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Rules-based investing

Recent trends, customization and a path to net zero

The customization of index-like portfolios

can help clients meet a range of climate and sustainability goals

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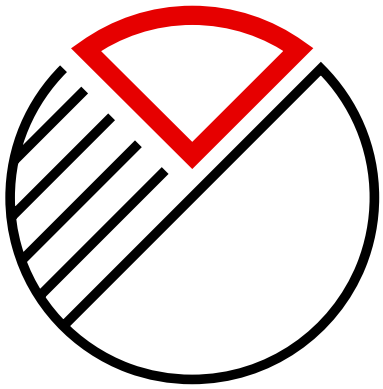
Sustainable investment has gained significant positive pace in recent years. A substantial proportion of investors are looking beyond financial returns of their portfolios to also consider non-financial issues related to environmental, social and governance (ESG) characteristics of the companies they invest in.

ESG investing incorporates evaluation of non-financial material risks and growth opportunities, that could affect the value of companies and their long-term sustainability, into portfolio construction. At the same time, sustainable investing enables investors to assess the potential positive and negative outcomes that may arise from their actions. For example, many investors are concerned that human rights abuses, climate change, biodiversity and inequitable social structures can affect the long-term performance of economies and the well-being of societies. Aligning an investment strategy with UN Sustainable Developments Goals (SDGs) can be one way to implement these concerns into a portfolio.

While many asset owners started their ESG journey by simply reducing the CO_2 footprint[1] of portfolios, given these dispositions it makes sense to think about moving beyond considering only a company's carbon emissions data. A multi-faceted approach that incorporates broader ESG data can allow investment managers to identify companies which may potentially be better positioned to take advantage of the long-term transition to a low carbon global economy. Addressing social and governance issues or focusing on a specific goal, such as aiming to achieve net-zero targets – can give portfolios a broader mandate. Our experience has shown that these portfolios may also benefit from a comprehensive, long-term stewardship program focused on engagement and voting in order to influence companies to better address climate action or social outcomes.

[1] **What is CO_2e?**
In order to compare the potency of various greenhouse gases (GHG), it is common practice to utilize an equivalent mass of CO_2 over a specific time period (100 years), using a conversion factor called the Global Warming Potential: then total GHG emissions are combined and presented in terms of CO_2 equivalent (CO_2e).



Over the two last years there has been significant evolution in climate and, in general, sustainable investing strategies. This trend has been driven in large part by investors' prioritization and customization of ESG concerns, regulatory frameworks (e.g., the Sustainable Finance Disclosure Regulation (SFDR)), and improvements in data quality and availability. We have used a climate-aware methodology, developed in 2016, as a backbone to tackle the continual evolution of sustainable investments, in particular in index and rules-based investment strategies. Exhibit 1 shows key components of rules-based strategies.

In this context, it makes sense to review two key aspects relevant in the space. Firstly, three of the key investment goals clients have expressed interest in recently:

A. Combining sustainable managed strategies with risk premia strategies
B. Climate strategies considering social aspects, in the context of 'just and fair' transitions or the UN Sustainable Development Goals (SDGs)
C. Net-zero strategies

We will also take a deep dive into the practical issues related to the implementation of net-zero strategies.

Exhibit 1: Managing exposures, objectives and tracking error in rules-based strategies

Exposure	Keeping exposure to broad markets aiming to achieve similar risk and return characteristics as the underlying benchmark
Climate-end related objectives	Can include lower exposures to CO_2 and fossil fuel and/or higher exposure to renewable energy or climate technologies than the benchmark, or market capitalization based or risk premia indices such as value, quality, low volatility or multifactor), or even target specific climate goals like net zero
Additional potential ESG objectives	Can include additional ESG objectives managed vs. the benchmark (e.g., broader ESG, SDGs, social metrics, etc.)
Manage tracking error	Manage limits on stock, sector, country and factor levels vs. the benchmark to keep the portfolio close to the benchmark's risk and return characteristics

Source: UBS Asset Management

Combining sustainable managed strategies

with risk premia strategies

In the current market environment, clients are paying increasing attention to harvesting well-known risk premia while aiming to make their portfolio aware of sustainable issues. For example, valuation-based strategies may have benefits in a global inflationary environment, while quality and low volatility strategies tend to be appealing in periods of market stress (i.e., the majority of 2022).

