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The Investment Engineers

Sustainable Investing Expertise by ROBECOSAM

Robeco buy-and-maintain solutions

Why climate risk considerations are especially relevant for buy-and-maintain portfolios

- Climate risk considerations are especially relevant for buy and maintain
- A forward-looking approach addresses carbon impact for longer tenors
- Optimization reduces transaction costs towards a decarbonized portfolio

Introduction

Countries, companies and investors are making firm commitments to reach net zero, in line with the Paris Agreement. According to Robeco's 2021 Global Climate Survey, climate change will be central to the investment strategy of almost 90% of global investors in the next two years, while more than half of investors will commit to aligning their investments with the ambition to realize a net zero economy by 2050. These commitments emanate not only from a conviction about the urgency of collective action to mitigate climate change. They are driven, too, by investors' realization that their assets are exposed to climate risk, and that it is critical that these risks are managed through prudent portfolio construction and bond selection.

These concerns around climate risk mitigation are especially critical for buy-and-maintain investors, who are limited in their ability to trade assets and who have a long-term

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investment horizon. When constructing these bespoke portfolios, Robeco assesses climate risks across sectors and companies, and optimally allocates bonds across the maturity spectrum, thereby preserving sector diversification through time and positioning companies with lower carbon footprint on longer tenors.

We outline our forward-looking process and discuss our approach to allocating carbon footprint across maturity buckets. A detailed case study for a buy-and-maintain cashflow-matching portfolio illustrates the practical steps and considerations when, for example, limiting turnover while transitioning towards a lower carbon footprint portfolio.

The relevance of climate change for investors with long-term holdings

Climate-related considerations typically play out over a much longer horizon than many other factors that influence the performance of financial instruments. For an investor with a long-term horizon and limited tolerance for portfolio turnover – such as the typical buy-and-maintain investor – it is essential to manage climate risk and invest with a clear perspective on the current and future carbon exposure of portfolio assets. In fact, not considering climate-related risks, such as those linked to possible reputational issues, business models becoming obsolete or hefty fines for failure to comply with environmental regulation, could have serious consequences for investment performance.

Furthermore, one could argue that a climate-focused perspective is even more important for buy-and-maintain investors than for more active investors, for whom shorter-term considerations typically are more relevant. Active investors also have far greater flexibility to sell assets whose emissions exposure is deemed too high, or whose emissions remain too high over a certain horizon.

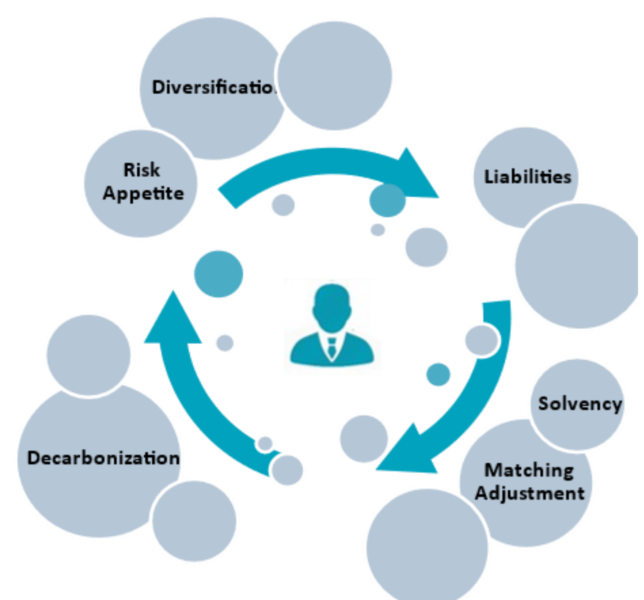
‘The fact that optimal buy-and-maintain portfolios are bespoke by nature, creates some clear advantages for investing with climate in mind’

Given the constraint in the buy-and-maintain approach on portfolio turnover, we argue that long-term climate considerations must already be incorporated at the inception of a portfolio construction process. In practice, since buy-and-maintain portfolios typically consist of large proportions of long-dated bonds that are held until maturity, bond issuers’ carbon footprint and climate risk have to be estimated up to three decades into the future and the manager has to have a view on the likely decarbonization trajectory during this extensive holding period.

While these considerations are highly complex compared with those for a typical, actively managed portfolio, the fact that optimal buy-and-maintain portfolios are bespoke by nature creates some clear advantages for investing with climate in mind.

