



Investment **Research**

Lazard Asset Management's:

Approach to Net Zero Portfolios

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The Paris Agreement has at its heart three concepts, that, when combined, represent a climate call to arms for the investment management industry. It asks for emissions reductions, it asks for help from all actors to deliver them, and it asks for financing to expedite the changes. The investment management industry can deliver these objectives in the form of net zero portfolios. These are portfolios that reduce their emissions in line with climate science, currently by ~50% from 2020 to 2030, before meeting net zero portfolio emissions by mid-century. Net zero portfolios also direct capital to climate solutions companies, or finance activities that expedite emissions reductions in the real-world economy.

This paper will set out the basis for net zero portfolios as framed by climate science and international policy, the implementation techniques that can deliver net zero portfolios, as well as the associated technical and methodological considerations.

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"Only within the moment of time represented by the present century has one species—man—acquired significant power to alter the nature of his world."

Rachel Carson, Silent Spring, 1962

"The retreat of glaciers, the shift in the pattern of migrating birds. I've been able to witness it. To witness changes that used to be measured in geologic time happening in human time."

Rick Ridgeway, 2021

Executive Summary

Climate policy has evolved from a government-led and top-down agenda to one of mass participation, while the evidence for climate change in the scientific and lived world has become overwhelming. All industries must now present an answer to tackling climate change, and for investment management, net zero portfolios are one of the newest front-line tools. Evidence of climate change in financial markets cannot be ignored as another motivation behind investment management's participation in the climate fight.

If the Paris Agreement signaled the need for mainstream financial sector involvement in tackling climate change, COP26 in Glasgow signaled a newly coordinated approach and mass uptake. The Glasgow Financial Alliance for Net Zero, or GFANZ, representing banks, investors, and insurers, now has >\$130tn of committed financial assets across member firms, having started life in November 2020 with \$5tn. The Net Zero Asset Managers initiative, a member of GFANZ, now has \$61tn of AUM committed to net zero portfolio implementation.

Lazard Asset Management has committed to the Net Zero Asset Managers Initiative, signing up in March 2021. A number of Lazard Asset Management clients have committed to the Net Zero Asset Owner Alliance. Lazard Asset Management published its initial commitments, in terms of portion of AUM, and associated portfolio targets in June 2022.

Under this backdrop of international climate policy, the latest scientific evidence on climate change, and Lazard Asset Management's commitment to the Net Zero Asset Managers initiative, this paper will set out how Lazard Asset Management will operationalize net zero across relevant strategies and what decisions we believe must be made in developing a Net Zero Framework. With investments across a range of strategies, Lazard Asset Management's Net Zero Framework is designed to provide a series of unifying principles that can be separately implemented across different investment platforms.

Lazard Asset Management will use the Paris Aligned Investment Initiative's Net Zero Investment Framework (NZIF) for net zero implementation across relevant strategies, based on the broad scrutiny it provides beyond initial target setting, across capital allocation, climate disclosures, and lobbying activities. The NZIF also understands net zero as a journey, making it compatible with Lazard Asset Management's understanding of evolution in the investment process. Lastly, it recognizes that

*"investors across the globe have different opportunities, constraints, and starting points for achieving net zero emissions and there are a range of methodologies and approaches available to investors to set targets and implement strategies."*¹ In some asset classes or for some investment strategies, agreed-upon net zero methodologies do not yet exist. NZIF will, therefore, work to address these challenges, including through the Paris Aligned Investment Initiative.

While setting an emissions-reduction or net zero target is a welcome step for a corporate, municipality, or sovereign entity, the complexities inherent to net zero delivery are endless. Lazard Asset Management believes the Climate Alignment Assessment that sits at the heart of the NZIF represents a comprehensive approach for assessing what happens after targets are set and how expectations for net zero delivery should change over time and where relevant to the asset class, facilitated by engagement.

Lazard Asset Management will initially set net zero portfolio targets based on each relevant portfolio's Weighted Average Carbon Intensity (WACI) but will also use alternative metrics such as Science-Based Targets initiative (SBTi) penetration where specific strategies or clients require it. WACI standardizes asset-level emissions by revenue, so that the output is tCO₂e/\$m revenue, and its use is endorsed by the Taskforce on Climate-related Financial Disclosures, as well as the Net Zero Asset Owners Alliance. While WACI will be the main portfolio-level metric, it should be emphasized that Lazard Asset Management considers this the output of bottom-up climate scrutiny, rather than a standalone target.

Although the setting of targets under the Net Zero Asset Managers initiative will initially be based on Scope 1 and 2 emissions, Lazard Asset Management's approach will consider Scope 3 emissions in tandem from the outset for two reasons. First, in terms of emissions mix, Scope 3 makes up on average 44% of total emissions where such emissions are reported, with an even higher amount in emissions-intensive sectors. Second, beyond the scale of the emissions, the Institutional Investors Group on Climate Change (IIGCC) will require inclusion of Scope 3 emissions in portfolio metrics from 2023, meaning producing calculations in tandem makes room for both methodology enhancements and a more holistic understanding of a portfolio's emissions composition and distribution.

Given this focus on understanding corporate emissions reductions, Lazard Asset Management is also working on increased use of emissions estimates. In the first wave of use cases, emissions estimates will be crucial in understanding the asset-level and portfolio-level emissions trajectories that are required in a net zero portfolio. In the second wave, these estimates will need to be integrated into traditional financial analysis so that they guide understandings of the capital costs and profitability implications of each asset's abatement journey. Lazard Asset Management will start this process by creating bottom-up emissions models for the companies that represent 70% of portfolio-financed emissions in selected designated net zero portfolios, with the ultimate goal of embedding this in sector analysis broadly over time.

While aggregate global emissions-reductions targets, such as reducing global emissions by 50% from 2020 to 2030, provide a reference point for how the global economy will need to transform to deliver net zero, security-level decarbonization pathways are often idiosyncratic, varying by industry, geography, and starting point. Lazard Asset Management's use of greenhouse gas forecasts is designed to allow these idiosyncratic pathways to be reflected in an assessment of an asset's net zero alignment, instead of comparing all assets to a common pathway. Therefore, we believe a portfolio decarbonization pathway should be considered a weighted average of idiosyncratic asset-level pathways.

Reducing emissions in a net zero designated portfolio does not by itself align an investment approach with the Paris Agreement. To do this, capital must also be directed to climate solutions, or entities that facilitate the energy transition, climate adaptation, or associated activities. Lazard Asset Management will set dual targets for net zero portfolios—the degree to which portfolio emissions will be reduced over time, and the extent to which revenue and capex exposure to climate solutions activities will increase over the same period.

A focus on climate solutions requires an understanding of what activities are relevant and how they can be measured, which increasingly means a discussion of both revenue exposure, a taxonomy approach, or avoided emissions. The inclusion of avoided emission metrics can be an important enhancement to a taxonomy type approach, given the way in which \$m amounts of climate solutions revenues or capex deliver varying degrees of real-world greenhouse gas impact. Not all climate investments are created equal in greenhouse gas terms.

Lazard Asset Management will look to consider calculations of avoided emissions in the discussion of an asset or portfolio's climate solutions characteristics as avoided emissions methodologies evolve.

Committing to net zero at a firm level and relevant portfolio level requires new data sources, approaches, and portfolio tools when compared to existing portfolio management approaches. Since signing up to the Net Zero Asset Managers initiative in March 2021, Lazard Asset Management has conducted an extensive search for what we believe to be the best data

sources and analytics. Lazard is also developing a proprietary internal analytics tool, the Net Zero Dashboard, to enhance risk management and client reporting across relevant net zero designated portfolios.

