past decade, including more than $14 billion in 2020. In Florida, its home state, NextEra has closed its last coal-fired plant; it began work this year on what will be the world's largest solar-powered battery facility, capable of storing enough energy to run Disney World for seven hours.

COURTESY OF NEXTERA ENERGY

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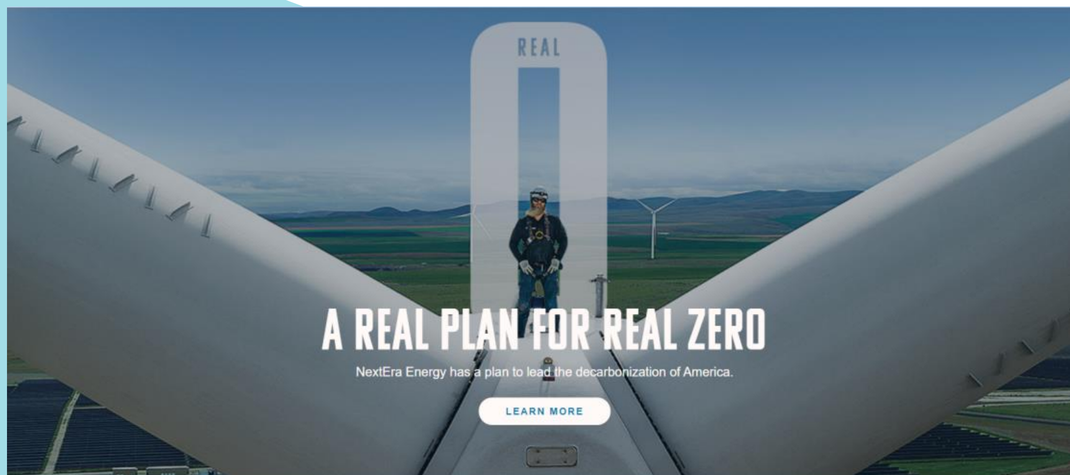

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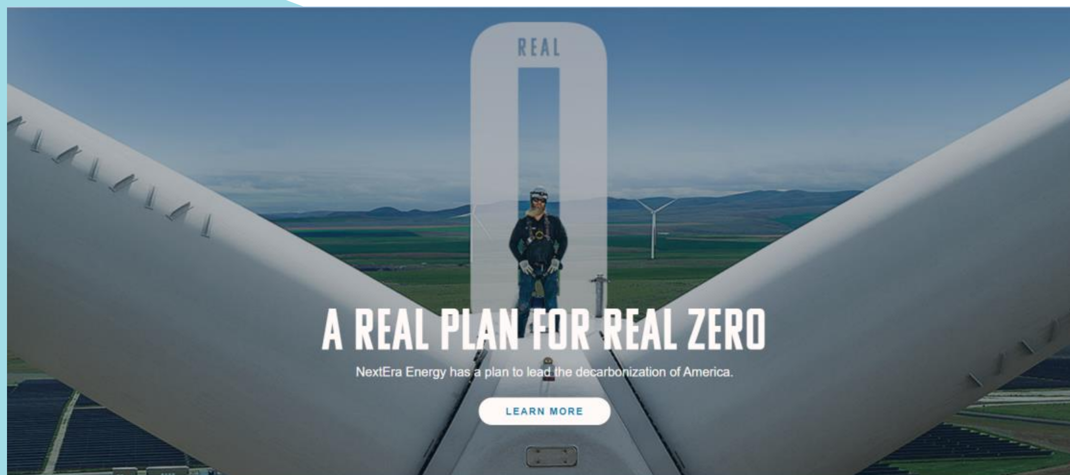