On the one hand, incorporating investors’ climate-related goals means adding to the complexity of having to manage multiple constraints on the investable universe as well as integrating specific requirements. For insurers and pension funds, these requirements can include cashflow matching, regulatory capital optimization, portfolio de-risking and/or targeting a specific yield.

Figure 1 | Managing multiple constraints on the investable universe in buy-and-maintain investing



Source: Robeco

On the other hand, the construction of a buy-and-maintain portfolio is by nature a process of providing a customized solution for a client. Incorporating client-specific climate targets is therefore a natural part of this process.

Moreover, a buy-and-maintain approach implicitly targets long-term return and is not constrained by performance measurement against a benchmark. It is therefore easier to avoid large-cap high-carbon-emitters and/or sectors at the beginning of the portfolio construction process than it is for a benchmark-focused approach. This therefore aids portfolio construction both from an investment and impact perspective.

Assessing climate risk considerations across sectors and companies

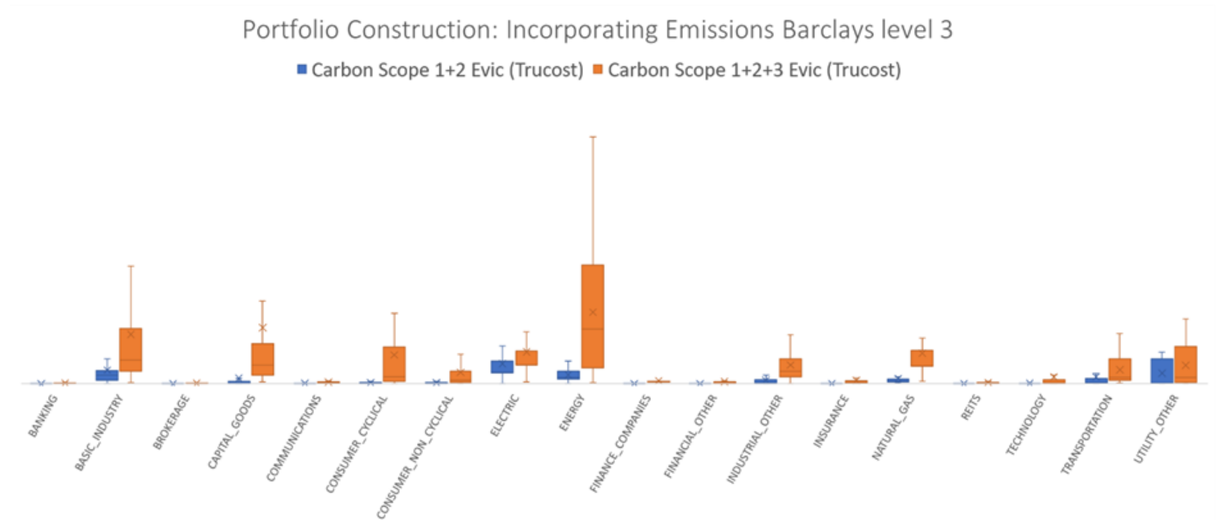
Robeco's approach to constructing a buy-and-maintain portfolio that incorporates climate change considerations across sectors and companies is a multidisciplinary one. Our quantitative methodology ensures, amongst others, sector diversification, low cyclicality exposure and a low carbon footprint, both across and within sectors, that also declines across maturity buckets. This is complemented by a qualitative evaluation of climate risks across companies, which builds on our many years of experience in sustainable investing, and now incorporates methodologies targeted specifically at climate considerations and assessing progress on decarbonization.

A quantitative methodology

A buy-and-maintain portfolio should be resilient to market cycles. It is therefore typically focused on limiting fallen angels by selecting high-quality issuers and minimizing tail risk through proper diversification across sectors and issuers. Incorporating climate considerations into the portfolio implies an additional constraint in the construction process, which requires optimally balancing diversification, cyclicality and carbon footprint across and within sectors.

Typically, our clients' investable universe is large and diversified enough to enable an optimal outcome. Figure 2 indicates the carbon footprint distribution of the universe of companies across and within sectors. This figure is based on Scope 1, 2 and 3 emissions, normalized by the enterprise value including cash (EVIC).

Figure 2 | Carbon footprint across sectors



Source: Robeco, Trucost, Bloomberg

As can be seen, dispersion is high across sectors as well as within sectors, creating scope to limit the impact of decarbonization on the risk-return profile of the typical buy-and-maintain portfolio.

