

Robeco insurance and pension solutions

Managing climate risk for buy-and-maintain bond portfolios

Sustainable Investing Expertise by
ROBECOSAM

- Climate risk management has become a key priority for bond portfolios
- A forward-looking approach can reduce carbon impact for longer tenors
- Decarbonization impacts on investment choices, not just a quant exercise

Introduction

With the US rejoining the Paris Agreement, climate change has become a key priority for US institutional investors facing increased legislative scrutiny. 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 bond investors, who are limited in their ability to trade assets and who have a long-term investment horizon. With energy and utility sectors being the dominant carbon contributors at the long tenors, decarbonization is no longer a straightforward quantitative exercise but one which involves active investment decisions. Along with integrating capital management for insurers and

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funding targets for pension schemes, this is a complex decision process.

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 bond 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 bond 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 bond 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.

‘A climate-focused perspective is even more important for buy-and-maintain bond investors than for more active investors’

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 bond 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.

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.

Optimizing for climate risk in a buy-and-maintain bond portfolio

Optimizing to ensure relatively better risk-return characteristics

The first step in building an optimal buy-and-maintain bond 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 an insurer or a pension scheme. The main portfolio objectives and requirements for this case are described in Figure 1.

Figure 1 | The investor’s main objectives and requirements

Objectives

- > Return: Optimal yield
- > Risk: Limit fallen angels & 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 – 10 years
- > Turnover: Restricted, only after client consent



Source: Robeco

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 2. 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, as shown in the table below.

Figure 2 | 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		
	NAIC RBC (Current)	0.69%	0.88%
	NAIC RBC (Proposed)	1.10%	1.32%



Source: Robeco, June 2021 market data,¹ NAIC²

The yield is 5 basis point higher and the overall risk characteristics are better than the reference benchmark. 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)³ score. In this case, an insurance investor would also benefit from the reduction in regulatory capital charge.

¹Carbon 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.

² American Academy of Actuaries C1 Work Group letter to the Life Risk-Based Capital (E) Working Group of the National Association of Insurance Commissioners, March 11, 2021.

³ The Sustainable Development Goals (SDGs) are 17 objectives for improving human society, ecological sustainability and the quality of life, presented by the United Nations in 2015.

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. 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 3. This analysis puts our optimized portfolio – Portfolio 3a – into perspective.

Figure 3 | 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	0.9	0.9	0.9	0.9	0.9	1.0	0.5
Regulation	NAIC RBC (Current)	0.69%	0.69%	0.69%	0.69%	0.69%	0.69%	0.88%
	NAIC RBC (Proposed)	1.10%	1.10%	1.10%	1.10%	1.10%	1.10%	1.32%

Source: Robeco, June 2021 market data, NAIC

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.

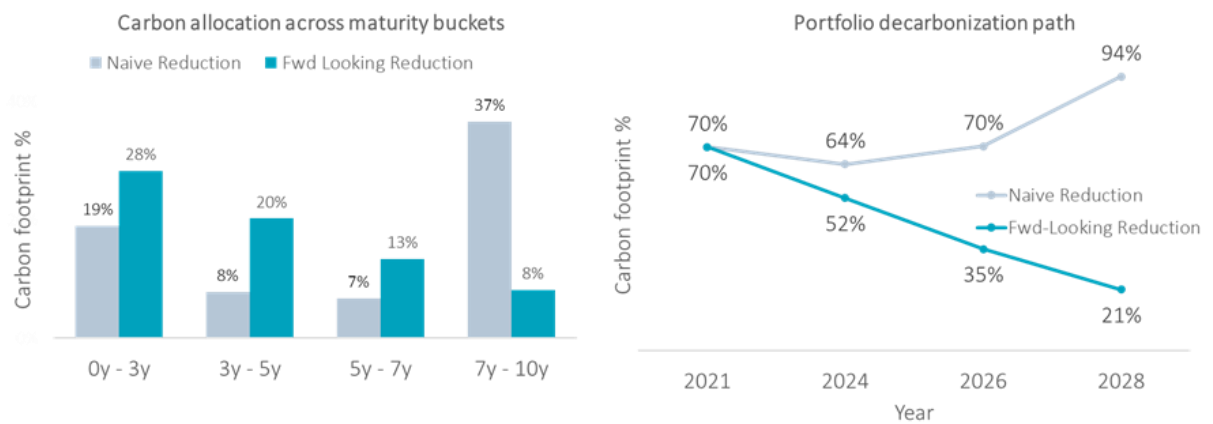
Note, though, that although Portfolio 3 and Portfolio 3a both imposed a 30% carbon reduction, the way in which this was done over the life of the portfolio differed.

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 bond 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.

This forward-looking approach to decarbonization across maturity buckets is illustrated through the portfolio represented in Figure 4 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.

Figure 4 | The importance of managing the allocation of carbon over tenors



Source: Robeco, June 2021 market data⁴

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 reduction pathway of the naïve approach could potentially result in a rising carbon pathway over time'

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.

Conclusion

Climate risk considerations are critical for all investors, and particularly for investors who are looking to transition their portfolio to net zero emission by 2050. Our view is that climate change considerations are especially relevant for buy-and-maintain bond 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.

Decarbonization is not just a quantitative exercise but one which involves active investment decisions. Our proprietary optimization framework can help investors to 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.

Robeco has a long history in buy-and-maintain bond 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.

⁴ 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.

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