As climate change is agnostic to ownership of emissions or the accounting standards attached to them, we believe net zero portfolio implementation must be designed so that they prioritize a reduction in real-world emissions, and not the artificial optimization of reported emissions. This, in our opinion, is organic decarbonization. We believe it is possible to change the composition of a portfolio without sacrificing or abandoning the pursuit of organic emissions, introducing the need to re-establish a baseline for portfolios where a meaningful change in asset allocation has taken place.

As outlined in the Climate Alignment Assessment, Lazard Asset Management puts engagement and proxy voting at the heart of the net zero designated portfolio process, to drive improvement in both corporate- and portfolio-level emissions. Our overall objective is to encourage companies to transition their operations, products, and supply chains towards a Net Zero 2050 goal. We will measure success by the extent to which companies progress through the stages of our Climate Alignment Assessment framework.

This paper is intended to provide an explanation of Lazard Asset Management's approach to net zero portfolio implementation, in addition to important background information and general guidance for Lazard's clients. What should also be clear though, is that the standards, metrics, and approaches discussed are in the early stage and constantly evolving.

As work continues on the application of methodologies across relevant portfolios, especially through the TCFD's Portfolio Alignment Team, Lazard Asset Management will seek to update our methodology where we see opportunities for better data, approaches specific to distinct asset classes, or improved methodologies. On this front we welcome the Transition Pathway Initiative's publication of EM-specific pathways for industries such as Electric Utilities, made available in their tool from April 2022² and will review the results of the UN's sovereign project – ASCOR (Assessing Sovereign Climate-related Opportunities and Risks) when released.³ We also note that CDP's database of companies with a temperature rating under their open source methodology now contains roughly 4,000 records, making this a metric where useability is quickly increasing.⁴ As set out below in the Portfolio Metrics section, our concern with this metric has been our ability to implement Implied Temperature Rise with integrity, not the validity of the metric itself.

These are just examples of how our methodology may need to evolve over time, but many more exist from corporate disclosures through to client reporting. As such, this is version one of Lazard's Approach to Net Zero, and we anticipate we will publish updates with enhancement to our own methodology, as well as learnings from the previous year's implementation, along with our target process.

Introduction: The Political and Scientific Basis for Net Zero Portfolios

What Has Changed? The international community has “known” about climate change for thirty years, so it is reasonable to ask why the investment management industry is only now developing net zero portfolios.

Climate policy has evolved from a government-led and top-down agenda to one of mass participation, while the evidence for climate change in the scientific and lived world has become overwhelming. All industries must now present an answer to tackling climate change, and for investment management, net zero portfolios are one of the newest front-line tools. Evidence of climate change in financial markets cannot be ignored as another motivation behind investment management’s participation in the climate fight.

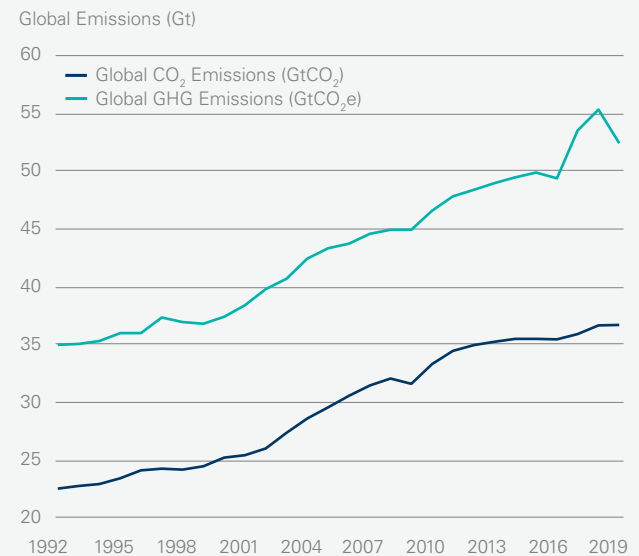
The 1992 Earth Summit in Rio de Janeiro gave rise to the UN Framework Convention on Climate Change, which, remains the international community’s main mechanism for tackling climate change. In 1997, the Kyoto Protocol was adopted, and developed countries committed to cutting their greenhouse gas emissions for the first time. In 2007, the UN’s Intergovernmental Panel on Climate Change (IPCC), the scientific body charged with advising the UN, concluded that climate change was “very likely” to be caused by anthropogenic emissions. By 2013, this conclusion had changed to “extremely likely.” In the UN’s latest assessment of climate science, they note that it is “virtually certain” that human-caused emissions drive climate change.

These thirty years have therefore seen a strengthening of scientific consensus on climate change and the development of sophisticated international agreements and treaties to limit greenhouse gas emissions. Neither the political frameworks nor scientific evidence have spurred real change. Since the 1992 Earth Summit, global CO₂ emissions have risen from 22.6 Gt annually to 36.7 Gt⁵ in 2019, while overall greenhouse emissions have risen from 35 GtCO₂e annually⁶ to 52.4 GtCO₂e⁷. In March 2022, the IEA announced that CO₂ emissions overall, and CO₂ emission from coal use both reached record highs in 2021 (Figure 1).⁸

As a result of this, atmospheric concentrations of CO₂ have reached 419 parts per million (February 2022)⁹, and global average temperatures in the period 2011–2020 have already risen to 1.1°C above pre-industrial levels, defined as 1850–1900.¹⁰

In the last five years, the physical manifestations of climate change have become impossible to ignore. In August 2021, rain fell on Greenland’s ice cap for the first time on record.

Figure 1
Global GHG Emissions since 1992



As at 31 December 2019

Source: Lazard, Our World in Data, UNEP

The public has been introduced to the concept of “wet bulb temperature” or the threshold beyond which human life simply cannot survive. Pakistan and the UAE experienced instances of these conditions in 2021. The public has also been introduced to the concept of a “heat dome” including the one that delivered temperatures of 130°F or 54.4°C in Death Valley in July 2021. This was likely a world record given the previous high of 134°F or 56.7°C was recorded in 1913, with all the instrumental limitations that implies. In July 2021, Lytton in British Columbia disappeared from the face of the earth, trapped under the same heat dome, and ravaged by the wildfires that came with temperatures near 50°C. Coincidentally, Lytton is 50° North of the equator. The Arctic Circle is at ~66° North, while London sits at 51.5° North. The IPCC’s February 2022 report on *Climate Change: Impacts, Adaptation and Vulnerability* explained that climate change will see “risks cascading across sectors and regions.”¹¹ In less scientific language, these risks were described by António Guterres, the UN Secretary General, as an “atlas of human suffering.”¹²

Financial markets and asset prices are not passive observers of these events. The bankruptcy of PG&E was characterized by *The Wall Street Journal* as “the First Climate-Change Bankruptcy, Probably Not the Last”¹³ while Tesla became the first, but hopefully not the last, trillion-dollar climate solutions company. Climate risk is now observable in municipal bonds¹⁴, stock prices¹⁵, and physical real estate¹⁶. These examples underline the two ways in which climate change impacts portfolios. There are risks associated with climate change, usually termed physical risk and transition risk, but the latter is also a huge opportunity.

