



Net-Zero Investing: Solutions for Benchmarks, Incentives, and Time Horizons

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Executive Summary

Many asset owners are attempting to mitigate their portfolio exposure to climate change risk by implementing net-zero investment programs. A net-zero investment program aims to support the global goal of zero growth in greenhouse gas (GHG) emissions by 2050.¹ It typically includes strategies for reducing portfolio emissions, investing in climate change solutions, and using stewardship and advocacy to reduce real-world emissions—that is, emissions beyond the portfolio's borders.² Net-zero investing presents new challenges for asset owners and asset managers because it requires reducing financial exposure to climate change risk and increasing investment in climate solutions without compromising financial risk and return objectives.

A key to addressing the challenges associated with net-zero investing is recognizing that an investment program is a system. Net-zero investing affects many elements of an investment program—including objectives, risk management, benchmarks, incentives, and investment horizons. These elements are interrelated, so changes to one part of the program often necessitate changes to other parts. A systems thinking approach provides a useful framework for designing an investment program that fully integrates all elements to improve the likelihood of achieving its objectives.³

In this paper, we discuss the challenges of adding net-zero objectives and climate risk management to a traditional investment program, and we explore how traditional benchmarks, incentives, and time horizons can hinder progress toward net-zero objectives. We provide guidance for choosing relevant net-zero

¹Net zero refers to a global state of zero GHG emissions, achieved by (1) reducing manmade GHG emissions as much as possible and (2) offsetting any remaining GHG emissions with GHG removals.

²See, for example, IIGCC (2024a) Net Zero Investment Framework 2.0.

³For a discussion on a systems thinking approach to net-zero investing, see Urwin (2024).

CONTENTS

[Executive Summary](#) pg. 1 | [Net-Zero Objectives](#) pg. 2 | [Climate Risk Management](#) pg. 4 | [Benchmarks](#) pg. 6 | [Incentives](#) pg. 12 | [Time Horizons](#) pg. 16 | [Conclusion](#) pg. 19 | [References](#) pg. 21

benchmarks, incentivizing actions and efforts needed to achieve net-zero objectives, and determining appropriate time horizons for measuring progress.

We offer the following takeaways:

- First**, a net-zero objective must coexist with an asset owner's risk, return, and actuarial objectives. It must not compromise them. On the contrary, if executed well, a net-zero objective supports, and even enhances, attainment of these objectives.
- Second**, analyzing and managing portfolio climate risk is difficult with existing risk management tools, which are not capable of measuring climate risk. Climate risk management is still evolving, but asset owners and asset managers can take practical steps to mitigate climate-related risks.
- Third**, net-zero investing requires suitable metrics and benchmarks. These additional measures do not displace existing metrics and benchmarks; rather, financial and net-zero measures can be combined into a scorecard that gives a comprehensive view of performance against all the investment program's objectives.
- Fourth**, a successful net-zero program must include incentives that motivate effort toward portfolio decarbonization, investment in climate solutions, and engagement. Few examples of such incentives exist today, but we can look at efforts to incentivize impact investing outcomes for insights and examples.
- Last**, the long-term goal of attaining a net-zero objective by 2050 must be achieved by meeting interim targets over short- and intermediate-term time horizons. Climate change can impact portfolio assets in material and unexpected ways, both near term and in the coming years, as the world attempts to mitigate this systemic risk. Evaluating the success of a net-zero investment program must reflect this reality, which stands in stark contrast to the three- to five-year rhythm of most performance goals.

Net-Zero Objectives

A well-constructed investment objective accurately reflects an asset owner's mission and lays the foundation for its investment program. The investment objective outlines the program's goals and serves as a guide for the investment

strategies that support the program's required rate of return and targeted levels of risk. In a typical investment program, an asset owner might define risk as tracking error, volatility, value at risk, and/or other measures. Asset owners who adopt a net-zero investment program recognize the systemic risk of climate change and set investment objectives aimed at mitigating this risk and capitalizing on transition opportunities. Many asset owners have adopted net-zero objectives and strategies developed by one of two non-governmental industry organizations—the Net-Zero Asset Owner Alliance (NZAOA)⁴ or the Institutional Investors Group on Climate Change (IIGCC).⁵ Other asset owners take different paths in their net-zero journeys and set their net-zero objectives and strategies independently.

Because asset owners are obligated to invest for the benefit of plan participants and beneficiaries, net-zero objectives should include an assessment of any expected improvements in risk and return to those beneficiaries. Such an assessment is critically important for explaining how net-zero objectives support the asset owner's primary mission and for preventing misunderstandings about the fundamental rationale for the addition of net-zero objectives. Many people have the impression that portfolio decarbonization and real-world decarbonization are ends in themselves, but both objectives are more accurately viewed as means to an end—they serve to protect and enhance a plan's assets.

Investment Strategies

As stated earlier, achieving a net-zero investment objective often requires a combination of strategies, such as reducing portfolio emissions, funding climate solutions, and engaging with emitters and regulators. These strategies function similarly to the way that equity and fixed-income strategies help achieve a target rate of return within certain risk parameters. Reducing portfolio emissions aims to reduce financial risks associated with a transition to a low-carbon economy. Investing in climate solutions seeks to fund climate transition solutions and capitalize on macro trend opportunities. Strategic engagement aims to reduce not only issuer risks but also the systemic risks of global GHG emissions.