In this context, strategies that combine, for example, a mix of equity factors (e.g., quality, value and low volatility) or single factors, such as low volatility strategies, with sustainable tilts such as lower-carbon tilts, may make sense to some investors.

A number of considerations need to be taken into account when developing and implementing these strategies. Risk premia factors and sustainability factors can show patterns of influencing each other. For instance, governance metrics have been positively correlated with quality factors historically. On the other hand, some value factors and carbon emissions have been negatively correlated in the recent past (i.e., some high carbon emitting companies, such as oil and gas companies, tended to score high in valuation metrics). The case of negative correlation imposes some challenges when implementing these type of strategies, as gaining the exposure to the risk premia factor entails a trade-off relative to the exposure of the sustainable factors. Moreover, correlations between ESG factors and risk premia factors may not be stable over time which further complicates the matter of combining them in an effective manner, especially when managers operate within a relative risk budget.

Many interactions between equity factors and sustainable factors are subject to causal relationships in both directions which makes decomposing portfolio returns into separate contributions from risk premia, industry, country and now sustainability components a relatively complex task. However, there are many routes investors can take in constructing ESG investment portfolios. (Exhibit 2)

Exhibit 2: The pros and cons of the top methods of normalizing carbon levels across a universe of companies

Starting universe	Construction	Comments
Broad market cap index	Optimize simultaneously for maximizing risk-premia and ESG factor exposure while reducing carbon footprint	Some stocks with weak ESG profiles and high carbon emitters might remain if they contribute to the intended factor exposure
Low carbon index	Optimize for maximizing risk-premia and ESG factor exposure	Starting universe is narrower and some stocks that contribute to the intended factor exposure might be omitted
Multi-factor index	Optimize for maximizing ESG exposure and carbon footprint reduction	Starting universe is narrower and some high carbon emitters that would have been removed might have contributed to the intended factor exposure
Broad market cap index	Weight stocks by the intended factor (e.g., value, quality, inverse volatility) and screen out high carbon emitters	Simpler and more transparent approach than 1-3
ESG index	Weight stocks by the intended factor (e.g., value, quality, inverse volatility)	Simpler and more transparent approach than 1-3
Multi-factor index	Screen out high carbon emitters and stocks with weak ESG scores	Simpler and more transparent approach than 1-3

Source: UBS Asset Management

In the current market environment, clients are paying increasing attention to harvesting well-known risk premia while aiming to make their portfolio aware of sustainable issues.

B

Climate strategies considering social aspects,

or SDGs in the context of 'just and fair' transitions

In another trend over the last two years, we have seen increased attention to mitigating social effects of the transition to a low carbon economy. For some emerging markets it might be hard to transition their economies without increasing the related social costs (e.g., the closing of coal-related businesses can lead to unemployment, which can aggravate poverty, and can also jeopardize equitable distribution of electricity). We believe avoiding unintended and knock-on social effects as societies move to lower-carbon economies is essential to achieve a 'just and fair' transition.[2]

In this context, climate tilts combined with social and governance tilts that measure the "S" and "G" components with metrics around progress toward the UN Sustainable Development Goals (SDGs) can gear a climate portfolio with a broader sustainable objectives

SDG aligned investment is likely to be a trend in the coming years. However, from our experience there are challenges in the current data, for example: 1) sector biases in a number of SDGs due to the nature of each SDG; 2) low coverage of some SDGs in general and different methodologies for measuring specific SDG alignment can make it difficult to identify companies' exposure to SDGs.