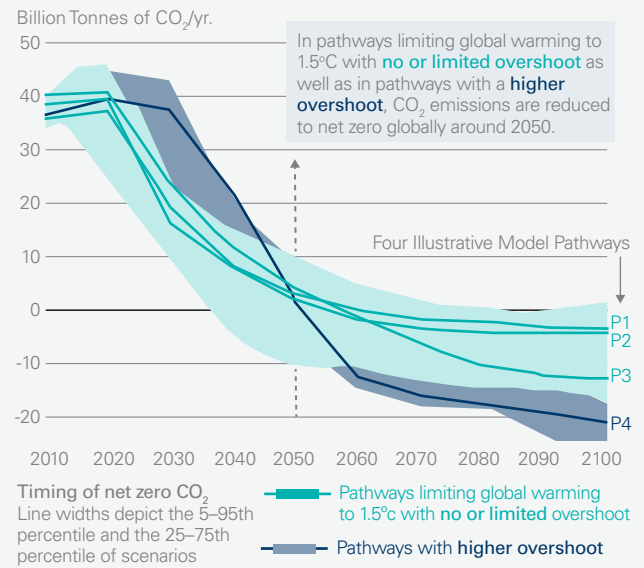
Why target 1.5°C vs. 2.0°C?

The Paris Agreement, adopted in 2015, is therefore the international community's last opportunity to contain the negative impacts of climate change. As a headline goal, the Paris Agreement commits to keeping global temperature increases to well below 2°C and pursue efforts to limit temperature increases to 1.5°C. This seemingly small range of desired outcomes has huge significance, as articulated in the UN's 2018 "Special Report on Global Warming of 1.5°C" which presents the differences in physical risk and ecosystem destruction that come with this additional 0.5°C of temperature increase. At 1.5°C of warming for example, loss of coral reef systems is estimated at 70%–90%. At 2°C, it is estimated at 99%¹⁷. Up to one billion people globally are dependent on coral reef ecosystems in some form, across direct nourishment, employment, and physical protection from the oceans¹⁸. The difference between 1.5°C and 2°C is not an academic one. The emphasis on 1.5°C as a planetary boundary has its origins in the Paris Agreement, which was developed through 2018, but really became codified in 2021 at COP26, through the Glasgow Climate Pact, which has an explicit aim of limiting temperature increases to 1.5°C¹⁹. COP26 marked the end of "well below 2°C" as a global climate policy.

How does a 1.5°C ambition connect to net zero targets?

Net zero is a product of these temperature objectives, as to limit temperature rises to 1.5°C, global greenhouse gas emissions must reach net zero by mid-century. In fact, given the near-linear relationship between cumulative greenhouse gas emissions and temperature increases, emissions must reach net zero at some point to deliver any temperature threshold. This also explains why not just the timing of net zero is important but also the how. Greenhouse gas emissions are a stock problem, and not a flow problem, with the stock being termed the carbon budget. This is the amount of remaining greenhouse gas emissions that can be emitted into the atmosphere before a certain temperature threshold is breached. At the time of the IPCC's Special Report on Global Warming of 1.5°C, published in 2018, the global carbon budget associated with a 50%–66% probability of 1.5°C was calculated at 420–580 GtCO₂, or 570–770 GtCO₂ depending on the methodology used. Based on the IPCC's Sixth Assessment Report from 2021, the remaining carbon budget associated with a 50%–66% probability of 1.5°C has now fallen to 400Gt–500 GtCO₂²⁰. This remaining carbon budget forms the basis of the required trajectory to mid-century net zero, put at -45% in 2030 from a 2010 base, or -50% from 2020 to 2030 given emissions have continued to rise since 2010.

Figure 2
Net Zero Emissions Pathways



Source: IPCC

The two headline ambitions global climate policy has therefore coalesced on are reducing emissions by 50% to 2030, and then reaching global net zero in 2050.

Alongside its temperature objectives, the Paris Agreement reinforced two concepts that continue to guide private sector involvement in climate policy. The first is the role of "various actors" which means accepting that climate change is a multi-stakeholder endeavor, where individuals, corporations, municipalities, and other organizations have a role to play. Climate change cannot be addressed by governments alone. The second is the aim of making "finance flows" consistent with emissions-reductions pathways. Climate finance in its purest form has existed since COP16 in 2010²¹, when developed nations committed to providing \$100bn of annual climate finance by 2020, which is, incidentally, another climate goal that remains unmet, but it was the Paris Agreement that led to the involvement of mainstream finance in climate change. Together, this expansion of climate objectives to mainstream finance is what triggered the development of the first net zero portfolio methodologies. The Net Zero Asset Owners Alliance launched in September 2019²² and the Net Zero Asset Managers Initiative in December 2020.

The Role of Financial Services in Climate Change

If the Paris Agreement signaled the need for mainstream financial sector involvement in tackling climate change, COP26 in Glasgow signaled a newly coordinated approach and mass uptake. The Glasgow Financial Alliance for Net Zero, or GFANZ, representing banks, investors, and insurers, now has >\$130tn of committed financial assets across member firms, having started life in November 2020 with \$5tn. The Net Zero Asset Managers Initiative, a member of GFANZ, now has \$61tn of AUM committed to net zero portfolio implementation.

Lazard Asset Management has committed to the Net Zero Asset Managers Initiative, signing up in March 2021. A number of Lazard Asset Management clients have committed to the Net Zero Asset Owners Alliance. Lazard Asset Management will publish its initial commitments, in terms of portion of AUM, and associated portfolio targets in May 2022.

Increasingly, the financial services industry has unified aims, organizations, and terminology. This consolidation of efforts will be crucial in driving uptake of net zero in financial services and ensuring transparency of claims.

At an investor level, the Net Zero Asset Owners Alliance and Net Zero Asset Managers initiative have ~\$11tn and ~\$61tn of assets under management among their membership. Their aims align with those of the Paris Agreement—to limit temperature increases to 1.5°C by supporting emissions reductions at an asset and portfolio level and by directing finance flows to climate solutions. More specifically, asset manager signatories must commit to managing portfolios in a manner that is consistent with a 50% reduction in global greenhouse gas emissions from 2020 to 2030, with five-year interim targets for what portion of assets will be managed on this basis, en route to reaching 100% of AUM in net zero portfolios by 2050.

Alongside these financial services commitments sits the corporate emissions-reductions and net zero targets that will ultimately drive the decarbonization of asset portfolios. Here, the SBTi has quickly become the de-facto standard for corporate emissions reductions, with over 1,000 companies now having emissions-reductions plans aligned with a 1.5°C pathway that is validated by the SBTi. In October 2021, the SBTi announced an extension of the existing target-setting process to allow companies to now set, and have validated, full 2050 net zero

targets. Historically, the SBTi validated targets based on a 2050 net zero aligned pathway, but only out to 2035. As of the SBTi's newly launched net zero standard, companies looking for net zero validation from the SBTi must reduce gross emissions by at least 90% to 2050 and then neutralize their residual emissions.²³ This does not however complete the picture, as companies are also able to set their own net zero targets using their own methodologies, especially in sectors [where the SBTi does not yet have a sector-specific standard available](#). These include Oil and Gas, Buildings, Cement, and Steel, meaning that most of the largest contributors to global greenhouse gas emission are not yet able to set a net zero target in an industry-specific fashion that can be validated by the SBTi. This enhances the need for bottom-up net zero scrutiny at a company level.

The CDP Survey for example shows the following waterfall from emissions-reductions targets through to full SBTi validation, as an illustration of target heterogeneity (Table 1).