Fiduciary Duty

Asset owners cannot lose sight of their fiduciary duty to plan participants and beneficiaries when formulating their net-zero objectives and strategies. In our view, a net-zero investment program fits within the boundaries of fiduciary duty if it is properly constructed and managed. The concept of fiduciary duty is defined somewhat differently depending on the legal and geographical context. Whereas Europe and the United Kingdom have expanded the concept of fiduciary duty to address climate risk specifically, the United States has not. Many core fiduciary duty principles, however, are universal.

⁴For more details on the NZAOA, visit <https://www.unepfi.org/net-zero-alliance/>.

⁵For more details on the IIGCC, visit www.iigcc.org/.

Universal fiduciary principles include the duty of care and the duty to act prudently. A net-zero investment plan that carefully considers climate risks fits within these duties, given that climate risk is just one of many risks that an asset owner should consider in the management of its assets. Another core fiduciary duty is the duty of loyalty—to manage plan assets solely for the benefit of plan participants and beneficiaries. The ultimate aim of a net-zero program must be to reduce the risk and improve the returns of the plan. At all times, an asset owner must be mindful of the program's benefits to the beneficiaries and plan participants.

Engagement

Equally important is the need to link all aspects of a net-zero investment program to the concept of materiality. Materiality helps asset owners and managers rank-order the risks they need to manage, the opportunities they might invest in, and the priorities for engagement. It can be difficult to quantify the benefits of engagement in financial terms, but this does not mean that engagement does not add financial value. Engagement that focuses on investees' climate-related risks and opportunities is appropriate in a net-zero program. For example, engaging with a high-emitting company to lower emissions because the company is likely to be taxed on those emissions is a valid engagement thesis because it protects future profitability. Engaging with a company to relocate production assets from increasingly flood-prone areas also fits within the concept of fiduciary duty because it seeks to avoid physical damage to a company's infrastructure. For each engagement effort, asset owners and asset managers should formulate and document an engagement thesis that clearly defines how the engagement will influence the valuation, embedded risk, or future cash flow of the holding. This approach ensures that a net-zero plan complies with fiduciary duty within a global context, including in the United States.

Climate Risk Management

Portfolio risk is often assessed within mean-variance frameworks that decompose risk into categories that can be managed. Approaches to assess and measure climate change risk are still evolving because risk management tools lack a sufficient climate change history that can be modeled. As climate risk increases, it becomes a moving target, spreading across asset classes and portfolio holdings in unpredictable ways. Thus, asset managers cannot rely on risk management approaches of the past. A net-zero investment program requires a risk management approach that goes beyond a traditional mean-variance model because there is insufficient historical data on how transition and physical risks impact company values.

Climate risk management should focus on mitigating material risks that may impair the future returns of a portfolio or increase the volatility of the stream of future returns. To date, many asset owners and asset managers have used carbon emissions as a proxy for climate risk. But a company's carbon

footprint is only a starting point for risk assessment because climate change risk is complex; it includes multiple transition and physical risks and climate scenarios that interact in various ways.⁶ For example, consider a high-emitting business, such as a steel company, that is adopting a lower-risk, lower-emission production model relative to its peers while keeping costs competitive. All else being equal, the steel company may perform very well compared with a low-emitting company subject to ongoing physical climate risk because its factories are located in a floodplain. For this reason, we caution asset owners against thinking that decarbonization alone solves the problem of exposure to climate change risk. Carbon emission footprints tell only a very small part of the story.

With this caution, how should investors assess climate change risk when assessment tools are still developing? To begin, they can take some practical steps to guard against downside exposure to climate risk in their public equity portfolios. Public equity portfolios typically contain the largest amount of climate risk per asset class. A good starting point to assessing climate risk is to identify the largest holdings within the aggregate equity portfolio (e.g., the top 20 largest emitters) by emissions and weight and to score them individually using data-driven criteria. For example, a company's carbon footprint can be assessed against its respective industry carbon budget⁷ to determine if it is outperforming or underperforming its share of emissions.

Investors can also make use of other types of climate risk indicators, including whether the holding has a science-based emissions reduction target, incentives for management to reduce emissions, self-measurement and reporting of emissions, and/or capital spending plans to reduce emissions. An investor that uses these indicators can be reasonably assured that transition risks are properly identified and addressed. There are also ways to assess physical risk, such as using data services to rank-order holdings by physical risk within the portfolio.⁸ A drawback to using physical risk databases, however, is that they are much newer than mean-variance models and subject to estimation error. Nonetheless, investors looking for a starting point for climate risk assessment would do well to consider leveraging the benefits of a physical risk database.

In addition, an asset owner may require of its internal or external managers a report identifying the holdings most likely to be exposed to a variety of climate risks (e.g., emissions regulation and transition). The TCFD Implementation Guide (SASB and CDSB 2019) provides a framework for identifying industries with particularly high exposure to climate risk. Together, these approaches

⁶For a discussion of financial climate-related physical and transition risks, see the Task Force on Climate-Related Financial Disclosures (TCFD 2017), p. 5.

⁷The Global Carbon Budget and the NZAOA have published industry emission budgets covering all sectors, with a focus on high emitters such as cement, steel, aluminum, buildings, and road transport. In addition, holdings that are targets of engagement action, such as Climate Action 100+, are likely to have concentrated risk.

⁸Morningstar Sustainalytics Physical Climate Risk Metrics and MSCI Climate Value-at-Risk are two examples of useful starting points for physical risk.

should identify holdings with significant climate risk exposure and can help determine whether the companies are taking steps to mitigate it.