The chart indicates that, depending on whether or not the analysis incorporates Scope 3 emissions, there can be significant variations in emissions intensity across sectors. For a buy-and-maintain portfolio, where the intention is to hold the

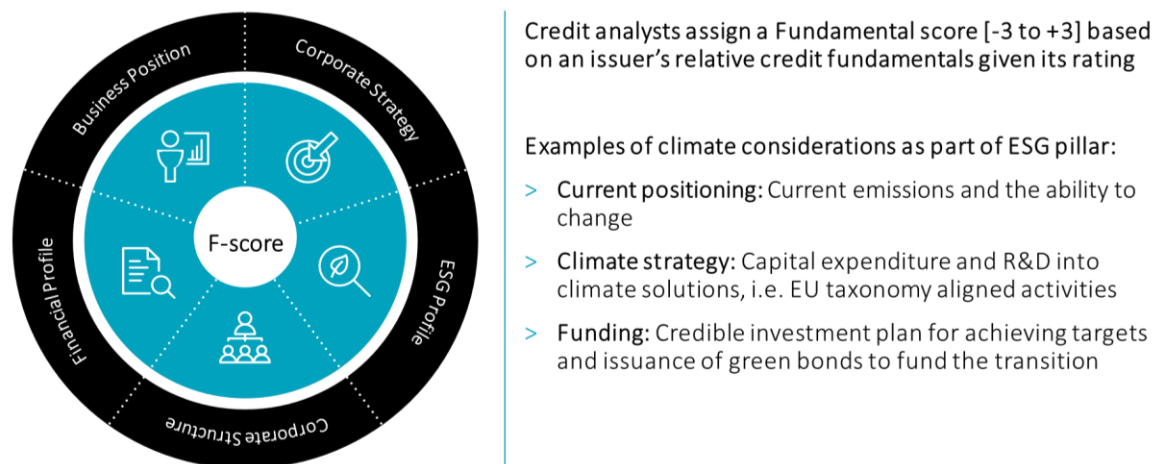
securities until maturity, it is therefore imperative to be clear from the outset what the scope of the decarbonization metric needs to be.

There are some caveats to the use of this data. Carbon footprint data typically is a (lagging) snapshot of a company's most recently reported carbon emissions – which in itself can be a year or more old – or an estimate of these emissions. In addition, it does not reflect the company's possible decarbonization pathway. Particularly for Scope 3 data, estimating these numbers without a thorough qualitative analysis can be quite challenging. At the same time, investors need a forward-looking approach to identify and include the carbon winners of tomorrow into their portfolio. This contradiction creates a measurement dilemma. Our 'active' buy-and-maintain managers can solve this dilemma by performing a sound qualitative analysis of issuers' exposure to climate change, through analyzing the transition-readiness of companies, and by looking at their carbon targets, business strategy and technologies.

Qualitative analysis

Given the usually very long-term horizon with which the team assesses a company for inclusion in a buy-and-maintain portfolio, it's critical to conduct in-depth fundamental credit and sustainability analysis. The evaluation of ESG factors is fully integrated in our bottom-up security analysis and combines proprietary sustainability research with that of other providers. In our assessment of ESG factors and their implications for an issuer's fundamental credit quality, we consider four elements. These are the impact of the product or service produced, how the company conducts itself in terms of governance, how it performs relative to its sector-specific ESG issues, and what its decarbonization strategy is. Figure 3 represents the considerations in this process and how it fits into the broader, fundamental credit analysis.

Figure 3 | Assessing an issuer's climate fundamentals



Source: Robeco

For the fourth factor in our ESG assessment, we evaluate to what extent a firm's decarbonization strategy – or the failure to have an appropriate one – can have an impact on its fundamental credit quality. The point of departure for this evaluation is the carbon footprint for each sector, measured as the sector-wide Scope 3 emission intensity, and expressed as a starting score ranging from -3 (heavy emitters) to zero (hardly any emissions). Our analysists then scrutinize the issuer's climate strategy, with a view to determining whether the company's individual climate score should be adjusted higher or lower. Box 1 describes an example from the automotive industry.

Related to this analysis is Robeco's work on sector decarbonization pathways (SDPs), to develop forward-looking metrics that equip us to assess how a company's carbon intensity will develop until 2050. The first element is to benchmark the company within its sector, based on our evaluation of its current as well as projected carbon intensities; this benchmarking incorporates the company's commitments and targets, if available. A second element factors in the company's effort to apply technology to decarbonize over time; this may include, for example, its capital allocation to low-carbon technology.

A third element considers climate change policies that could influence companies over time, such as carbon taxes and emissions trading systems.