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NextEra Energy RANK 35

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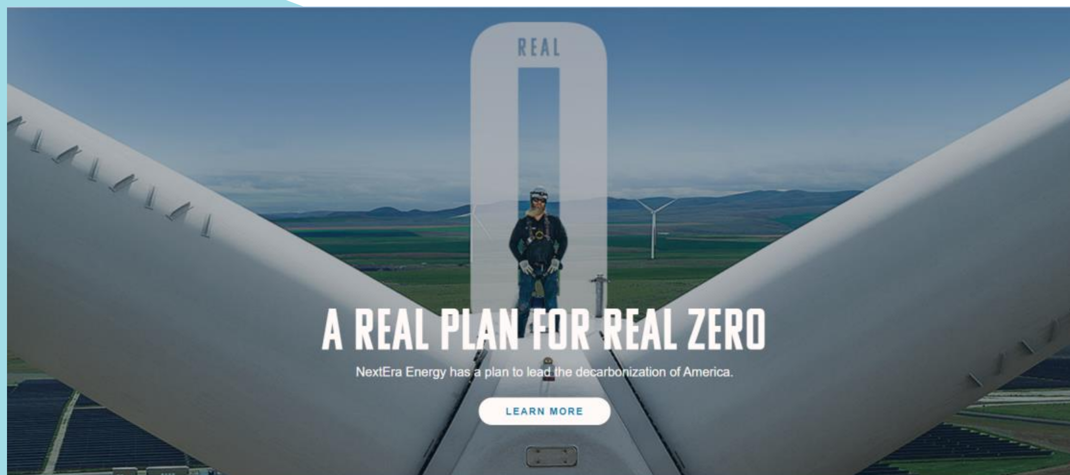
The world's biggest utility company by market cap has invested some $100 billion in clean energy infrastructure over the past decade, including more than $14 billion in 2020. In Florida, its home state, NextEra has closed its last coal-fired plant; it began work this year on what will be the world's largest solar-powered battery facility, capable of storing enough energy to run Disney World for seven hours.

COURTESY OF NEXTERA ENERGY

Source: Robeco, TruCost. The universe used is the MSCI World Index. This case is used as an example; it is not intended to be and does not constitute an investment recommendation.
*Please note that Robeco uses Climate Beta to lower climate transition risk on an index level. Individual company examples are for illustrative purposes only.

Case study: Company with high emissions data, but low climate beta (transition risk)

Name	Description	Sector (GICS)	Scope 1+2 emissions	Scope 1+2 intensity	Climate beta
Nextera Energy Inc	US energy company, offering business solutions for a path towards decarbonization	Utilities	2506 High 7th decile	2412 High 7th decile	-0.49 Low 1st decile



ABOUT NEXTERA ENERGY

As one of America's largest capital investors in infrastructure, with between $50 and $55 billion in new infrastructure investments planned through 2022, we're helping ensure that the next energy to power our dreams will be American energy.

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NEXTERA ENERGY COMPANY PROFILE > CHANGE THE WORLD > #35

Change the World

NextEra Energy RANK 35

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The world's biggest utility company by market cap has invested some $100 billion in clean energy infrastructure over the past decade, including more than $14 billion in 2020. In Florida, its home state, NextEra has closed its last coal-fired plant; it began work this year on what will be the world's largest solar-powered battery facility, capable of storing enough energy to run Disney World for seven hours.