Table 1
Metals and Mining Responses to CDP Survey 2021

	No.
Metals and Mining Companies	95
Metals and Mining Companies with Emissions-Reduction Plan	62
Metals and Mining Companies with Net Zero target	9
Metals and Mining Companies with Net Zero target, not science based	5
Metals and Mining Companies with Net Zero target, science based	4
Metals and Mining Companies with Net Zero target, to be SBTi validated	1

As at 31 December 2021

Source: CDP

A further problem exists, though, identified by Mark Carney, as the *tragedy of the horizon*. Setting a corporate net zero target is part of a 30-year commitment. Few companies have experience of planning on this horizon, while few investors have experience of investing on this horizon. The challenge therefore for corporates is moving beyond target setting and into execution and operational delivery of net zero. *Target setting alone will not deliver 1.5°C.*

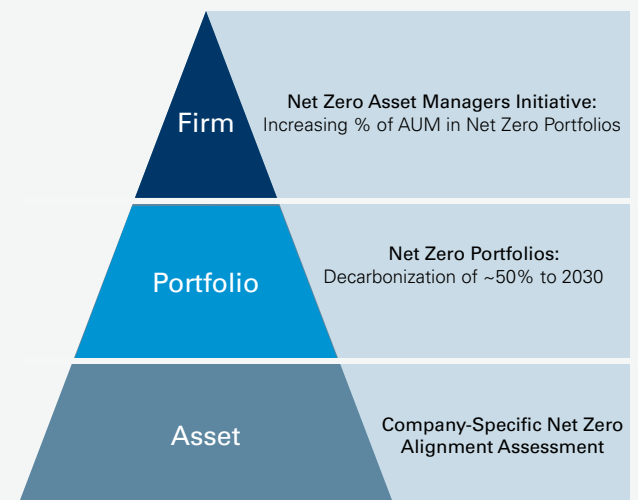
The challenge for investors is how to scrutinize these targets and evaluate chances of success, while balancing the sometimes-competing demands of portfolio decarbonization, support for transition companies, and allocation of capital to climate solutions.

Lazard Asset Management's Delivery of Net Zero across Relevant Strategies

Under this backdrop of international climate policy, the latest scientific evidence on climate change, and Lazard Asset Management's commitment to the Net Zero Asset Managers initiative, this paper will set out how Lazard Asset Management will operationalize net zero across relevant strategies and what decisions we believe must be made in developing a Net Zero Framework. With investments across a range of strategies, Lazard Asset Management's Net Zero Framework is designed to provide a series of unifying principles that can be separately implemented across different investment platforms.

Implementation exists on three levels. At a firm level, Lazard Asset Management must meet its commitments made under the Net Zero Asset Managers Initiative. This means selecting an initial portion of AUM that will be managed as Net Zero strategies from May 2022, as well as a pipeline for future strategies that will become the next portion of AUM to be committed. This firm-level layer requires co-operation with asset owner clients and their own commitments, targets, and chosen metrics. At a portfolio level, net zero implementation means understanding how existing mandates, with their specific investment objectives and parameters can be combined with emissions-reductions targets, without compromising the overall objective of delivering strong investment performance and maximizing long-term shareholder value. Underpinning these layers is the requirement to understand the idiosyncratic decarbonization that needs to be delivered by each asset in a net zero portfolio. Again, this will differ across sovereign and corporate assets and by region. Differences exist in climate disclosure standards by region, with the gap between developed and emerging markets predictably the most pronounced. At its heart though, Lazard Asset Management believes net zero for the investment management industry is built on bottom-up asset-level scrutiny.

Figure 3
Lazard Asset Management's Net Zero Alignment Levels



For illustrative purposes only
Source: Lazard

Net Zero Portfolio Implementation

Lazard Asset Management will use the Paris Aligned Investment Initiative's Net Zero Investment Framework (NZIF) for net zero implementation across relevant strategies, based on the broad scrutiny it provides beyond initial target setting, across capital allocation, climate disclosures, and lobbying activities. The NZIF also understands net zero as a journey, making it compatible with Lazard Asset Management's understanding of evolution in the investment process. Lastly, it recognizes that *"investors across the globe have different opportunities, constraints, and starting points for achieving net zero emissions and there are a range of methodologies and approaches available to investors to set targets and implement strategies."*¹ In some asset classes or for some investment strategies, agreed net zero methodologies do not yet exist. Industry bodies will, therefore, work to address these challenges, including through the Paris Aligned Investment Initiative.

As the construction of net zero portfolios is new, several alternative methodologies for implementation have emerged concurrently. The Institutional Investor Group on Climate Change (IIGCC), Europe's asset management trade body for climate change, allows members to use one of three methodologies when assessing portfolio alignment. These are the Net Zero Asset Owner Alliance Target Setting Protocol, the SBTi Financial Sector Targets Guidance, and the Net Zero Investment Framework from the IIGCC/Paris Aligned Investment Initiative (PAII) itself.

Table 2
Net Zero Portfolio Methodologies

Methodology	Owner	Framework Document
Net Zero Investment Framework	Paris Aligned Investment Initiative	Net Zero Investment Framework Implementation Guide
Net Zero Asset Owners Alliance Target Setting Protocol	UNEP/PRI	Target Setting Protocol, Second Edition
Financial Sector Targets Guidance	Science-Based Targets Initiative	Financial Sector Science-Based Targets Guidance: Version 1.0

Source: CDP

As Lazard Asset Management's own implementation will be driven initially by a combination of explicit client mandates and Lazard strategies, the temptation is to simply align with the clients' likely commitment, that of the Net Zero Asset Owner Alliance. The headline requirement here is to hit an emissions-

reduction corridor of -22% to -32% by 2025 and then -49% to -65% by 2030²⁴, based on a 2020 starting point. This is a form of a single-scenario benchmark and while it provides an appropriate overall glide path consistent with climate science, we do not believe it can easily accommodate the idiosyncratic decarbonization trajectories required by specific portfolios and securities.

Under the SBTi Financial Sector Targets Guidance, asset managers may select from three modes of target setting. They may opt for a target based on the penetration of asset-level SBTs, so that portfolio coverage is 100% by 2040. Under the SBTi approach to net zero portfolios, asset managers are also permitted to set targets based on the temperature ratings of portfolios. Lazard Asset Management's thinking towards temperature metrics is covered in the subsequent section on portfolio metrics. Finally, targets may be based on the appropriate pathways for industry-level decarbonization as outlined by the SBTi Sectoral Decarbonization Approach. Lazard Asset Management may use SBTi methodologies for specific strategies or portfolios that are net zero designated and will continue to monitor attempts to standardize and harmonize the various approaches supported by different industry bodies. It is also relevant to note that by using one of the SBTi methodologies, an asset manager that is part of a larger financial services firm can make progress towards setting a target at a parent company level that will combine the Scope 1 and Scope 2 operations of the parent, and the Scope 3 (Investments, or financed emissions) from the asset management unit.