A challenge is that managing portfolio climate risk requires experience and judgment to decide whether a holding should be traded because of its climate risk profile. This type of judgment cannot be captured in a simple rules-based approach, suggesting that a more active approach to portfolio management may be preferred in decision making. Alternatively, an asset owner can shift its portfolios in part or wholly toward a climate benchmark. Index tracking to a climate benchmark has taken hold at some asset owner organizations because it is relatively easy to implement and it accelerates portfolio progress toward net zero.⁹ Although we believe it is a sound initial step, this approach has certain drawbacks, which we discuss in the Benchmarks section.

Finally, we emphasize that risk, when defined as volatility, is symmetrical. So far, we have discussed downside risk, but upside risks (opportunities) exist as well. Climate risk management also includes searching for new investment opportunities that may arise. A changing climate may enhance the fortunes of entire industries and specific companies that can adapt successfully, provide solutions, or invent new products and services that benefit from the focus on climate risk. To capitalize on climate opportunities, an asset owner might allocate a portion of the total asset mix to climate solutions and give asset class mandates to managers that show skill in finding investments in listed securities, private equity, infrastructure, real estate, and so on. Alternatively, an asset owner might motivate managers to find climate investment solutions within existing mandates, such as within a public equity portfolio. Both approaches are viable, and some asset owners combine them.

Benchmarks

For portfolios of listed securities, market indexes are the investment industry's benchmarks of choice. Market indexes are particularly useful for measuring risk-adjusted return, a measure that has become the predominant indicator to judge the success of an investment strategy or manager. Such reliance on a single performance measure makes the investment industry an outlier compared with most other industries, which usually use multiple comparators or performance indicators to measure success.

Market indexes work well for measuring manager skill against an asset class index, but they fail to measure manager skill and effort for net-zero strategies. As stated earlier, a combination of strategies is often used to achieve net-zero objectives, including reducing portfolio emissions, investing in climate

⁹See, for example, NZ Superfund, "NZ Super Fund Shifts \$25 Billion to Low Carbon Indices in Sustainability Push" (14 September 2022), <https://nzsuperfund.nz/news-and-media/nz-super-fund-shifts-25-billion-to-low-carbon-indices-in-sustainability-push/>.

solutions, and engaging with emitters and regulators. The success of each strategy cannot be known without suitable comparator metrics or benchmarks.

Asset owners take different approaches to benchmarking their net-zero investment programs. Some use a market index, reasoning that a climate change management program that is integrated into their existing portfolios should be reflected in, and enhance, portfolio returns. Others use a climate, or decarbonizing, benchmark to guide the reduction of portfolio emissions over time. Several asset owners use a custom reference portfolio, created by narrowing the investment universe to a subset of companies that are better aligned with the investment strategy.¹⁰ And lastly, some asset owners use a “scorecard” that includes a market index for measuring financial performance along with metrics that measure the progress or performance of each net-zero strategy component. In the following sections, we discuss climate benchmarks and scorecard benchmarks.

Climate Benchmarks

Climate benchmarks are designed primarily for index tracking rather than measuring manager skill. The most common are the EU Paris-aligned Benchmark (PAB) and the EU Carbon Transition Benchmark (CTB). These benchmarks are constructed from existing market indexes according to criteria set by the European Union. The purpose of a PAB is to align portfolios with the Paris Agreement’s aim to pursue efforts to limit global warming to 1.5° Celsius by achieving net-zero emissions by 2050. CTBs aim to align portfolios with the European Climate Law goal of achieving climate neutrality in the European Union by 2050. Each benchmark is constructed with a minimum carbon footprint reduction from its parent index and an average decarbonization rate thereafter of 7% per annum.¹¹

PABs and CTBs have several key characteristics that make them more similar to actively managed portfolios than to traditional market indexes. Traditional market indexes are constructed using a well-defined set of rules. In contrast, PAB and CTB providers have flexibility in determining how they achieve the annual decarbonization target; the process of selecting and weighting benchmark constituents is not entirely rules-based or predictable, nor is it readily transparent (see IIGCC 2023). To achieve the required emission reductions, PABs and CTBs may have higher weightings in low-emission sectors, such as communications, technology, and health care, which can create potential sector biases relative to parent index weightings (see IIGCC 2023) and deviations from a parent index’s risk profile. An overweight to technology stocks, for instance, may impart a growth bias to a portfolio. In addition, PABs

¹⁰For example, please see the New Zealand Super Fund Reference Portfolio at <https://nzsuperfund.nz/how-we-invest/reference-portfolio/>

¹¹For more information on PABs and CTBs, see, for example, State Street Global Advisors “EU Climate Benchmarks: A Guide” (March 2020), www.ssga.com/content/dam/ssmp/library-content/pdfs/insights/eu-climate-benchmarks-a-guide.pdf.

and CTBs contain “do no significant harm” baseline exclusions, and PABs contain economic activity exclusions.¹²

Tracking error is another area where PABs and CTBs may seem more like actively managed portfolios. Whereas decarbonization indexes may track parent indexes with a reasonably small standard deviation in the near term, tracking error may eventually increase to a range outside typical bounds if real economy emissions trend significantly higher than decarbonizing index emissions and constituent selection choices become difficult.