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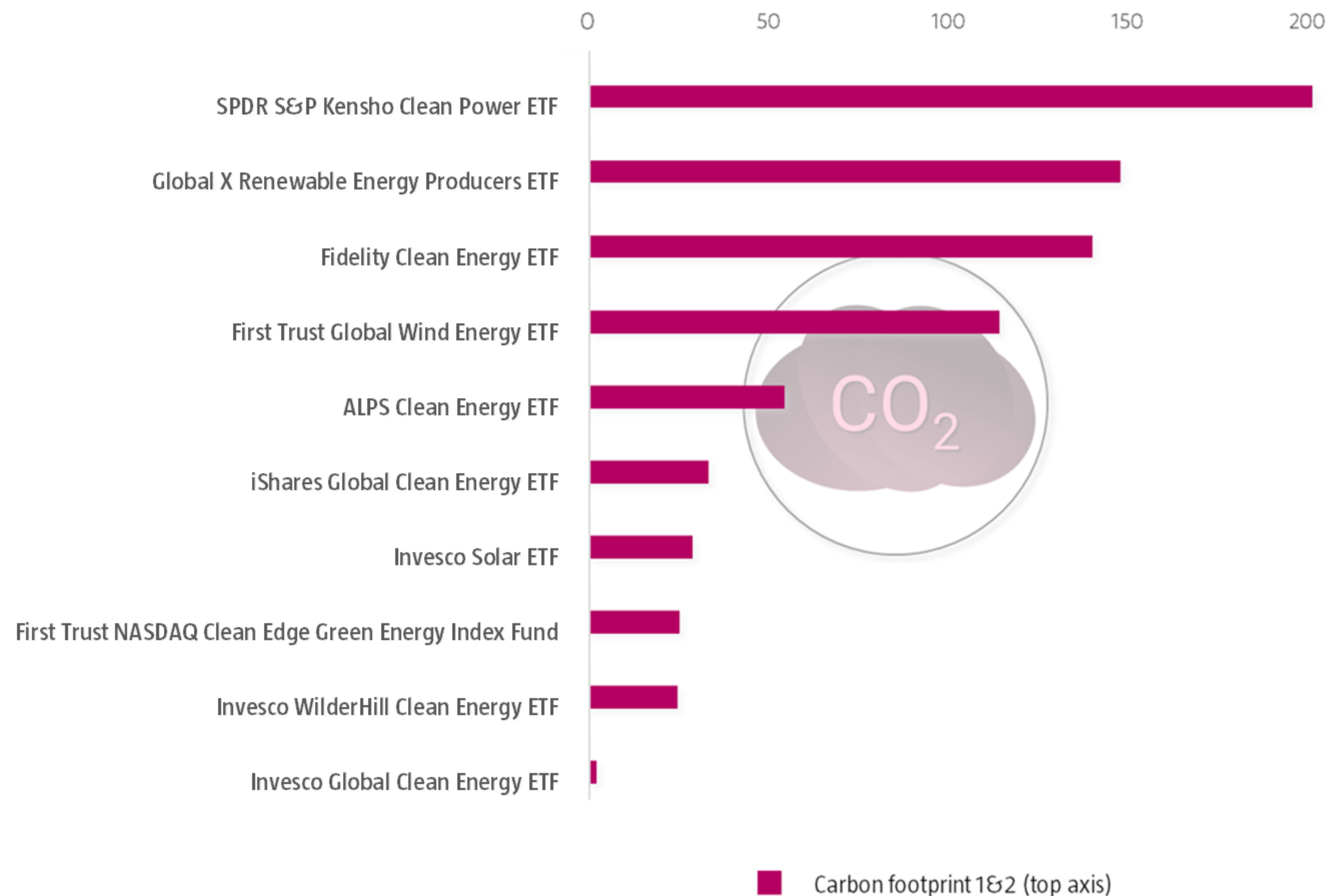
*Please note that Robeco uses Climate Beta to lower climate transition risk on an index level. Individual company examples are for illustrative purposes only.

High carbon footprint does not equal high climate transition risk



Source: Robeco, TruCost, FactSet, Morningstar. The analysis is conducted using data as of 18 May 2022.