The NZIF has a particular emphasis on understanding decarbonization at the security level and use of engagement to drive decarbonization, while still delivering a *fair share* of the 50% reduction in global emissions needed by 2030. The NZIF includes security-level climate assessments for the main asset classes. In the example of listed equity, this is based on five levels of alignment with global climate policy objectives, from "Not Aligned" through to "Committed to Aligning" then "Aligning" before reaching "Aligned" and "Net Zero" with six main categories by which to measure corporate commitment and ongoing compliance. Furthermore, the IIGCC explicitly acknowledges that corporate emissions reductions may occur at a lag to active engagement strategies, making it suitable for strategies that wish to engage in pursuit of net zero. In essence, the NZIF allows room for companies to transition and investors a framework to support it, rather than a rigid and inviolable year-on-year emissions trajectory. This is also important in the context of climate solutions compliers, or net zero "enablers" who may deliver near-term rises in corporate emissions to generate much larger emissions reductions at a system level. This will also be explored in the section on avoided emissions metrics. For these reasons, Lazard Asset Management has decided to use the NZIF for implementation of net zero across relevant portfolios.

The Climate Alignment Assessment

While setting an emissions-reduction or net zero target is a welcome step for a corporate, municipality, or sovereign entity, the complexities inherent to net zero delivery are endless. Lazard Asset Management believes the Climate Alignment Assessment that sits at the heart of the Paris Aligned Investment Initiative's Net Zero Investment Framework represents a comprehensive approach for assessing what happens after targets are set and how expectations for net zero delivery should change over time and where relevant to the asset class, facilitated by engagement.

At the heart of Lazard Asset Management's approach to net zero portfolios is a three-stage process designed to identify emissions risk across relevant portfolios, understand how those emissions are currently being managed, and identify what further progress is needed before an asset can be deemed net zero (Figure 4).

1. **Emissions Screen.** Across a portfolio's assets, emissions are rarely evenly distributed, and instead, large intuitive differences exist across industries and countries. We believe

managing relevant portfolios to net zero must first start with finding those emissions. This requires an analysis of the portfolio to identify assets accounting for 70% of financed emissions, in tCO₂e, initially on a Scope 1 and 2 basis, based on the guidance of the Net Zero Asset Managers Initiative but broadened to capture all sectors. Parallel analysis will be constructed on a Scope 3 inclusive basis where feasible, given that Scope 3 emissions can be 10x those of Scope 1 and Scope 2 combined. In relevant fundamental portfolios, securities that are identified as responsible for 70% of financed emissions will then be subject to a bottom-up emissions model constructed by Lazard Asset Management. The role of greenhouse gas emissions forecasting is discussed in full in a separate section below. Based on a sample of work across varying strategies, and consistent with the Pareto Principle, this 70% bucket of financed emissions might come from as few as 4–8 assets in a portfolio of 50–60 assets (Table 3).

2. **Climate Alignment Assessment.** Under the PAII's Net Zero Investment Framework (NZIF), a net zero journey is started by an entity committing to a long-term emissions-reduction target. From then on, investors must measure progress towards delivery. The NZIF does this by allocating portfolio assets to buckets of net zero compliance ranging from "Not Aligned" to "Net Zero." These alignment categories are in turn fed by six underlying measures of ambition, targets, emissions performance, disclosure, decarbonization strategy, and capital allocation. The ultimate target is to move each asset in a portfolio across the alignment spectrum, before reaching 100% of the portfolio categorized as at least "Aligned" by 2040. This acknowledges that delivery of a net zero strategy is progressive as there are temporal limits to change. Each of the six alignment categories under the Climate Alignment Assessment can be linked to specific data sources, meaning this component can form one element that can be utilized broadly across corporate debt and equity strategies. Lazard Asset Management's Climate Alignment Assessment uses 22 datasets from four families of data—CDP, SBTi, CA100+, and Trucost (Figure 5).

Figure 4
Climate Alignment Assessment Workflow



For illustrative purposes only
Source: Lazard

Table 3
Distribution of Emissions for the Three Largest Portfolios (in terms of AUM) that LAM Has Assessed against Net Zero Trajectories

Portfolio	Number of Holdings	Scope 1 and Scope 2		Scopes 1–3		Scope 1–3 vs. Scope 1–2
		Number of Holdings for 70% Emissions	Total Portfolio Financed Emissions (tCO ₂ e)	Number of Holdings for 70% Emissions	Total Portfolio Financed Emissions (tCO ₂ e)	
US Equity Select	54	4	4,183	6	41,673	10.0x
GLIF	69	6	672,600	8	6,860,095	10.2x
Robotics	58	13	61,674	3	5,508,714	8.8x

As at 28 February 2022
Source: Lazard, CDP, Trucost

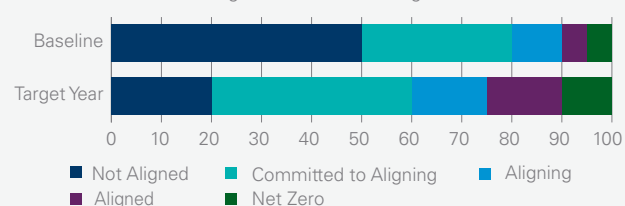
Figure 5
Climate Alignment Assessment

Criteria	Assessment	Source	Not Aligned	Committed to Aligning	Aligning	Aligned (Low Impact)	Aligned (High Impact)	Net Zero
			Transition Potential			Aligned		
Ambition	Long term 2050 net zero target	CA100+ CDP SBTi		✓			✓	✓
Targets	Short- and medium-term emissions trgets	CA100+ CDP SBTi			✓	✓	✓	✓
Emissions performance	Current emissions vs targets	CA100+ Trucost				✓	✓	✓
Disclosure	Disclosure of Scope 1, 2, and 3 emissions	CA100+ CDP			✓	✓	✓	✓
Decarbonisation strategy	Quantifiable business plan for decarbonisation	CA100+ SBTi			✓		✓	✓
Capital allocation alignment	Demonstration of capex alignment to decarbonisation	CA100+					✓	✓

As at 31 March 2022
Source: Lazard, PAII

Figure 6
Portfolio Climate Alignment Targets

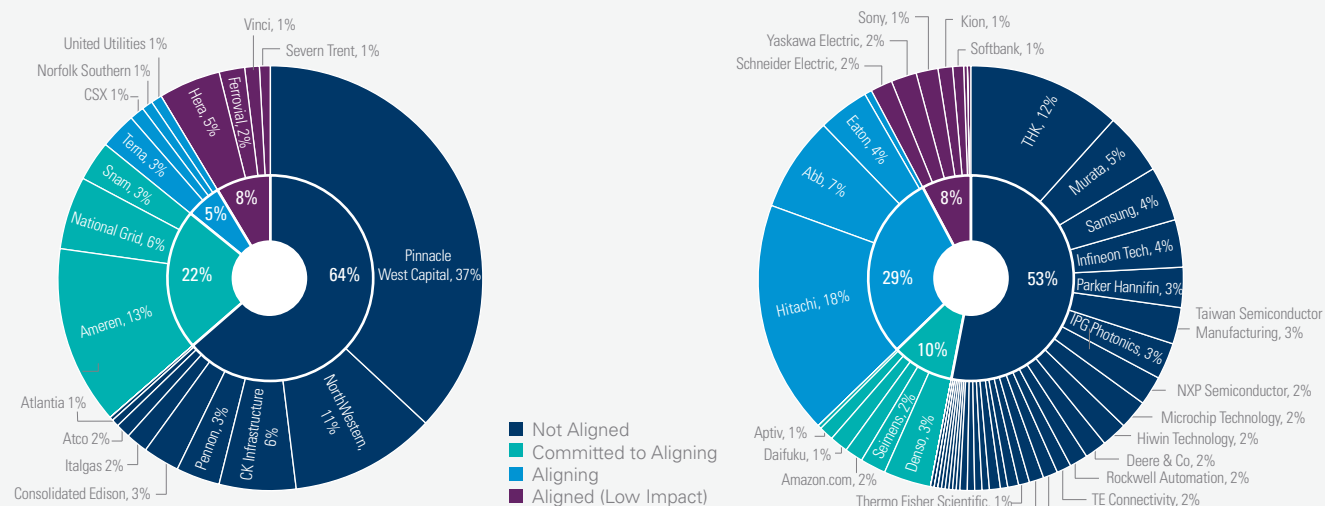
Classification Portfolio Weights – Baseline vs. Target Year (%)