A significant drawback to tracking a decarbonizing benchmark is that benchmark decarbonization does not necessarily change carbon emissions in the real world.¹³ Companies that are excluded from a decarbonizing benchmark will continue to exist; they will simply be held by investors who choose to take the associated risks. Moreover, net-zero decarbonizing benchmarks may fail not only to reduce real-world carbon emissions but also to eliminate portfolio climate risk, because climate change risk is complex, with multiple contributing factors. Overall, decarbonizing benchmarks provide a useful way for investors to launch a net-zero 2050 decarbonization program, but net-zero investors should be aware of the limitations of these benchmarks.

In addition to PABs and CTBs, index providers offer an array of other types of climate indexes, such as low carbon indexes with reduced exposure to GHG emissions and thematic indexes designed to capitalize on climate change opportunities. Some indexes expand the scope of climate risk to include constituents’ climate risk management and transition plans, typically based on proprietary scores or assessment methods. When considering any climate index or benchmark, investors should understand the index methodology and the index’s inherent risk biases, such as industry, sector, or regional biases.

A “Scorecard” Approach

No single index or benchmark exists that can satisfy all measurement needs for an investment program that has both financial risk and return objectives and net-zero objectives. An approach that some asset owners have taken is to use a set of metrics or performance indicators to comprehensively measure financial objectives and net-zero objectives. This set of metrics can be thought of as a “scorecard.” that provides visibility of progress toward all key objectives. Asset owners can use this scorecard to evaluate all of an investment program’s overall objectives, including manager efforts to achieve the net-zero objective and performance against a market or financial objective.

¹²For an index to be labeled a PAB, for example, it must exclude coal, oil, and gas exploration companies as well as companies that violate United Nations Global Compact norms.

¹³IIGCC (2023) reviewed decarbonizing benchmarks from eight index providers and concluded that the benchmarks lack mechanisms to achieve real-world decarbonization. The paper lays out five key principles for a new generation of net-zero benchmarks, recommending that index providers focus on enhancing real-world organic emissions reductions over paper emissions reductions.

As an example, the UK Universities Superannuation Scheme (USS) uses an “investment-balanced scorecard” to evaluate progress toward its overall defined benefit plan objectives (see USS 2023). The scorecard consists of qualitative and quantitative performance indicators across six elements: investment return, investment risk, active management, portfolio resilience, responsible investment, and investment advice. The investment-balanced scorecard was designed to reflect the organization’s holistic and multifaceted approach to its investment program, including its net-zero alignment program (see Sloley 2023). Prior to the adoption of the holistic portfolio approach, USS used a market-based benchmark for risk management and performance attribution. The pension scheme found that the return objectives of the reference portfolio were misaligned with the overall plan objectives, creating a situation where portfolio managers could meet their risk and return objectives but the plan as a whole could fall short of its overall objectives. The scorecard was constructed to measure and reward investment performance across multiple measures while assessing risk across multiple risk metrics for different time horizons.

In another example, the UK pension scheme National Employment Savings Trust (NEST) laid out three key expectations for its external asset managers as part of its net-zero investment program: (1) report on climate risks and opportunities using the TCFD framework, (2) reduce emissions, and (3) vote and engage on company transition plans and efforts. NEST set 66 specific climate-related objectives designed to support these expectations across its 23 portfolios managed by 13 fund managers. Examples of objectives include improving climate data quality and developing an engagement escalation process. NEST holds its managers accountable for climate change objectives in addition to financial objectives.¹⁴

In the following sections, we discuss what the net-zero components of a scorecard could look like for the three net-zero portfolio strategies of reducing portfolio emissions, investing in climate solutions, and engaging with emitters and regulators.¹⁵ Each component of the scorecard contributes to reducing portfolio risk and enhancing return.

Scorecard Component: Emissions Reduction

As stated earlier, a portfolio’s climate change risk can be measured in various ways, but it is commonly measured by emissions and emissions-based metrics. An array of emissions-based metrics exists, and choosing which ones to measure and manage is difficult. Metrics range from simple to sophisticated and from backward-looking to forward-looking. A technical discussion on the merits of various emissions metrics is beyond the scope of this paper, but we provide some high-level guidance for consideration and point to helpful resources.

¹⁴For more on NEST’s net-zero program objectives and metrics, see the case study in IIGCC (2021), p. 31.

¹⁵For another example of scorecard components, see the target recommendations in NZAOA (2022a).

Emissions-based metrics, such as absolute emissions, carbon intensity, and fossil fuel reserves, provide information on a company's carbon use or exposure as of a certain date; for example, its previous fiscal year-end. In this respect, they are backward-looking metrics that can be helpful in assessing current carbon-related risks, such as transition risk and regulatory risk. Forward-looking metrics aim to estimate the portfolio's embedded future risk based on its current positioning. Examples of forward-looking metrics include MSCI's Implied Temperature Rise metric, MSCI's Climate Value-at-Risk model, and other proprietary climate risk ratings or scores. Because these types of metrics are based on many assumptions, they carry a high level of model risk.

A PRI workshop of net-zero asset managers found that the most commonly used metrics were weighted average carbon intensity, economic emissions intensity, implied temperature rise, and financed emissions (see PRI 2023). The workshop also found that most organizations use more than one carbon metric.¹⁶ The New York State Common Retirement Fund, for instance, measures fossil fuel and high-impact sector exposure, carbon footprint, temperature alignment, and corporate climate data (see Napoli 2023).

Measuring various types of emissions and backward- and forward-looking carbon metrics can introduce a great deal of complexity into portfolio and risk management; not all organizations have the resources or desire to manage such complexity. Some investors choose instead to measure portfolio climate risk using a single metric, such as the percentage of portfolio companies with Science-Based Target Initiatives, or the percentage of portfolio companies with approved net-zero goals, or the carbon intensity of their listed equity and bond portfolios.