For example, from a strict revenue exposure perspective SDG 3 (Good Health and Well-Being) tends to be dominated mostly by health care companies. Likewise, with SDG 5 (Gender Equality), identifying companies with products promoting specifically gender equality is not a straightforward exercise. However, this area of data methodologies is experiencing increasing attention and innovation by the financial community.

We believe SDG aligned investment will be a trend in the coming years.

[2] A transition to a low carbon economy that shares the financial and social burden in a fair way.

C

Decarbonization

and net-zero

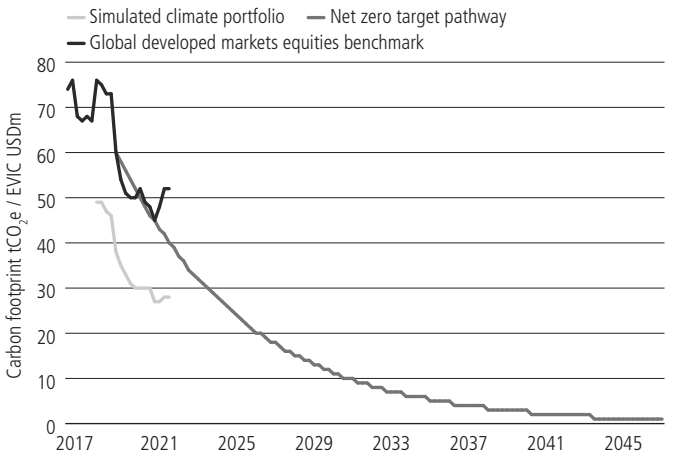
The third trend we are seeing is the evolution of climate/carbon strategies to portfolios specifically aligned to the Paris Agreement, with the goal of achieving clients' net-zero ambitions. These strategies have moved from measuring the relative carbon reductions with respect to a broad market benchmark to measuring the carbon reduction with respect to the portfolio over time. A portfolio can be measured against a base year to assess how it is decarbonized over time in line with an implied net-zero trajectory. For example, by incorporating a 1.5° climate scenario target estimated by a framework such as the IPCC (UN Intergovernmental Panel on Climate Change).

Exhibit 3 shows an example of an indicative net-zero implementation in a rules-based strategy. The graph shows a global equity portfolio carbon profile relative to its equity benchmark and implied net-zero constraint.

As a result of these global investment ambitions, industry initiatives such as the Institutional Investors Group on Climate Change (IIGCC) and the Net Zero Asset Owners Alliance (NZAOA) and Net Zero Asset Managers Initiative (NZAM) have set up ambitious frameworks and guidelines on implementing a net-zero strategy in portfolios.

Under various industry frameworks, net-zero alignment is typically measured against three types of objectives:
1) decarbonization, 2) climate solutions, and 3) engagement.

Exhibit 3: A net zero aligned rules-based indexed strategy can reduce a portfolio's carbon footprint



Source: UBS Asset Management. As of 31 October 2022. Simulated data for illustrative purposes only.

Some strategies have moved from measuring the relative carbon reductions to measuring the carbon reduction with respect to the portfolio over time.

UBS articulated its own 2050 net-zero ambition in 2021, and as an asset manager we set ourselves the target of having 20% of our assets under management invested in a manner that is aligned with net zero by 2030; we have also seen these goals echoed by clients seeking to integrate net-zero objectives into their own business and investment strategies as well.

In the next sections, we aim to provide a practical overview related to the implementation of rules-based net-zero strategies. We consider key aspects of data and related measurements; followed by some practical challenges that an investor should consider.

Decarbonization: how to measure it?

Exhibit 4: Overview of key carbon emissions data and related metrics is important for net-zero strategies

Type of Emissions	Type of Normalization	Type of Aggregated Metric
Carbon Scope 1 & 2 Carbon Scope 1, 2 and 3 (upstream and downstream) Carbon Scope 1, 2 and selected 3 (upstream and downstream)	Absolute: No normalization	Ownership metric or carbon footprint
	Intensity: normalized emissions using: Revenue Enterprise value including cash (EVIC) Market Capitalization	WACI (weighted average carbon intensity)

Source: UBS Asset Management

Measuring portfolio-level decarbonization is one of the key pillars of a net-zero investment strategy. The table above (Exhibit 4) provides an overview of the key carbon data and measuring components to be considered in a net-zero strategy. The first identifies the scopes to be considered. (See separate box for scope definitions.)