High carbon footprint does not equal high climate transition risk

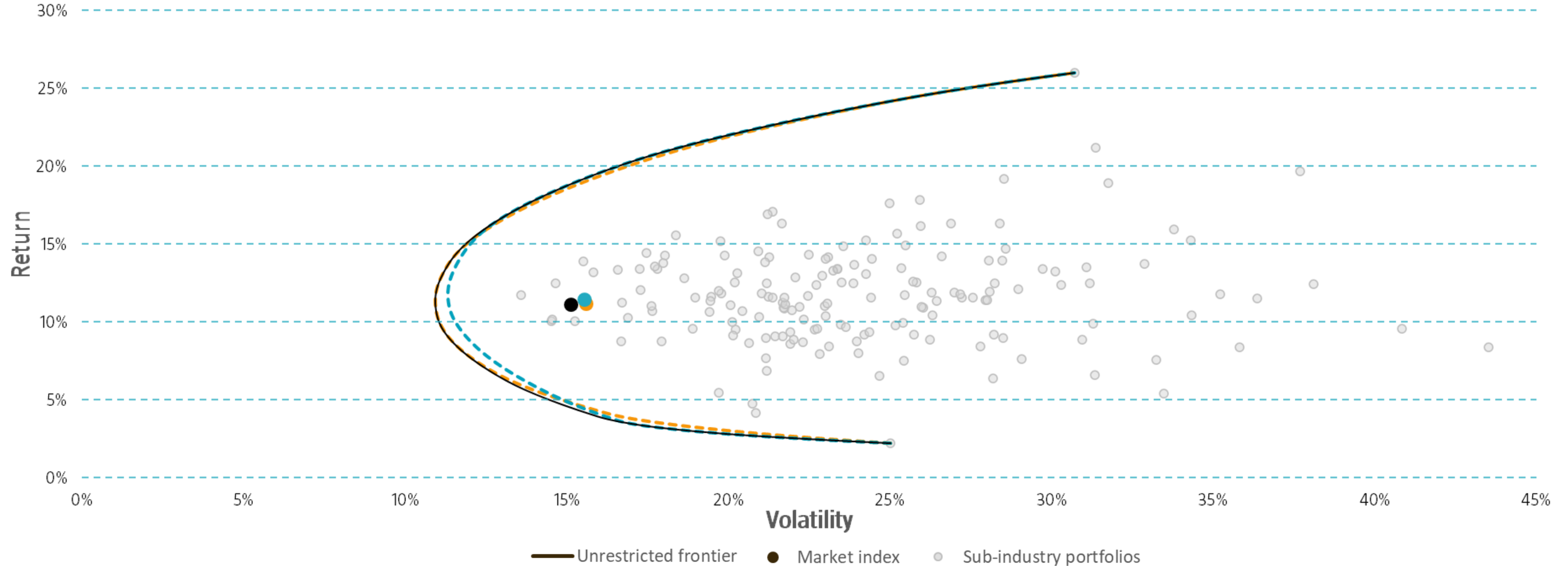
Source: Robeco, TruCost, FactSet, Morningstar. The analysis is conducted using data as of 18 May 2022.

Implications of sustainability integration on risk and return

Passive investors can be more selective with their investments

Can passive investors integrate sustainability without sacrificing returns or diversification?

Return, risk and diversification characteristics are virtually identical for all three passive solutions