Scorecard Component: Investing in Climate Solutions

A climate solutions target is typically measured as a percentage of assets or a fixed dollar amount invested in climate solutions. The capital taken away from holdings that expose portfolios to climate risk can be opportunistically reallocated to companies that are working on or providing solutions to climate change. The percentage invested in climate change solutions may be static or may increase over time. A review of NZAOA member targets shows a wide range of climate solutions investment targets (NZAOA 2024). Climate solution investments may be integrated into existing asset class mandates, such as listed equity and bond portfolios, or allocated to dedicated mandates.

Measuring this target may seem straightforward, but that is not necessarily so. Measurement is complicated by the fact that there is no universal definition of what constitutes a climate solution investment. The European Union's taxonomy and the Climate Bonds Initiative's Climate Bonds Standards provide

¹⁶The PRI also refers readers to this abrdn publication for a summary of pros and cons when choosing carbon metrics: "Why the Choice of Carbon Metric Matters" (September 2022), <https://www.abrdn.com/docs?editionId=07ef0a18-656c-4e81-93e0-6693b767db56>.

two ways to classify investments as climate solutions. In practice, asset owners and asset managers have taken a variety of approaches to defining climate solutions. Investments may include companies that provide water treatment and distribution, renewable energy, sustainable transportation, carbon capture and storage, infrastructure adaptation, and many more.

Scorecard Component: Engagement

Engagement is essential to influencing company activities and contributing to real-world emissions reduction—net zero cannot be achieved unless humans take action to bring about the offsetting or elimination of emissions. Successful engagement is resource-intensive, requiring time, knowledge, and personnel. Yet investor influence is limited; change cannot occur if a company lacks the economic resources or technological solutions to reduce emissions. It is difficult to achieve portfolio effects at scale by focusing on individual issuers. Thus, engaging with regulators to advocate for policy changes and regulations that support or mandate emissions reduction is critical to creating an environment that facilitates successful corporate engagement (see NZAOA 2022b).

Measuring engagement success is also difficult. When a company enacts a climate transition plan or reduces emissions, it can be problematic to attribute the result to the efforts of specific investors. Thus, engagement metrics have commonly consisted of measuring engagement activity, such as the number of communications with management, number of companies engaged with, or participation in collaborative efforts with other investors. The University of Ontario Pension Plan, for example, has a target to engage with at least 20 companies through collective and direct engagement.¹⁷

Choosing a Net-Zero Benchmark

A net-zero benchmark or scorecard should fairly represent the asset owner's net-zero objectives and serve as a point of reference against which manager efforts are assessed. The GIPS standards Guidance Statement on Benchmarks for Asset Owners provides best practice considerations for choosing a valid benchmark.¹⁸ Not all characteristics of a valid benchmark can be applied to a net-zero scorecard, so asset owners should choose a benchmark that has as many valid benchmark characteristics as possible.

Best practice considerations include specifying in advance the benchmark or scorecard components and describing the metrics used to evaluate these components. The benchmark or specific scorecard components should be relevant to the net-zero targets, measurable, and clearly defined. Consider a target to decrease GHG emissions by 50% in a portfolio's listed securities by 2030. The types of emissions measured, the portfolio baseline emissions, and the method of emissions measurement should be specified in advance.

¹⁷See NZAOA (2024).

¹⁸See CFA Institute (2023), pp. 4–5, for a list and discussion of valid benchmark characteristics.

For example, “Scope 1 and Scope 2 GHG emissions will be measured on an absolute emissions basis relative to 2019 portfolio baseline emissions.”

Net-zero benchmarks or scorecards should reflect an asset owner’s individual net-zero investment approach. Asset owners should choose a benchmark or construct a scorecard that encompasses all the components of their net-zero investment policy. Metrics are most useful when they are tailored to the degree of complexity supported by the organization’s resources. Importantly, asset owners should clearly disclose the net-zero benchmark or scorecard components.

Incentives

To motivate managers to achieve the targets set out in the scorecard components, asset owners must provide appropriate incentives. Traditionally, asset owner and asset management incentives focus narrowly on investment performance against a benchmark. Although other incentives exist, such as building reputation, recognition, and intrinsic motivation, they pale next to the monetary incentives that are tied to superior investment performance. Performance is the main driver for compensation. In addition, a superior investment track record makes it possible for an asset manager to attract more assets, leading to more fees and higher compensation.

Despite the industry’s focus on performance, the predominant fee structure in the industry for funds of listed securities is a flat basis-point fee for a certain amount of assets under management (AUM). This fee covers costs and provides fee stability to the asset owner and asset manager but does not directly target investment results. A consequence of this type of fee arrangement is that it motivates managers to grow AUM because it provides significant operating leverage.

External Incentives

Asset owners typically hire external managers for active management mandates, whereas passive mandates may be managed internally or externally. When considering incentives for external managers, it is important to realize that apart from investing and research, all other activity at an asset management firm is either an added cost or an administrative burden. A successful net-zero program must address this reality by fundamentally changing how managers view their role and how they will be paid for it.