The second column considers normalization approaches to make comparable the levels of carbon emissions between companies (i.e., accounts for the effect of company's size). Most low carbon strategies have focused on carbon scope 1 and 2 metrics.

Recently, due to better data availability, scope 3 has been gradually added. More specifically, note that in certain industries in which scope 3 data is material and/or the levels of disclosure and data accuracy are acceptable (such as energy companies and automobiles), asset owners are encouraged to include these emissions to form a 'selected scope 3'.

Finally in the third column, aggregated portfolio-level metrics can be referred to as the weighted average carbon intensity (WACI) or carbon footprint. Both approaches are equivalent once we normalize for portfolio size. The WACI approach uses

portfolio weights to get an 'average' carbon intensity metric of a given portfolio. The ownership approach uses the ratio between the value invested and the overall size of a company as measured by EVIC or market capitalization (i.e., the level of investor's ownership of the company). This allows an investor to estimate the carbon emissions they 'own' given the value invested in the company.

It is worth highlighting issues around carbon data quality.

Data quality is still a challenge when measuring net-zero trajectories

Scope 1 and 2	Scope 3
Data quality and disclosure levels have improved in the last years, but still only less than 40% of the data is disclosed by companies in carbon scope 1 and 2 for global equity markets.	If Scope 3 is added, which can account for around 90% of emissions for some companies, the level of reporting is below 25% of the emissions and the quality is not ideal.

Source: UBS Asset Management

The two most popular normalization methods in use today are 1) scaling by revenue in USD millions, which has its origins in the Taskforce for Climate-Related Financial Disclosure and 2) scaling by enterprise value including cash (EVIC) in USD millions which has its origins in the EU regulation for climate benchmarks. We have seen a general trend towards the use of EVIC-based measures since the launch of EU Climate Benchmarks, however both measures are largely equivalent.

In the table below (Exhibit 5) we highlight some of the key similarities, pros and cons, between the two leading scaling methodologies.

Exhibit 5: The pros and cons of the top methods of normalizing carbon levels across a universe of companies

Pros	tCO_2e / revenue USDM	tCO_2e / EVIC USDM
Measures energy efficiency of companies	●	●
Applicable across companies and across asset classes	●	●
Simple and intuitive calculation	●	●
Consistent with standards for portfolio sustainability reporting	●	●
Captures devaluation of stranded assets (e.g., fossil fuel reserves)		●
Moves portfolio slightly towards market cap[3]		●

Cons	tCO_2e / revenue USDM	tCO_2e / EVIC USDM
Does not capture measure of investor responsibility	●	●
Denominator is not comparable across sectors	●	●
Slight value bias[4]	●	

Source: UBS Asset Management

The next step involves setting the net-zero targets. We believe that it is beneficial for asset managers to work with clients to set appropriate net-zero targets (see Exhibit 6).

Exhibit 6: Overview of typical target setting for net-zero strategies

Base year	Trajectory or decarbonization rates
Register carbon intensity of the universe (e.g., benchmark) as of, for instance, 31 December 2019	Construct a decarbonization curve that starts at base year and ends in 2050, with an annual rate of decay which points towards a 50% reduction by 2030 and a 90%-plus reduction by 2050[5]

Source: UBS Asset Management

Most global net-zero scenarios (top-down) consider carbon emissions trajectories at the absolute level (e.g., IPCC 1.5° climate scenario). Thus, if a WACI approach is considered in a portfolio's net-zero construction, an adjustment step needs to be considered in order to remove the effect of fluctuations in, for example, the EVIC metrics due to market fluctuations. This 'inflation' adjustment allows for readjusting, if necessary, the carbon emissions trajectory initially set for a net-zero strategy.