For illustrative purposes only.
Source: Lazard, PAII

3. Climate Engagement Program. In understanding that net zero delivery is a journey and not a binary event defined by target setting, we believe the journey must have waypoints across a climate engagement program. These are the intermediate steps that a company must make between target setting and delivering net zero, and the timetable required to deliver each step. Lazard Asset Management believes company engagement is the key to supporting this. Our approach to climate engagement with companies will be covered in full in a subsequent section but will focus on moving portfolio companies across the categories of net zero alignment (Figure 6), while also prioritizing those heavy-emitting companies that are alignment laggards (Figure 7).

Figure 7
Portfolio Climate Alignment Attribution



As of 8 March 2022
Source: Lazard

Portfolio Metrics

Lazard Asset Management will initially set net zero portfolio targets based on each relevant portfolio's Weighted Average Carbon Intensity (WACI) but will also use alternative metrics such as SBTi penetration where specific strategies or clients require it. WACI standardizes asset-level emissions by revenue, so that the output is tCO₂e/\$m revenue, and its use is endorsed by the Taskforce on Climate-related Financial Disclosures, as well as the Net Zero Asset Owners Alliance. While WACI will be the main portfolio-level metric, it should be emphasized that Lazard considers this the output of bottom-up climate scrutiny, rather than a standalone target.

As the various methodologies for climate benchmarks and net zero commitments from asset owners and managers have proliferated, so too have the metrics that accompany them. The first metric to be widely adopted was WACI, followed by Enterprise Value Including Cash (EVIC), as popularized by the EU's Technical Expert Group²⁵. More recently, the TCFD have advocated for medium-term adoption of Implied Temperature Rise (ITR) at an asset and portfolio level,²⁶ while the SBTi also recommend use of ITR in their Financial Institutions guidance.

Table 4
Major GHG Reporting Metrics

Metric	Unit	Methodology Document
Weighted Average Carbon Intensity	tCO ₂ e/\$m revenue	Implementing the Recommendations of the TCFD
Enterprise Value Including Cash	tCO ₂ e	EU Technical Expert Group Report on Benchmarks
Implied Temperature Rise	°C Warming	TCFD: Assessing the position of companies and portfolios on the path to net zero

Source: Lazard

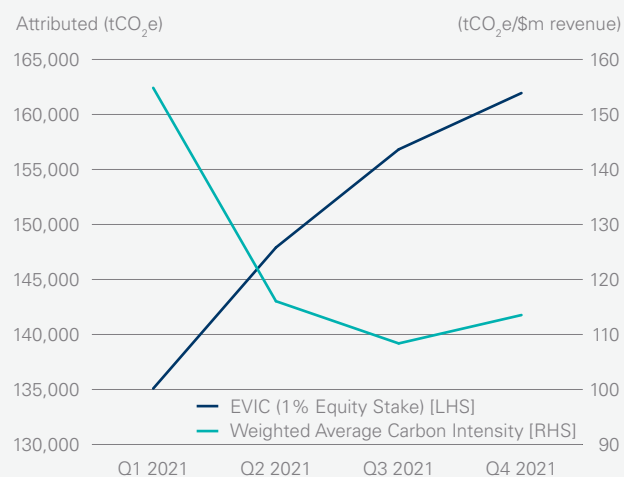
All three methods have advantages and drawbacks that are worth considering. WACI allows a standardized comparison of the emissions intensity of an asset's operating activities, making it suited to understanding how portfolio-level emissions can be reduced and how asset- or portfolio-level performance compares to a benchmark. It does, however, introduce revenue volatility into an emissions calculation, which is a particular concern given that the most emissions-intensive sectors, including energy and materials, have broad exposure to commodity prices. This commodity price volatility, through the revenue channel, can disconnect reported WACI from business activity, but still links emissions to the output of a company. This is important because net zero target setting at a corporate level for most emissions-intensive sectors is via the Sectoral Decarbonization Approach²⁷,

a method that is tied to their emissions intensity per unit of output and not directly to its absolute emissions.

EVIC creates a clear link between an investment and financed emissions, or emissions for which the investor is responsible, making it a closer proxy for absolute emissions reductions. Instead of the revenue volatility experienced with WACI though, the EVIC calculation introduces complications around capital structure and market price volatility. These complications mean that use of EVIC requires an inflation factor, introducing a layer of assumptions between the underlying emissions and the reported attribution to securities or portfolios²⁸.

The competing distortions of revenue and market price volatility on WACI and EVIC can be illustrated by an example using Glencore's consensus revenue expectations and market value at the start of each quarter in 2021. This is shown in Figure 8 below. The "spot" WACI for Glencore decreased meaningfully throughout 2021, based on changes in consensus revenue expectations, i.e., no change in emissions but a positive change in revenue expectations, resulting in a decrease in WACI. In the same example, Glencore's market cap and EV have risen through the course of the year, but without any change in the absolute debt level. This means when "spot" EVIC is calculated, the figure rises for a constant % equity position held through the period. While this illustrative calculation uses changes in consensus expectations within a calendar year, the same mechanics over a multi-year period would again disconnect WACI and EVIC from changes in company-level emissions performance.

Figure 8
Comparison of WACI and EVIC



As at 31 December 2021

Source: Lazard, Company Reports, FactSet

Implied Temperature Rise is the metric with the best link to climate science²⁹, but again is not without compromises. ITR takes an emission estimate for a particular asset out to 2050 and calculates the cumulative stock of emissions that are above the company's benchmark-derived carbon budget over the period. This stock of emissions is then converted to a temperature

figure using the Transient Climate Response to Cumulative Carbon Emissions (TCRE). The technique can be used to show company-level or portfolio-level alignment but is bound by the accuracy of the 30-year emissions estimates that must be used as inputs. As a measure that describes “stocks” of emissions, rather than “flows” it is also less useful in demonstrating delivery of short- and medium-term emissions reductions, so must be used alongside an alternative measure of emissions performance. ITR calculations are still in their infancy and as they continue to develop, Lazard Asset Management will continually review their use across relevant portfolios, with a view to providing enhanced net zero reporting instead of an outright replacement of existing reporting categories.

Types of Emissions in a Net Zero Portfolio

While the setting of targets under the Net Zero Asset Managers initiative will initially be based on Scope 1 and 2 emissions, Lazard Asset Management’s approach will consider Scope 3 emissions in tandem from the outset for two reasons. First, in terms of emissions mix, Scope 3 makes up on average 44% of total emissions where such emissions are reported, with an even higher amount in emissions-intensive sectors. Second, beyond the scale of the emissions, the IIGCC will require inclusion of Scope 3 emissions in portfolio metrics from 2023, meaning producing calculations in tandem makes room for both methodology enhancements and a more holistic understanding of a portfolio’s emissions composition and distribution.