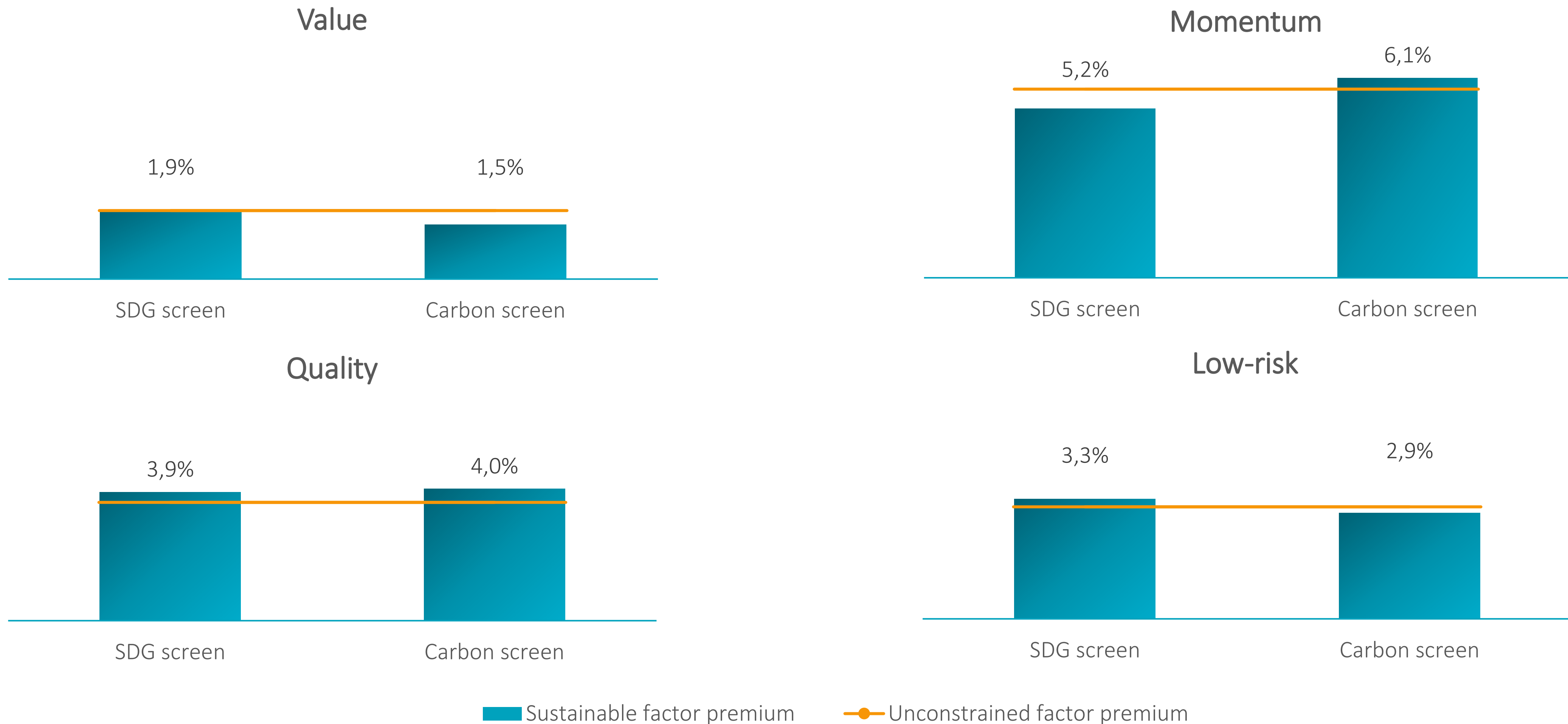


Source: Huij, J., Lansdorp, S., and Van Zanten, J., March 2022, "Can passive investors integrate sustainability without sacrificing returns or diversification?", Robeco article.
As shown in the graph, we found that employing a simple low-carbon (blue dot) or positive SDG investment approach (orange dot) did not lead to lower historical returns compared to investing in the market index (black dot). The risk levels of the three passive solutions were also similar. The 'efficient frontiers' represent the set of optimal portfolios that offered the highest return for a defined level of volatility. Thus, the chart indicates that the potential diversification benefits were virtually identical for a more selective approach that incorporates sustainability (Low-carbon frontier and SDG frontier) and an unrestricted proposition (Unrestricted frontier). Returns shown are annualized over the period 1986 – 2021 in USD for global developed markets.

Does integrating sustainability reduce opportunities for active investors?

Source: Robeco Sustainable Index Solutions – “Does sustainability integration reduce opportunities for active investors?”, Robeco article.
The figure shows that after filtering out stocks with a negative SDG score, the stock characteristics for the two universes are virtually identical. This is reflected by the blue ellipses (sustainable universe) almost completely overlapping the orange ellipses (full universe). Given that each pair of ellipses are rotated in a similar angle, we can conclude that applying the sustainability filter – using the SDG criteria – does not result in concentrated exclusions within specific market segments, for example stocks with low valuations or high quality.

Does sustainability integration affect factor premiums?



Source: Robeco Sustainable Index Solutions. “Are factor premiums affected by applying sustainability screens?”, Robeco article.
The figure shows that filtering out stocks with a negative SDG score or with a high carbon footprint, does not materially affect the long-term performance to the value, momentum, quality and low-risk factor portfolios. For instance, looking at the value factor in the top-left chart of the figure, we find that the average premium for the unconstrained, full universe is 2.0% per annum. For the universe in which stocks with a negative SDG score are excluded, the average value return is almost similar wit 2.1% p.a. The average return to the value factor within the low-carbon universe is slightly lower at 1.5% p.a. Interestingly, the historical quality premium has even been slightly higher for both sustainable universes compared to the quality premium within the full universe. The low-risk factor performance, as shown by the historical Jensen’s alpha, is virtually identical for all three universes. Returns shown are annualized over the period 1986 – 2021 in USD for global developed markets.