Box 1 | Scoring on climate: assessing the decarbonization profile of an issuer in the automotive industry

To illustrate our approach, consider Company X, a US-based automotive manufacturer. The starting point for the company's climate score is that of the automotive industry, which is -3. In this case, the company has a carbon intensity more or less in line with that of the overall automotive industry, and moreover has a very limited offering in terms of electric vehicles. X's current position therefore does not justify adjusting the climate score higher.

The next step is to evaluate X's decarbonization strategy and the implications for its future emissions intensity. The business is making a rapid push into electric vehicles. Its decarbonization targets include, amongst others, zero tailpipe emissions from new light-duty vehicles by 2035, being carbon neutral in global products and operations by 2040, and a Business Ambition Pledge for 1.5°C (in line with the Scienced Based Targets initiative, or SBTi). In order to achieve this, X is investing USD 27bn in electric and autonomous vehicles in the next five years and is planning to offer 30 battery electric vehicles by 2025. The company already has a strong EV platform, which will serve as the basis for the EV offering. Other initiatives include sourcing 100% renewable energy for its US sites by 2030, and globally by 2035.

While the company is on the right path, there still are three risks: execution risk with respect to the electrification strategy; the possibility that emission regulation becomes stricter more rapidly than anticipated; and the need for significant investments, which will have an impact on the company's financial position.

Considering all these factors, we upgrade the climate score to -1. This score is incorporated into the overall, fundamental assessment of the issuer.

Source: Robeco

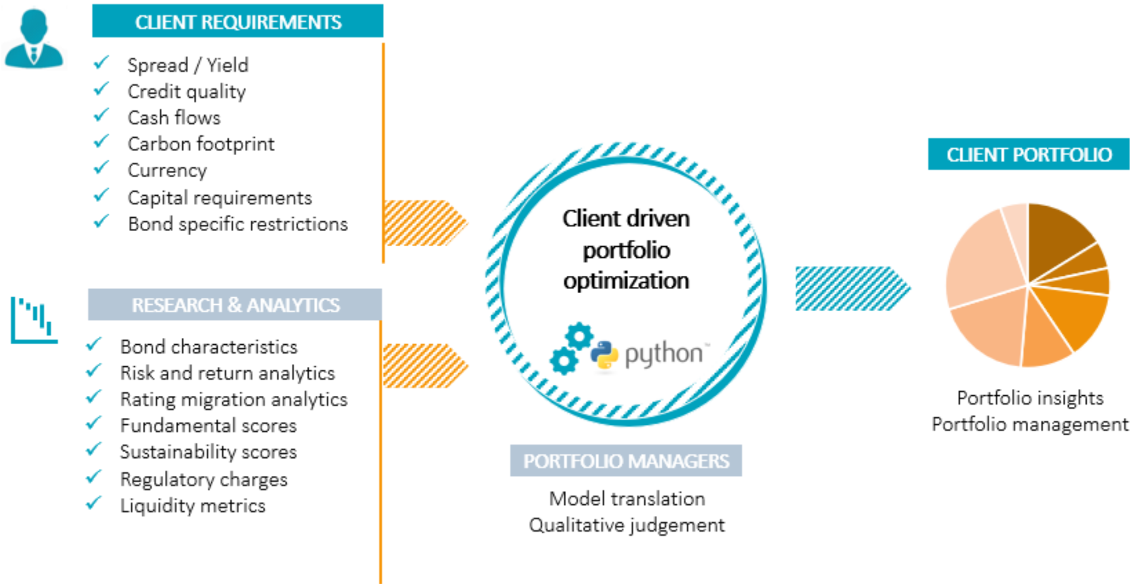
How to construct the optimal 'climate proof' buy-and-maintain portfolio

Next to incorporating sustainability goals related to climate risk and carbon footprint, our insurance and pension clients typically also require other specific objectives to be met, like avoiding fallen angels, maximizing capital and risk-adjusted returns, and matching a specific cashflow profile.

To assist the portfolio manager in the enormously complex process of meeting all of these client-specific risk, return, regulatory and sustainability objectives over a long horizon, we use an optimization framework. It optimally positions the portfolio on a very long-term timeline based on credit and sustainability analyst research, the portfolio manager's investment views and client-specific analytics and requirements. The framework thereby helps to achieve the optimal outcome, by bringing together our proven research capability in global credits and sustainability, many years of market-cycle portfolio management experience and our analytics on a wide range of financial and sustainability metrics. Figure 4 shows the setup of the framework, including the various inputs and considerations for this process.