Next, we consider three study cases related to some challenges worth considering when implementing net-zero strategies.

Governments and societies are setting ambitious targets and increasing investments in climate technologies in order to transition to a low carbon economy.

Case study 1: Tracking error considerations in a world that does not decarbonize

Governments and societies are setting ambitious targets and increasing investments in climate technologies in order to transition to a low carbon economy. Recent data suggests that meeting the desired carbon reductions on a global basis is challenging. This scenario has implications in the design, target setting and possible future scenarios for net-zero strategies:

A key question is whether ambitious climate scenarios are achievable.

The IPCC estimates that the remaining budget for a 50% chance of avoiding more than 1.5° warming is around 500bn tonnes up to the end of the century: this is taking into account pre-pandemic levels. This is the difference between 2,890bn tonnes of CO2, around 2,390bn of which had already been emitted between the period of 1850-2019 (i.e., around 82%).

At today's rates around 10 years would be enough to burn through the entire 1.5° budget (that is, 40bn tonnes per year) allotted until 2100. In this context, net-zero portfolios have to consider this contingency. Of course, we should have an optimistic view, but further bold coordinated government action and climate technology breakthroughs, such as negative emissions or geoengineering would be necessary to change this scenario.

Source: The Economist, "Briefing: An inconvenient truth. The world is going to miss the totemic 1.5°C climate target" Nov 5th 2022

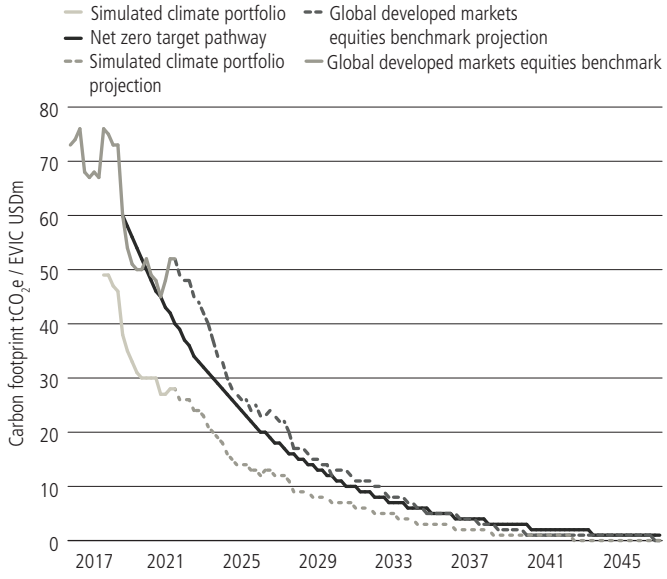
A tale of two (contrasting) scenarios. The first is an optimistic scenario in which the global economy successfully decarbonizes operations in line with the targets laid out by the Intergovernmental Panel on Climate Change (IPCC). In this scenario we expect to manage our clients' net-zero portfolios with limited

tracking error to their respective market capitalization benchmarks; we would require only limited deviations at the company level to achieve the required decarbonization because in this case the global economy is already decarbonizing. We would expect to see a lower priority on managing physical risks that arise from severe weather events and increased sensitivity to transition risks and opportunities as the world begins to adopt new climate technologies at scale and shift away from high-emitting products and services (see Exhibit 7).

take higher and higher levels of tracking error vs the respective market capitalization benchmarks. Alternatively, a review and, possibly, a re-statement of carbon reduction targets would be required.