Passive mandates contain an added wrinkle because typically the manager with the lowest fee is the one that is hired—and that manager cannot add excess returns because it is tasked with replicating a benchmark. Asking the manager to substitute a traditional benchmark with a climate benchmark or modify the traditional benchmark through exclusions (for example, omitting high-emitting companies or sectors) creates extra work, which can lead to fee increases. To address the issue of managing climate risk through passive investing, asset

owners such as NEST and others have switched from simple index replication to an optimized index replication that maintains the portfolio's risk profile but tweaks individual holdings to reduce the portfolio's carbon footprint. Fees for an optimized portfolio are higher than for an index tracking portfolio but lower than for an actively managed portfolio. Coupling this approach with a robust engagement effort can keep fees in check while reducing portfolio climate risks and contributing to real-world decarbonization.

Active managers who are incentivized under current conventions may not pursue investment actions that contribute to the net-zero goal, and they may even take actions that are counterproductive in search of immediate performance gains. For example, a holding that may not perform well over a longer time frame because of growing climate risk may outperform in the very near term. There is little incentive to sell the holding if the manager perceives that it can seize an advantage over the benchmark in the short term. Conventional compensation structures within asset management firms are very difficult to change without internal impetus. Asset owners have little influence over asset management compensation systems, including evaluation, internal goals, and pay.

That said, some asset managers have changed their compensation structures to reflect the longer-term perspective needed for net zero. AXA IM, for example, has implemented a companywide deferred compensation structure linked to net-zero targets.¹⁹ Another example is an asset manager that pays its portfolio managers and analysts five- and ten-year performance bonuses, with annual bonuses paid on qualitative assessments. These developments are encouraging, but they are rare. At least for the time being, asset managers are unlikely to make broad changes to overall compensation structures in response to net-zero investing. Nonetheless, we are seeing the emergence of net-zero incentive structures and expect that we will see further development as net-zero investing gains momentum.

Although asset owners have limited ability to motivate changes in asset manager compensation models, they can set terms and compensation structures for specific mandates. When adding new incentives and fee structures to an investment mandate to motivate a manager to invest for net zero, it is important that the compensation component tied to the net-zero objectives is sufficient. If the net-zero incentive is too small relative to the manager's fee, it is unlikely to motivate behavioral changes. Asset owners must gauge how to size the compensation component tied to net-zero objectives relative to the fees and risks of the asset class being managed. It is critical that asset managers see any changes in fee structure as a win-win. Novel fee structures on a net-zero mandate are especially meaningful if they are embraced by the team responsible for the mandate.

¹⁹IIGCC (2024b) reports that AXA tied part of its managers' deferred compensation to net-zero goals.

One way to think about net-zero incentive compensation is to view a net-zero mandate as an impact mandate because asset managers are expected to achieve investment performance *and* portfolio decarbonization through real-world decarbonization. In a 2011 report titled “Impact-Based Incentive Structures,” the Global Impact Investing Network (GIIN) suggests asset owners consider several factors when deciding how to structure impact-based compensation, including whether to reward for short-term performance, long-term performance, or both, as well as whether to reward or penalize managers to the extent that impact targets are met.

The biggest change required for a successful net-zero incentive structure is the need for multiple targets, multiple measures, and different time scales. These multiple points of reference encompassing existing and new objectives and incentives can be combined in the scorecard described earlier. We recommend that asset owners set incentives for financial performance that are in line with existing practice because these objectives and incentives will be familiar to asset managers. Incentives for portfolio decarbonization and net-zero engagement, on the other hand, will be very new. Portfolio decarbonization incentives should be aligned with a mix of short-, medium-, and long-term targets. Decarbonization mandates should have engagement objectives that are sufficiently long term to allow strategies to play out. In this way, each set of objectives and incentives is properly aligned to each component’s time horizon and can motivate an investment program toward net-zero success. This incentive system is completely different from the “performance is everything” system that has existed so far.

Engagement incentives deserve special focus. Because asset management fees—particularly for index-tracking managers—are generally not high enough to compensate managers for the staff time, effort, and resources needed for successful engagement, asset owners might consider, where appropriate, paying managers an engagement fee in addition to a portfolio management fee. Such is the case with the Government Pension Investment Fund (GPIF) of Japan, which pays four of its external passive managers to implement engagement activities to “encourage investee companies to increase their corporate value and the sustainable growth of the entire market from the long-term perspective” (p. 18).²⁰

Internal Incentives

Asset owners should also consider incentives for their internal managers. As with external incentives, these incentives should be a mix of existing performance incentives and goals as well as additional incentives to address both investment strategies and net-zero strategies. Again, creating such an incentive structure will require a shift from a strictly investment performance-based perspective to a multi-dimensional approach. The weights

²⁰See GPIF, “Stewardship Activities Report 2023–2024” (March 2024), www.gpif.go.jp/en/topics/Stewardship_Activities_Report_2023-2024.pdf.

assigned to these components must be considered carefully—they cannot compromise an asset owner’s fiduciary responsibility to generate returns for beneficiaries. At the same time, these incentives and targets must be simple enough to be adopted and embraced throughout the asset owner’s organization.