The optimization framework uses a scenario-based setup to generate optimal portfolios. In addition to playing an integral part in the management of portfolios, the framework is also used to share insights with clients on how different allocations have consequences for meeting investment objectives. This helps guide the dialogue on setting the most suitable restrictions for the portfolio. The decarbonization case study below illustrates this process in more detail.

Figure 4 | Optimization framework for building optimal customized fixed income portfolios



Source: Robeco

Case study: Optimizing for climate risk in a buy-and-maintain cashflow matching portfolio

Optimizing to ensure relatively better risk-return characteristics

The first step in building an optimal buy-and-maintain portfolio is to determine the investor's objectives and requirements, which typically cover the risk-return characteristics of the portfolio, regulatory-related constraints and specific sustainability targets. The relative importance that the investor assigns to each objective is also established.

We illustrate our approach to incorporating carbon footprint targets using a cashflow matching case study that is typical when constructing a portfolio for a life insurer or de-risking a pension scheme. The main portfolio objectives and requirements for this case are described in Figure 5. In addition to sustainability goals, the investor has also specified requirements relating to currency, rating, portfolio duration and turnover.

Figure 5 | The investor's main objectives and requirements

Objectives

- Return: Optimal yield
- Risk: Limit fallen angels and credit impairments
- Regulation: Efficient capital requirement usage
- Sustainability: Reduce carbon footprint

Requirements

- Currency: USD, EUR, GBP (hedged to USD)
- Rating: Average >A-, only IG bonds
- Cash flow matching: Between 1y – 10y
- Turnover: Restricted, only after client consent

Source: Robeco

After in-depth consultation, we construct a portfolio that balances the client's various risk, return, regulatory and sustainability criteria and we show the headline characteristics of this portfolio together with those of a reference benchmark, as illustrated in Figure 6. The reference benchmark is used to provide a theoretical construction of a buy-and-maintain benchmark; it is customized to the investor's restrictions and liability cashflow matching profile using bonds available in the market.

Based on a range of metrics, we can illustrate that the optimized portfolio has better overall characteristics than this reference benchmark. Specifically, the yield is 5 basis points higher and the overall risk characteristics are better: the overall rating is one notch higher, and the portfolio has a higher fundamental credit quality as assessed by Robeco's in-house credit analysts – reflected in the Fundamental Score – and a lower calculated probability of downgrades to high yield. It also has a more diversified sector exposure. In this regard it is important to note that our aim is not to avoid sectors with heavy carbon footprints; instead, we make our assessment on a company basis.

Figure 6 | Characteristics of an optimal portfolio

	Metric*	Portfolio	Reference benchmark
✓ Return	Yield (USD)	1.64	1.59
✓ Risk	Rating	A/A- (7.3)	A-/BBB+ (8.4)
	Max sector exposure	15%	29%
	Fundamental Score	0.5	0.0
	Duration	5.2	5.2
	BBB- allocation	4%	15%
	Fallen Angel probability	8%	15%
✓ Sustainability	Carbon footprint	70%	100%
	SDG Score	0.9	0.5
✓ Regulation	SCR spread risk	8.3%	10.0%

Source: Robeco, June 2021 market data[1]

From a sustainability and carbon perspective, the optimized portfolio has generated a 30% reduction in the carbon footprint and a significant improvement in the Sustainable Development Goal (SDG) score. In this case, an insurance investor would also benefit from the reduction in regulatory capital charge.

'We use this portfolio as a starting point in a discussion with the client, using a sensitivity analysis to help the investor set their risk, return, regulatory and sustainability appetite'

Weighing up the portfolio carbon footprint relative to its returns

We use this portfolio as a starting point in a discussion with the client, using a sensitivity analysis to help the investor set their risk, return, regulatory and sustainability appetite. Further iterative discussions help us guide investors towards finding an appropriate bespoke decarbonization solution.

[1]Carbon footprint level indexed to 100 at reference universe footprint level and based on Trucost Scope 1, 2 and 3. The portfolio is also expressed relative to this level. Fallen angel probability is based on the average historical Moody's rating migration tables and model assumptions over the period 1983-2017. The SDG (Sustainable Development Goal) score is allocated by Robeco, based on our proprietary methodology. The score ranges from -3 to +3 per company. For issuers where we do not have an SDG score, the sector score is used. The F-score is the fundamental credit score given by Robeco's analysts. Issuers for which we do not have an F-score are assigned a score of zero.

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Our carbon footprint sensitivity analysis shows that we can reduce the carbon footprint of a global portfolio even further without having a significant impact on the risk-return profile, as illustrated in Figure 7. This analysis puts our optimized portfolio – Portfolio 3a – into perspective.