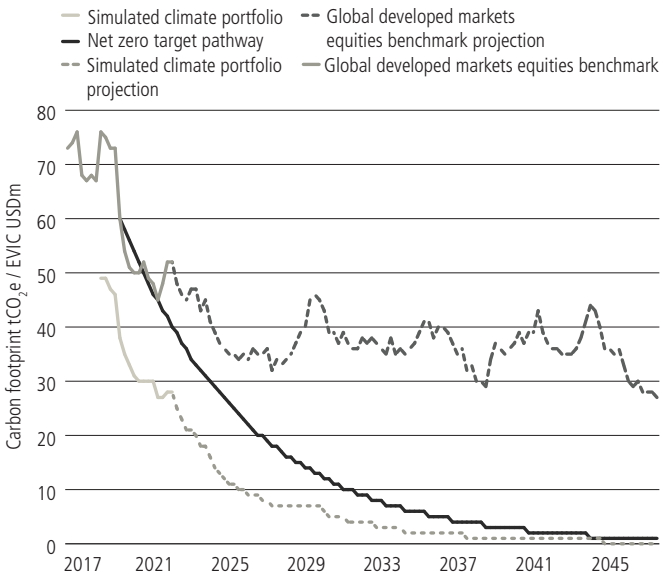
In this scenario, we would also expect to prioritize higher physical risks and potential new opportunities for technologies associated with protecting against the severe effects of weather events. There might also be a decreased sensitivity to transition risks and opportunities as the world fails to adopt new climate technologies at scale (see Exhibit 8).

Exhibit 7: Global developed markets equities (optimistic scenario)



Source: UBS Asset Management. As of 31 October 2022. Simulated data for illustrative purposes only.

Exhibit 8: Global developed market equities (pessimistic scenario)



Source: UBS Asset Management. As of 31 October 2022. Simulated data for illustrative purposes only.

The second scenario is a more pessimistic scenario in which there is limited progress made to decarbonize the global economy, and where greenhouse gases (GHC) continue to be emitted to the atmosphere at a similar rate to today. In this scenario in order to maintain the required level of carbon reduction within net-zero portfolios, it would be necessary to

At today's rates around 10 years would be enough to burn through the entire 1.5° budget (that is, 40bn tonnes per year) allotted until 2100.

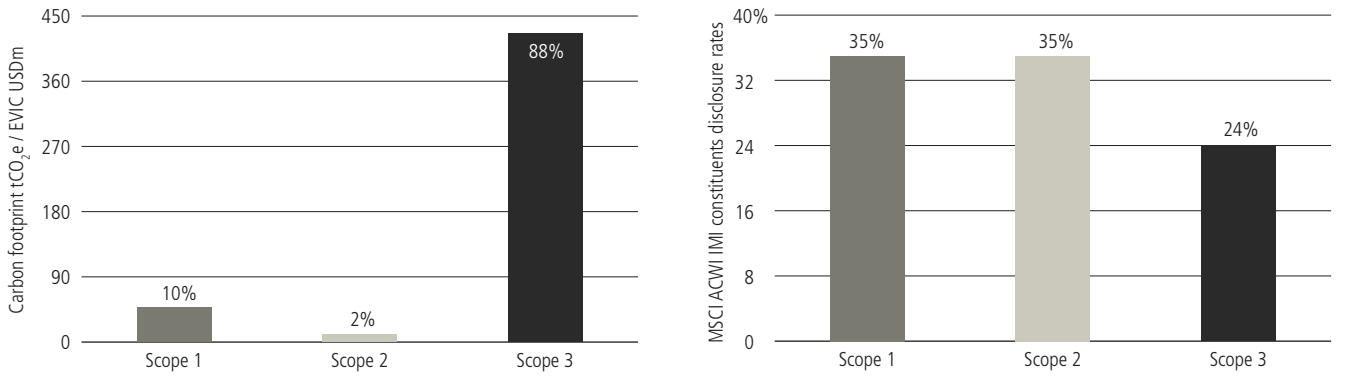
Case study 2: Careful consideration of scope 3 data

Previously we mentioned that carbon data quality and disclosures impose challenges when implementing net-zero strategies, or low carbon strategies in general. In this section we elaborate further on the discussion of Scope 3.

Under the Green House Gas Protocol (GHG Protocol), scope 3 emissions data are intended to encompass all company emissions that are not directly emitted by the company (scope 1) and not related to purchased energy (scope 2). Scope 3 emissions relate to upstream and downstream company emissions, for example car fleet emissions in automobile industry.