Alignment of incentives with an organization’s mission is also critical to achieving success. Misaligned incentives may lead to failure to achieve an organization’s objectives. USS provides a good example of how incentives can be aligned to support all of an organization’s objectives. During the extended period of falling interest rates after the Global Financial Crisis, the USS defined benefit pension plan experienced a situation where the funding ratio of the plan deteriorated. The performance of the investment managers was measured against a reference portfolio benchmark, and although the managers could outperform that benchmark, this would not necessarily improve the funding ratio; the target and incentives for the investment managers were not contributing directly to all of the pension scheme’s ultimate objectives. USS took the view that a focus on just outperforming market benchmarks was inadequate for meeting the scheme’s objectives, including improving the funding ratio. USS moved from setting outperformance targets versus a reference portfolio benchmark to implementing a total portfolio approach,²¹ structuring the plan’s investment approach as a whole to align with multiple objectives including meeting its liabilities over the longer term, return and risk objectives, climate and responsible investing, and liquidity. Investment performance efforts are managed and measured across multiple aspects and time horizons, and incentives are partly based on the investment-balanced scorecard approach that accounts for the various quantitative and qualitative risks facing the plan’s assets. The scorecard approach also incorporates assessing the management of climate risk effects on the plan’s assets.

Organizational Readiness

A successful incentive structure depends on the asset manager having an investment philosophy and process that is explicitly designed to create change, measure the change, and compensate staff to drive change, according to GIIN (2011). When hiring external managers, asset owners should evaluate whether a net-zero incentive is related to the asset manager’s core belief, whether it drives a theory of change that the manager embraces, and whether the asset manager has internal measurement and compensation structures tied to outcomes that will drive net-zero investing. Without all of these elements in place, a net-zero investment program overlaid onto a traditional existing investment program is unlikely to work very well.

When organizational readiness is in place, compensation and incentives can be structured to help drive financial and net-zero results. Some instructive examples are emerging from the impact investment industry, but they

²¹For a discussion of the Total Portfolio Approach, see Urwin (2024).

are scarce. One approach is to pay a carry or bonus tied to specific impact outcomes in addition to a flat fee for financial investment performance. Another is a decrement to the flat fee for *not* achieving impact outcomes. This approach, however, can lead to more work for less pay, which is not motivating. A third approach is some form of a deferred, outcome-based compensation bonus that encourages long-term goal setting and investment strategy. There are also examples of relaxing risk guardrails, such as wider tracking error ranges, and extending contract time frames—to five years, for example—to encourage asset managers to take a longer view, especially of engagement efforts. As outcome-based investing grows, new and more effective compensation structures are likely to emerge.

Outcome-based investing requires a great deal of additional effort and resources, including additional engagement staff, the development of outcome metrics, changes in the compensation structure, and various other activities that inevitably make the asset manager's job more complex and time consuming. Asset owners should be cognizant of the requirements of a net-zero program and ensure an asset manager has the resources to execute it successfully.

For its internal managers, an asset owner must address whether its staff has sufficient incentives to meet the organization's net-zero investing objectives. If not, then incentives must be redesigned. Internal incentives need not be solely monetary, but they are most likely to drive success if they are embedded in the staff's annual review, individual objective setting, and internal rating process.

By far the most important elements to ensure success of a net-zero investment program are the organizational components, commitment from all stakeholders, and a vision for success that is shared by everyone at the asset owner from top to bottom. An asset owner must address powerful behavioral forces to implement a successful net-zero investment program. In short, the asset owner must be organizationally ready to launch a net-zero program. Leadership, the asset owner board, and trustees must back the program. The asset owner's consultants must be brought on board and must help enact the net-zero effort. And the asset owner and staff must resist behavioral regret if they made changes to the portfolio that detracted from near-term performance while the promise of superior future performance is yet to be fulfilled.

Time Horizons

Much has been written about the investment industry's short-termism problem, which manifests in several ways. Asset owners with long-term investment objectives commonly give their asset managers three-year contracts, reasoning that three years is sufficient time to assess manager skill and value added relative to a benchmark. Asset managers, with their three-year mandate, look for near-term opportunities to take performance gains and avoid losses,

often looking to events such as quarterly or annual earnings guidance and announcements to inform buy and sell decisions. Companies, aware that the holding period for a stock averages less than a year, may prioritize near-term gains at the expense of long-term projects. Short holding periods also have implications for manager engagement efforts when company changes take longer than expected holding periods.

Performance Evaluation Periods

The typical performance evaluation period is far too short to assess manager success over a full market cycle, which averages seven years; an engagement program, which may not see success for five or more years; or a net-zero strategy, for which progress may not be known for five to ten years and success will not be known for several decades. The longer horizons and patient capital needed for net zero investing, however, are not unfamiliar to the industry. A ten-year minimum time horizon is generally the norm for private equity investors, for example. Managers of passively managed investment products also have the benefit of inherently long time horizons, provided they maintain minimal benchmark tracking error and charge competitive fees. Managers tracking a decarbonizing benchmark and private capital managers investing in climate solutions have a somewhat built-in, climate-change-appropriate time period.

Given the longer time horizons for private and passive investments, it is active managers of listed securities who find themselves at odds with striving to achieve net-zero objectives within a traditional equity or fixed income performance evaluation period. Decarbonizing a portfolio through real-world emissions reduction will take many years; currently, only a small percentage of companies are Paris-aligned. Active managers need sufficient time to effectively manage a net-zero strategy, which includes evaluating company climate risk and emissions trajectories, identifying appropriate climate solutions, and using engagement levers to attempt to influence change. Yet for the large portion of an asset owner's portfolio that is invested in listed securities, active management, not passive, has the greatest potential to bring about portfolio decarbonization through real-world changes. Evaluating active managers over a three-year time horizon and replacing underperforming managers undermines the long-term commitment necessary to achieve an asset owner's net-zero objective.