Figure 7 | Reducing carbon footprint in a global portfolio can be done without a large impact on the risk-return profile

				Naïve Reduction	Fwd-Looking Reduction			
	Metric*	Portfolio 1	Portfolio 2	Portfolio 3	Portfolio 3a	Portfolio 4	Portfolio 5	Reference
Return	Yield (USD)	1.65	1.64	1.64	1.64	1.64	1.63	1.59
Risk	Rating	A/A- (7.3)	A/A- (7.3)	A/A- (7.3)	A/A- (7.3)	A/A- (7.3)	A/A- (7.4)	A-/BBB+ (8.4)
	Max sector exposure	15%	15%	15%	15%	15%	15%	29%
	Fundamental Score	0.5	0.5	0.5	0.5	0.5	0.5	0.0
	Duration	5.2	5.2	5.2	5.2	5.2	5.2	5.2
	BBB- allocation	4%	4%	4%	4%	4%	3%	15%
	Fallen Angel probability	8%	8%	8%	8%	8%	8%	15%
Sustainability	Carbon footprint	100%	85%	70%	70%	55%	40%	100%
	SDG Score	0.8	0.8	0.9	0.9	0.9	1.0	0.5
Regulation	SCR spread risk	8.3%	8.3%	8.3%	8.3%	8.3%	8.3%	10.0%

Source: Robeco, June 2021 market data[1]

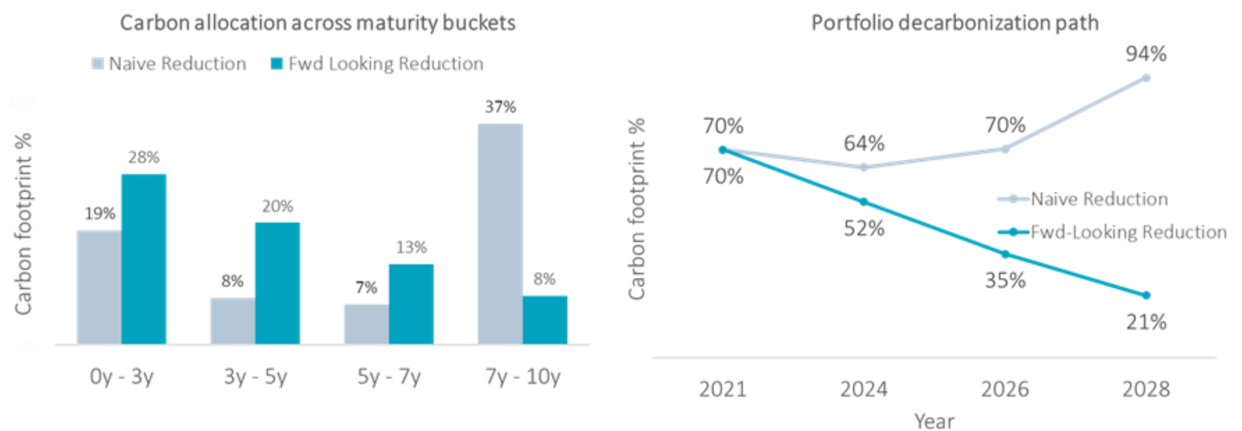
Portfolio 1 shows an optimized portfolio with a carbon footprint similar to that of the benchmark portfolio (which is shown in the last column, on the right). We then lower the targeted footprint by 15% in each of our subsequent portfolios, up to Portfolio 5. We note that in our sensitivity analysis there is no impact (Portfolios 2 and 3) or very limited impact (up to 2 basis points, for Portfolio 5) on portfolio yield when incorporating a lower carbon footprint.

Note, though, that although Portfolio 3 and Portfolio 3a both imposed a 30% carbon reduction, the way in which this was done over the life of the portfolio differed.

‘An important aspect of the portfolio construction process, especially for a buy-and-maintain portfolio, is to consider how the carbon footprint is allocated across future maturities’

Naïve versus forward-looking allocation of carbon across the lifetime of the portfolio
An important aspect of the portfolio construction process, especially for a buy-and-maintain portfolio, is to consider how the carbon footprint is allocated across future maturities. The approach used for Portfolio 3a is to set the portfolio optimization to reduce carbon exposure over the lifetime of the portfolio. This means that those assets which are the heaviest emitters are allocated to shorter-maturity buckets; for the cleanest companies, the optimizer selects longer-maturity buckets.