Given the breadth of the definition of scope 3 emissions, the GHG Protocol facilitates its categorization into logical sub-groups such as "Category 11: Use of Sold Products" and "Category 4: Upstream Transportation and Distribution." In spite of these categorizations and continued corporate engagement to improve the quality of company scope 3 disclosures, we are yet to see a high-level of consistency in company reporting standards. In the exhibit below (Exhibit 9) we present a visualization of these two key challenges: 1) scope 3 emissions outweigh scope 1 and scope 2 emissions by over 7 times for a typical global developed markets equity benchmark; 2) scope 3 emissions data generally has a higher proportion of estimated data compared to scope 1 and scope 2.

Exhibit 9: The emission footprints and quality of reported data are starkly different for scopes 1 & 2 vs. 3

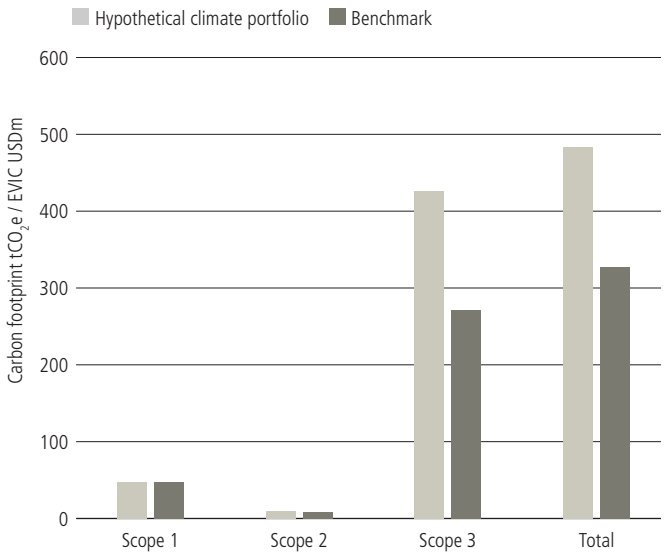


Source: UBS Asset Management, MSCI ESG Research LLC, as of 31 October 2022. "Reported Emission Footprints: The Challenge is Real", MSCI Research Insight, 9 Mar 2022, https://www.msci.com/www/blog-posts/reported-emission-footprints/03060866159

Taking these two factors into consideration, we continue to take a vigilant approach when integrating scope 3 data in our investment models to control how much impact this data can have on our portfolio positioning. We typically aim to reduce the emissions footprint of our portfolios based on scope 1 emissions and scope 2 emissions as we observe a higher level of data quality and consistency. (We also believe scope 1 and scope 2 emissions are more likely to be emissions that our portfolio companies can influence and control, whereas some scope 3 emissions may be harder to abate).

Consider a counterexample of a hypothetical low carbon / climate portfolio which appears to lean heavily on scope 3 emissions to achieve its target level of emissions reduction (e.g., sum Carbon Intensity 1,2, 3 (both up/down-stream)). While such a strategy may achieve the required reduction, it may not reduce its scope 1 footprint; indeed, in this case, the scope 1 emissions footprint of the strategy actually increases slightly while the scope 3 footprint reduces in-line with the target.

Emissions profile of a portfolio can differ from expectations if scopes data is not handled well



Source: UBS Asset Management. As of 31 October 2022. Simulated data for illustrative purposes only.

Case Study 3: Additional comments on Climate solutions and engagement

The last case study aims to discuss two points that a net-zero investment strategy should consider. The first relates to the effect at portfolio level of de-carbonization strategies. In general, low carbon and net-zero strategies tend to penalize high emitting companies and sectors in order to gradually achieve their decarbonization targets. Our experience suggests that combining negative tilts (e.g., low carbon emissions targets) with positive tilts (e.g., transition or climate technology metrics at company), can allow investors to re-direct their portfolio's exposures in a similar fashion, at least conceptually, to the energy transformation required by the low carbon economy.