The GHG Protocol divides corporate emissions into Scope 1, Direct Emissions, Scope 2, Indirect Emissions from Purchased Electricity, and Scope 3, Value Chain Emissions, both upstream and downstream, across fifteen reporting categories³⁰. This creates a conundrum because while Scopes 1 and 2 are easiest for a company to measure and control, Scope 3 is often the largest driver of a corporate GHG footprint.

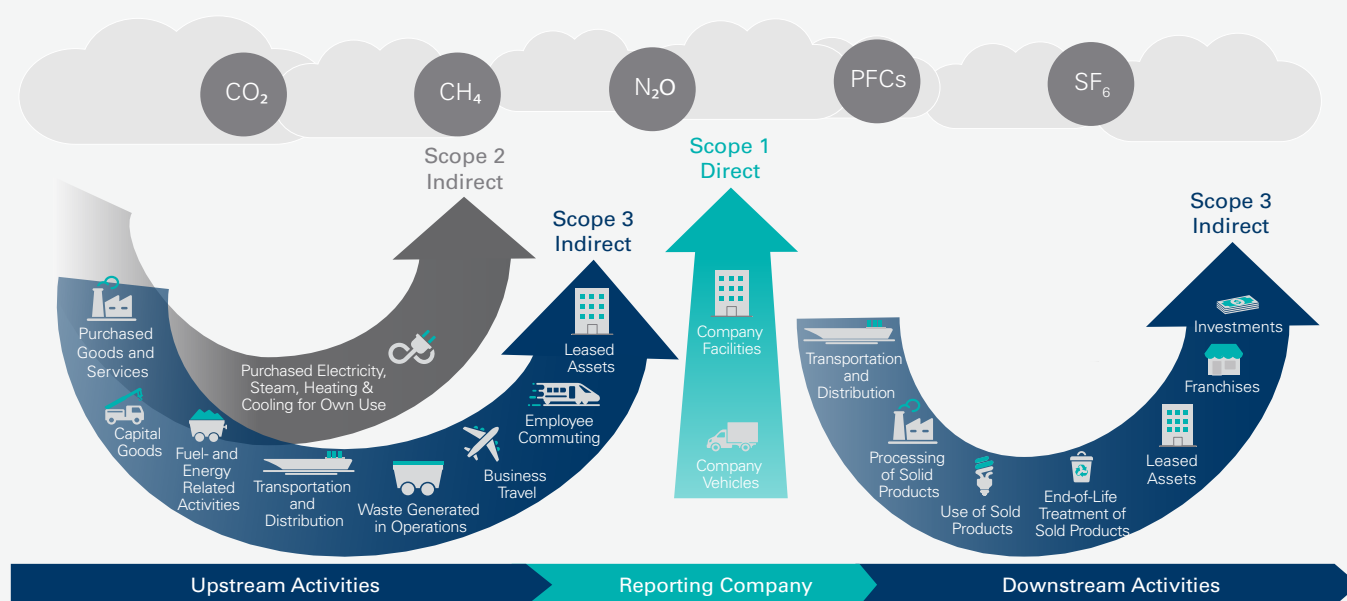
This is reflected in reported data. Using the MSCI World as the global benchmark, only 37% of constituents are reporting Scope 3 data, for whom Scope 3 emissions are 44% of the total. When the MSCI ACWI is used as the global benchmark, given the inclusion of emerging market companies, the disclosure rate is only 18%. For emissions-intensive sectors though, the picture is more extreme. In autos, Scope 3 is 97% of total, and in energy it is 86%. For materials overall, the figure is only 37%, but when this is applied only to large cap mining companies it can be >90%.³¹

Scope 3 emissions are also significant in setting emissions-reductions targets via the Science-Based Targets initiative. To have a near-term target validated, now defined as ten years, a company’s target must cover 67% of Scope 3 emissions if Scope 3 overall is over 40% of total Scope 1–3 group emissions. To have a full net zero target validated, 90% of Scope 3 emissions must be covered³².

The IIGCC will require portfolio metrics and targets to include Scope 3 emissions from 2023, consistent with the EU’s SFDR requirement:

- “[investors should] Phase in Scope 3 emissions over time in line with the emerging European timetable for the Sustainable

Figure 9
Categories of GHG Emissions



Source: The GHG Protocol

Finance Disclosure Regulation (SFDR). The SFDR requires investors to disclose Scope 3 emissions from 1 January 2023.” IIGCC, December 2021³³.

By contrast, TCFD’s Portfolio Alignment Team suggest that Scope 3 data should first be included for sectors with high emissions risk, meaning fossil fuels, mining, autos.

- “[investors should] include Scope 3 emissions for the sectors for which they are most material and for which benchmarks can be easily extracted from existing scenarios.” TCFD, October 2021³⁴.

In March 2022, the SEC proposed new emissions reporting rules that include mandatory reporting of Scope 3 emissions.³⁵

Regardless of timeline for inclusion of Scope 3 in portfolio metrics, it introduces a series of complications. Scope 3 inclusion changes the size, the distribution, and the comparability of emissions within a portfolio. Scope 3 data also suffers from lower disclosure rates. As an example, analysis of Lazard Asset Management portfolios, meaning portfolio-level emissions, rather than individual asset-level emissions, shown above in Table 3 suggests that when changing from Scope 1 and Scope 2 emissions to Scope 3 inclusive, the quantum of emissions covered can increase by >10x.

Under the requirement to include Scope 3 data over time, it’s also necessary to create a hierarchy of data, instead of solely reviewing company disclosures. Company-reported Scope 3 data, either from company reports or CDP should be prioritized, after which two methods can be considered. Certain external vendors supply Scope 3 estimates, including from Trucost, while it’s also possible to use industry benchmarks. The TCFD recommend for example calculating Scope 3 data based on the average portion of Scope 3 data taken from reporting companies in the same GICS level 2 sectors. In this latter method, a company’s Scope 3 emissions would be imputed from the ratio of Scope 1 and Scope 2 emissions to those of Scope 3 for the companies’ reporting peer groups.

Access to Scope 3 data is only half of the analytical battle as in setting targets investors must also understand what the drivers of a corporate’s Scope 3 emissions are, split across the 15 categories of Scope 3 emissions, what their pathway to decarbonization looks like, and who really has responsibility for that decarbonization. We believe this complicated analysis is best illustrated with a comparison of industries and their Scope 3 drivers. For an Auto company, most corporate

emissions come from the “Use of Sold Products” category under the GHG protocol, based on lifetime vehicle travel (i.e., an ICE burning fuel). As a result, Scope 3 emissions are now a function of product mix between ICE and EV. In the case of Volkswagen, the group target EVs is at 50% of sales by 2030 so there is a clear pathway to Scope 3 decarbonization.³⁶ For an oil company, the challenge is different, as even though emissions are similarly concentrated in “Use of Sold Products” meaning for the combustion of fossil fuels, there is no product substitution available and so the decision to reduce this bucket of emissions requires an explicit commitment to reducing the volume of fossil fuels sold. bp is now committed to reducing fossil fuel volumes by 40% to 2030.³⁷ In a third scenario, a company may manufacture products that consume electricity in the use phase and are accounted for in Scope 3 under “Use of Sold Products.” While the energy efficiency of the product and thus its associated emissions are within a company’s control, the bigger driver is likely to the rate of decarbonization projected in the supply of electricity where the products are used. All of these examples also introduce the issue of double counting of Scope 3 emissions, something that will need to be factored into portfolio-level calculations as they replace standalone Scope 1 and 2 metrics. An example of this would be owning a refining company that accounted for combusted fuels as a “Use of Sold Product” while an auto original equipment manufacturer also accounted for the same fuel use in the same category.