Figure 8 | The importance of managing the allocation of carbon over tenors



Source: Robeco, June 2021 market data[2]

This forward-looking approach to decarbonization across maturity buckets is illustrated through the portfolio represented in Figure 8 by the blue bars (left side) and the blue decarbonization glide path (right side). This contrasts with a so-called naïve allocation of carbon across maturity buckets (grey bars and line), which is the result of a portfolio optimization that reduces total portfolio carbon without factoring in how this would look over time.

‘The reduction pathway of the naïve approach could potentially result in a rising carbon pathway over time. This shows that if a decarbonization pathway is not incorporated in the initial portfolio construction, it could result in increased portfolio turnover over the life of the portfolio, in an attempt to manage the carbon exposure’

As illustrated, the reduction pathway of the naïve approach could potentially result in a rising carbon pathway over time. This shows that if a decarbonization pathway is not incorporated in the initial portfolio construction, it could result in increased portfolio turnover over the life of the portfolio, in an attempt to manage the carbon exposure.

The analysis shown is based on the current carbon footprint estimates of the companies in the portfolio, as the future decarbonization path of each company is not yet known with certainty. In addition, it is important to qualitatively assess the ability and willingness of these companies to lower their carbon footprint over time and to engage with them on this topic. Doing so could lead to an even better decarbonization path over time.

Turnover can be significantly reduced with very limited impact on the risk-return profile

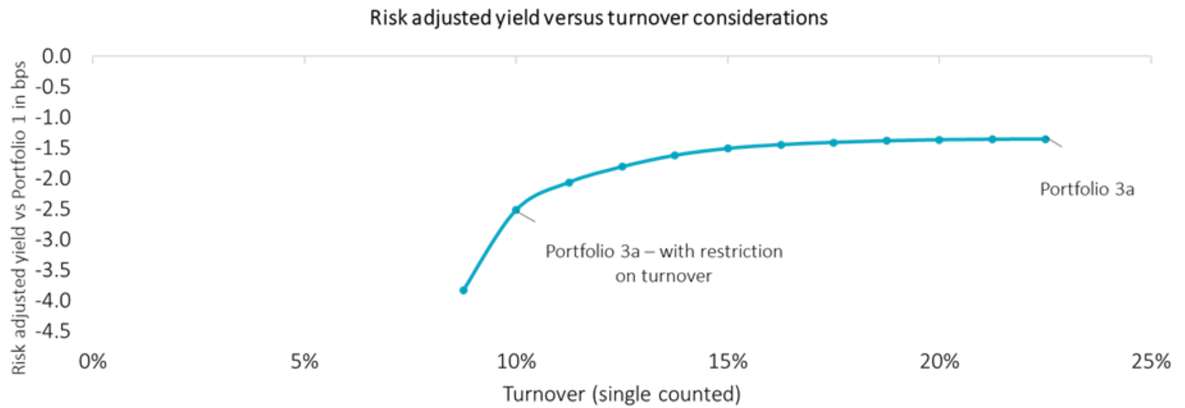
The optimal model portfolios that have been constructed so far do not consider the current holdings and any desired turnover restriction. For example, to fully switch from optimal Portfolio 1, which has a similar carbon footprint to the benchmark, to optimal Portfolio 3a (with 30% footprint reduction), turnover of 23% is needed. In practice, of course, one would want to be mindful of the turnover and the potential impact on transaction costs and book value.

In this example, turnover for the switch to the forward-looking portfolio can be reduced by about half, with only a limited impact on the overall risk-return profile; see Figure 9. The figure also shows that the added value of turnover in the

[2] Into the future up to year 2031, the carbon footprint is indexed to the carbon footprint of the reference benchmark into the future, based on the current carbon footprint data of companies. E.g., for the year 2026, only the footprints of the bonds in the 5y-10y maturity buckets are used in the calculation for both the portfolio and the reference.

portfolio decreases exponentially. The impact on other metrics, such as transaction costs or book value, can also be considered to determine which are the most suitable transactions.

Figure 9 | Risk-adjusted yield versus turnover considerations



Source: Robeco, June 2021; yield is adjusted with a penalty for default and fallen angel risk[3]

In practice the actual turnover needed to decarbonize a portfolio, while considering other client-specific investment objectives, is dependent on the investor's current holdings and specific portfolio requirements. In addition to decarbonizing the portfolio, by choosing the optimal transactions carefully, the portfolios risk-return profile can often be improved at the same time with limited transaction costs.