Considering positive tilts in net-zero strategies	Two possible routes
In general, net-zero strategies tend to systematically reduce exposures to high emitting companies. But it is not clear where these reduced exposures get reallocated within a net-zero portfolio.	Company level transition risk metrics. A forward-looking glide-path score allows a portfolio's carbon reduction effort (top-down) to be supported by a mechanism that increases the exposure to companies that are also on decarbonization trajectories (bottom-up)
	Companies supporting the transition to the low carbon economy with solutions in climate technologies. At their core, most climate scenarios rely on technology breakthroughs such as renewable energy, electric vehicles, hydrogen power and carbon capture and storage and power.

Furthermore, net-zero frameworks promote asset owners and asset managers to tackle climate change on by setting minimum levels of investment in segments of the global economy that are critical to the transition. For example, companies in energy and or materials sectors have the expertise on managing the complexity, size, and logistics of carbon sequestration projects. These may be sectors that require high levels of engagement and voting to support changes to their operating models.

At the start of the journey towards net zero, all these angles should be considered simultaneously in order to achieve the decarbonization objectives. It is generally good practice to allow for a sufficient risk buffer now such that net-zero ambitions can continue to be met long into the future.

In general, low carbon and net-zero strategies tend to penalize high emitting companies and sectors in order to gradually achieve their decarbonization targets.

Adding it all up

Rules-based strategies can provide flexible, customizable sustainable portfolio solutions that can help meet the range of climate and sustainability solutions that investors are increasingly seeking.

Rules-based investing can offer multi-faceted, climate-aware approaches that incorporate broader ESG considerations, such governance and social factors, including, for example, human rights abuses, biodiversity, diversity and equity in employment and inequitable social structures.

Or customization of a climate-aware strategy can allow investment managers to incorporate risk premia that focus on factors such as growth or value, or quality.

Rules-based approaches could also take core climate portfolios a step further, incorporating rules that seek to help asset owners to achieve their net-zero ambitions through their investments.

There are three emerging investment strategies that we see investors showing increasing interest in lately:

- Combining sustainable managed strategies with risk premia strategies
- Climate strategies considering social and governance issues, in the context of "just and fair" transitions or the UN Sustainable Development Goals
- Net-zero strategies, which seek to align portfolios to the goals of the Paris Agreement

At UBS Asset Management educating our clients and other investors about key trends in sustainable investing is important to us. We hope this paper has given you some insight into the ins and outs of rules-based and net-zero aligned investing.

Scope 1 is the direct emissions coming from an economic activity. For instance, an electricity company burning coal to generate power. The emissions that are released from the smokestack of the plant is carbon dioxide that comes directly from the combustion of fossil fuels. In household terms, it is the emissions coming out of the exhaust pipe of a car is mostly carbon dioxide generated by burning a petrol-based product to produce the energy to run it.

Scope 2 comes from the energy that we purchase. The GHG emissions associated with the electricity bought by a company to run their business, e.g., the electricity used for heating, lighting, etc., and that electricity comes from a power station that emits CO_2 as it creates that electricity, the same way that we all purchase electricity for our household.

Scope 3 is a much broader idea of the origin of GHG emissions that contribute to economic activity. There are 15 different categories of scope 3: approximately half of them are associated with the suppliers, who sell goods to businesses. As suppliers conduct their business activities they generate GHG emissions, and scope 3 allows for the suppliers' emissions to be allotted to the end users or purchasers of those goods: known as embedded GHG emissions. The other roughly half are related to what happens when you use or process the product. For instance, a mining company that is mining iron ore, their suppliers will be supplying trucks and tires and there will be GHG emissions associated with that. Bringing it all together, consider that the mining company will also be burning fuel via diesel trucks, creating scope 1 emissions; it will be buying electricity to run its plant, which is scope 2 emissions; and the iron ore will go to a steel company, which process the ore, generating its own scope 1 emissions. But scope three for the mining company includes all of the emissions associated with the upstream supply chain and all of the downstream emissions associated with the use of its products.

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