Indices Insights:[1]

Indices insights

Can passive investors integrate sustainability without sacrificing returns or diversification?

- Carbon footprint reduction and SDG integration are viable options for passive investors
- Sustainable passive solutions can enjoy similar risk-return characteristics to the market
- These strategies don't have to miss out on the diversification benefits of market cap indices

In the third article of the Indices insights series, we highlight how sustainability integration is an accessible choice for passive investors. We demonstrate that carbon footprint reduction and SDG integration can be implemented without compromising investors' financial objectives.

Article
For professional investors
March 2022

Sustainable Index Solutions Team

One of the main advantages of passive investing is that such strategies track market indices that offer investors broad diversification in their quest to earn an equity premium. That said, sustainability is now a key consideration for many investors, including those taking the passive route.

In the two previous 'Indices insights' articles, we analyzed how different sustainability ratings align with values-based exclusions and thematic impact funds. We concluded that, for investors who are focused on aligning their portfolios

Indices Insights:[2]

Indices insights

Does sustainability integration affect factor premiums?

- Value, Momentum, Quality and Low-risk factor premiums are historically significant
- The premiums are largely unaffected by SDG integration or carbon footprint reduction
- Thus, factor investing and sustainable investing can be combined efficiently

In this 'Indices insights' article, we analyze the impact of sustainability integration on factor premiums. We demonstrate that Value, Momentum, Quality and Low-risk factor premiums remain largely unchanged after SDG integration or carbon footprint reduction.

Article
For professional investors
May 2022

Jan Anton van Zanten, PhD
Sustainable Index Solutions Team

Factor investing entails the exploitation of academically proven factor premiums such as value, momentum, quality and low-risk. To harvest the long-term premiums associated with this style of investing, sufficient exposure to these factors is required. As investors are increasingly taking sustainability considerations into account, a key question is whether integrating sustainability aspects interferes with a portfolio's factor tilts, leading to reduced performance.

In the previous two 'Indices insights' articles,[1] we first analyzed the impact of sustainability integration on a passive, market-cap-weighted investment approach, as well as how this affects the opportunity set for an active investor.

[1] Sustainable Index Solutions Team, March 2022, "Can passive

Indices Insights[3]

Indices insights

Can Value's climate risk be neutralized without reducing returns?

- Generic Value strategies are exposed to climate transition risk
- Integrating climate beta can neutralize Value's climate risk without reducing returns
- Climate-aware passive investors can still earn equity premium while lowering climate transition risk

By integrating climate beta in an investment strategy, a portfolio's sensitivity to climate transition risk can be neutralized – while still earning similar long-term returns. For both Value strategies and passive market-cap weighted strategies, this practical and relevant measure can help investors better manage a portfolio's climate transition risk.

Article
For professional investors
December 2022

Sustainable Index Solutions Team

In our previous 'Indices insights' article,[1] we introduced our climate beta measure, which assesses a stock or portfolio's exposure to the climate risk factor[2] and indicates its sensitivity to climate transition risk.

This measure is useful to investors in several ways. Firstly, it complements existing climate risk indicators, with its forward-looking properties and its departure point in market rather than self-reported data. Secondly, a climate beta is

[1] Huij, J., Lansdorp, S., Peppelenbos, L., and Markwat, T., September 2022, "Does climate beta pick up on climate risk?", Robeco article.
[2] Huij, J., Lansdorp, S., Peppelenbos, L., and Markwat, T., August 2022, "Do investors act on shifts in climate concerns?", Robeco article. The climate risk factor is constructed by going long 'polluting' companies and short 'clean' companies and is tracked by the Robeco Developed Climate Risk LS Factor Index. See

[1] Indices insights: Can passive investors integrate sustainability without sacrificing returns or diversification?
[2] Indices insights: Does sustainability integration affect factor premiums?
[3] Indices Insights: Can Value's climate risk be neutralized without reducing returns?

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