The Robeco approach to impact: Sustainable Development Goals and climate change

In addition to steering a portfolio based on carbon footprint, a buy-and-maintain credit portfolio can also be constructed to generate a targeted long-term impact through its alignment with the UN Sustainable Development Goals (SDGs).[4]

The UN Sustainable Development Goals

The United Nations Sustainable Development Goals (SDGs) target a broad range of 17 objectives such as elimination of poverty and hunger, decent work and growth, sustainable cities and communities, and climate action. 193 countries adopted the 'Agenda for Sustainable Development', agreeing to contribute to the realization of these SDGs by 2030.

The UN Commission on Trade and Development (UNCTAD) estimates that between USD 5-7 trillion per year will be needed to achieve these goals in this timescale. As it is unlikely that governments alone will be able to fund this, the UN has explicitly asked the private sector, including asset owners, to contribute as well.

Source: United Nations. The use of the United Nations SDG icons is for illustrative purposes only and does not imply endorsement by the United Nations.

[3] In the forward-looking scenarios, the carbon footprint across the longer-maturity buckets is additionally constrained to be declining as a percentage of the carbon footprint reference benchmark, based on current carbon footprint data of companies in line with Portfolio 3a.

[4] The Sustainable Development Goals are 17 goals that the UN presented in the last quarter of 2015. These goals set the world-wide agenda for sustainable development until 2030, and cover a wide range of social and environmental aspects.

Robeco developed a unique framework that measures the contribution of investee companies to the UN SDGs. The framework comprises three steps: assessing what a company produces, how it operates, and its possible involvement in severe controversies. This framework serves as a screening system that calculates the contributions – both positive and negative – that companies make to any of the 17 SDGs. The way in which this screening process identifies companies that have a long-term positive effect on society and the environment makes it particularly suitable for buy-and-maintain strategies.

Example: incorporating SDGs as a target
A buy-and-maintain portfolio can, for example, be adapted to invest solely in companies that contribute positively to (one or more of) the SDGs or have an overall target SDG score higher than the benchmark reference. In Figure 10 we show as example how the carbon footprint analysis would change if the main impact focus was on achieving a high average SDG score instead of focusing on decarbonization.

Just as in the carbon footprint example, based on a range of metrics, the optimized portfolio has better overall characteristics than the reference benchmark. Similar further iterative discussions as in the carbon footprint example help us guide investors towards finding an appropriate bespoke SDG solution.

Figure 10 | Incorporating SDG-related objectives into a buy-and-maintain portfolio

	Metric*	Portfolio 1	Portfolio 2	Portfolio 3	Portfolio 4	Portfolio 5	Reference
Return	Yield (USD)	1.65	1.65	1.64	1.63	1.62	1.59
Risk	Rating	A/A- (7.3)	A/A- (7.3)	A/A- (7.3)	A/A- (7.4)	A/A- (7.5)	A-/BBB+ (8.4)
	Max sector exposure	15%	15%	15%	15%	15%	29%
	Fundamental Score	0.5	0.5	0.5	0.6	0.5	0.0
	Duration	5.2	5.2	5.2	5.2	5.2	5.2
	BBB- allocation	4%	4%	4%	4%	4%	15%
	Fallen Angel probability	8%	8%	8%	9%	9%	15%
Sustainability	Carbon footprint	100%	100%	100%	100%	77%	100%
	SDG Score	0.8	1.0	1.3	1.5	1.8	0.5
Regulation	SCR spread risk	8.3%	8.3%	8.3%	8.3%	8.3%	10.0%

Source: Robeco, June 2021 market data[1]

Conclusion

Climate risk considerations are critical for all investors, and investors increasingly are incorporating their climate goals into their investment objectives. Our view is that climate change considerations are especially relevant for buy-and-maintain investors, given their long-term horizon and the restrictions on portfolio turnover. We follow a disciplined process to assess climate risks, which includes the application of both qualitative assessments and quantitative methodologies, developed as a result of our many years of experience in credit and sustainable investing. The outcomes of these processes are used to construct bespoke portfolios for clients, based on their unique objectives.

With our proprietary optimization framework we help investors assess the possible financial impact of climate change on their portfolio and provide insights on the turnover needed to decarbonize their portfolio with a forward-looking view. We typically see that significant carbon footprint reduction can be achieved with limited turnover and limited portfolio impact.

Robeco has a long history in buy-and-maintain investing, helping many investors to achieve their unique objectives over lengthy timeframes. With our in-house combination of insurance and pensions analytical capabilities, our market-leading global credit platform and our pioneering role in sustainable investing, we are able to design high-quality and truly client-driven sustainable credit portfolios.

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