The Price of Short-Termism

A focus on short-term time horizons has negative implications not only for asset owners and asset managers but also for the companies in which they invest. CFA Institute first explored short-termism effects on companies in a seminal 2006 work, "Breaking the Short-Term Cycle" (Krehmeyer, Orsagh, and Schacht 2006). That report found that the practice of sell-side analysts pressuring companies for quarterly earnings guidance led to companies implementing short-term incentive compensation structures and favoring near-term profits over long-term strategic initiatives. CFA Institute, along with other organizations, issued several recommendations to investors and issuers

to reform earnings guidance practices, including using engagement as a form of communication to increase transparency in lieu of earnings guidance.

A follow-up paper, “Short-Termism Revisited” (Orsagh, Allen, and Schacht 2020), quantified the cost of short-termism over the period 1996 to 2018, estimating that forgone earnings amounted to an average of \$79.1 billion annually during this 22-year period. Investors appeared to discount companies that prioritized short-term gains without a legitimate reason; these companies tended to underperform over a medium-term period of three to five years.

Short time horizons also have negative implications for engagement strategies. Eliminating or greatly reducing GHG emissions requires a massive transformation in company business operations and models. As noted earlier, the average holding period for a company’s stock is much shorter than the period needed for engagement efforts to come to fruition. In “Short-Termism Revisited,” CFA Institute recommended that “issuers and investors should both make meaningful investments in engagement to foster increased discussion around the long-term issues most important to a company’s strategy.” Investors should aim to establish long-term relationships with companies targeted for engagement. This is especially true for managing climate change risks. Managers who demonstrate deep knowledge of a company’s business model and climate risk management efforts may lean toward longer holding periods and thus may have greater success in their engagement efforts. Over time, growth in assets tracking decarbonization benchmarks could also lead to greater influence over company behavior if AUM tracking these indexes reaches a point where index exclusion affects share prices. Today, however, AUM tracking decarbonization benchmarks constitutes only a small portion of passively managed AUM.

Net-Zero Time Horizons

The investment time horizon for a net-zero objective is not unlike that of a traditional long-term objective. To increase the probability of meeting a long-term objective, an asset owner must set interim targets. Time horizons and targets go hand in hand; setting one necessitates setting the other. Progress toward a traditional long-term objective is measured along the way by setting three- to five-year investment performance targets. Interim targets are also critical for meeting net-zero objectives because climate change effects will not materialize all at once in 2050. It is difficult—perhaps impossible—to quantify the effects of climate change on a portfolio’s asset values over various periods, but climate change impacts and transition opportunities are happening now and will continue during the next several decades.

To achieve the portfolio benefits of real-world emissions reduction, asset managers must invest time and resources to evaluate company transition strategies and risks, measure emissions pathways, source transition opportunities, and engage for corporate change. When asset owners evaluate asset managers who implement a net-zero mandate alongside a traditional

investment program, asset owners should be mindful of the complexities and resources required and set realistic and productive interim targets at various time horizons to give managers sufficient opportunity for success. A five-year time horizon, for example, not only provides better chances for engagement success and progressive emissions reduction, but it also more closely aligns with a market cycle, offering a fuller evaluation of financial performance.

NZAOA and IIGCC both offer guidance for setting net-zero targets and time horizons.²² The IIGCC Net Zero Investment Framework (NZIF) Implementation Guide 2.0 recommends setting a five-year target for the percentage of the portfolio that is managed according to a net-zero strategy and targets inside of ten years for portfolio-level emissions reduction and the percentage of investments in climate solutions.²³ NZAOA asked its members in 2021 to commit to 2025 and 2030 emissions reduction targets. In practice, asset owners have set a variety of target dates, ranging from beginning in 2025 to beginning as late as 2040, generally with several interim dates in between. Interim target dates should realistically reflect the maturity of an asset owner's program.

Conclusion

Asset owners should not lose sight of the overarching objective of net-zero investing—to avoid making investments that will be left behind by the transition to net zero and to improve returns by finding ways to benefit from the transition. A well-designed net-zero investment program can contribute to an asset owner's fiduciary duty to manage their assets by striving for the highest returns within the defined risk parameters for the benefit of plan participants and beneficiaries. Strategies to influence real-world climate transformation and create a climate-resilient portfolio include a combination of allocating capital to climate solutions, engaging to change corporate strategy, and advocating for policy changes. To build a successful net-zero investment program, an asset owner must obtain organizational buy-in and ensure internal and external managers have sufficient resources and expertise.

Traditional performance evaluation practices—with the narrow focus of evaluating portfolio returns relative to a market index over short time horizons—often present barriers to net-zero investing. To overcome these barriers, asset owners should consider evaluating an investment program's success by using a scorecard that measures both risk-and-return targets and metrics as well as net-zero targets and metrics. Setting appropriate and relevant incentives will increase an asset owner's probability of achieving net-zero objectives and targets. For a net-zero program to be fully effective, objectives and targets should be set for short-, medium-, and long-term periods. For example, to achieve net zero by 2050, the NZAOA recommends absolute emissions reduction targets of 22% to 32% by 2025 and 49% to 65% by 2030.

²²See NZAOA (2022a) and IIGCC (2021).

²³The NZIF 2.0 contains an extensive list of recommendations at the portfolio and asset level, with interim steps and objectives.

What can we say about the future of net-zero investing? The planet is undergoing a climate transformation that is driving one of the most significant economic transitions in history. We expect that net-zero investing will continue growing as the industry develops better tools and skills to measure and manage climate-change risk and as climate-change solution opportunities continue to materialize.

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