As such, while the direction of travel is clear in terms of inclusion of Scope 3 emissions data, Lazard Asset Management is cognizant of the additional computational work and subsequent interpretation that needs to take place when compared to analysis of Scope 1 and 2 emissions. As Scope 3 disclosure rates improve, Lazard Asset Management will need to develop ways of calculating and considering the double-counting issues that arise from ownership of multiple securities across industry supply chains and use of different methodologies. This consideration of double counting is being replicated in corporate emissions accounting. Anglo American for example recently restated their Scope 3 emissions to eliminate double counting in steel supply chains³⁸. Contrasting assumptions within methodologies can also be seen in Volkswagen’s use of a 200,000 km vehicle lifetime travel in their Scope 3 disclosure, while Groupe PSA historically used 150,000 km prior to merging to become Stellantis (Source: CDP).

Use of Greenhouse Gas Emissions Forecasts

Lazard Asset Management shares the TCFD's expectation that *"analyst estimates of greenhouse gas emissions have the potential to play a similar role to their earnings estimates in their financial assessment."*

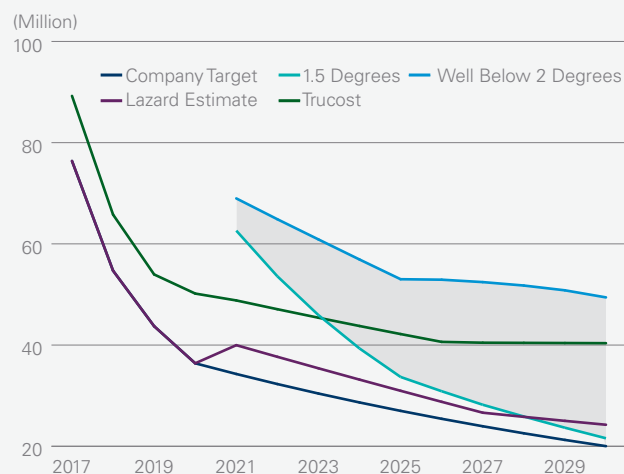
Given this focus on understanding corporate emissions reductions, Lazard Asset Management is also working on increased use of emissions estimates. In the first wave of use cases, emissions estimates will be crucial in understanding the asset-level and portfolio-level emissions trajectory that is required in a net zero portfolio. In the second wave, these estimates will need to be integrated into traditional financial analysis so that they guide understandings of the capital costs and profitability implications of each asset's abatement journey.

Lazard Asset Management will start this process by creating bottom-up emissions models for the companies that represent 70% of portfolio-financed emissions in selected designated net zero portfolios, with the ultimate goal of embedding this in sector analysis broadly over time.

At a basic level, a target to reduce emissions in a designated net zero portfolio requires an understanding of the underlying emissions trajectory of the component assets of that portfolio. In turn, this requires a new approach to financial forecasting, where the activities and investments of an asset, as articulated by traditional financial metrics, are translated into emissions terms. This is an approach Lazard Asset Management is starting to implement, with the high emissions assets in portfolios, accounting for 70% of portfolio-financed emissions, the first to be subject to this process, based on inputs from both Lazard Asset Management's sector analyst and the ESG teams. The emissions forecasts from these models are designed to provide the forward-looking emissions-intensity measures that Lazard Asset Management will use to forecast compliance with the 10-year decarbonization commitments made under the Net Zero Asset Managers initiative.

As discussed in the section on Portfolio Metrics, on an even longer horizon, emissions estimates are the major driver of Implied Temperature Rise calculations which uses them to calculate carbon budget overspill to 2050, as well as projections of emissions intensity at a company and net zero portfolio level. This "overspill" versus a required carbon budget trajectory is shown in the shading of Figure 10 above and Figure 11 below. Budget overspill at an asset level can be translated into temperature terms using the transient climate response to cumulative emissions of carbon dioxide (TCRE), so while Lazard Asset Management has decided against use of Implied Temperature Rise as our primary target measure now, the development of internal emissions forecasts means we retain optionality for developing for future use.

Figure 10
Comparison of Decarbonization Pathways

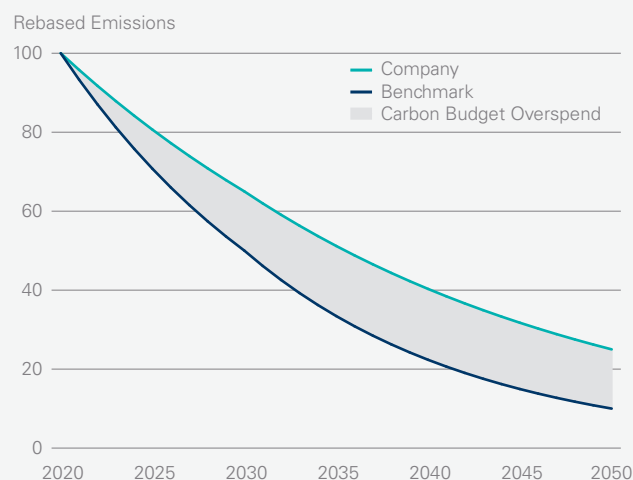


As at 31 March 2022

Forecasted or estimated results do not represent a promise or guarantee of future results and are subject to change.

Source: Lazard, SBTi

Figure 11
Sample Implied Temperature Rise Calculation



As at 31 March 2022

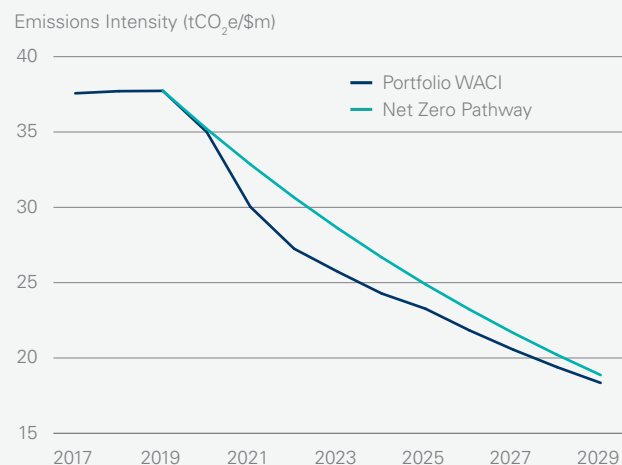
Forecasted or estimated results do not represent a promise or guarantee of future results and are subject to change.

Source: Lazard, Trucost, Sustainalytics, FactSet

In the conventional calculation of emissions intensity, such as the WACI, these estimates will form KPIs and targets for Lazard Asset Management's Net Zero Asset Manager initiative commitments. It is, however, important to understand the lack of precision in these forecasts, especially as corporate disclosures on the relationship between their activities and emissions are far from complete. In the context of Implied Temperature Rise for example, a thirty-year emissions forecast is needed, well beyond the boundary for any claim of financial forecast accuracy, let alone emissions forecasts.

Moving beyond the use of emissions forecasts in portfolio net zero calculations, Lazard Asset Management believes emissions can be best understood by bottom-up modeling in the same

Figure 12
Selected Portfolio Trajectories



As at 31 March 2022

Forecasted or estimated results do not represent a promise or guarantee of future results and are subject to change.

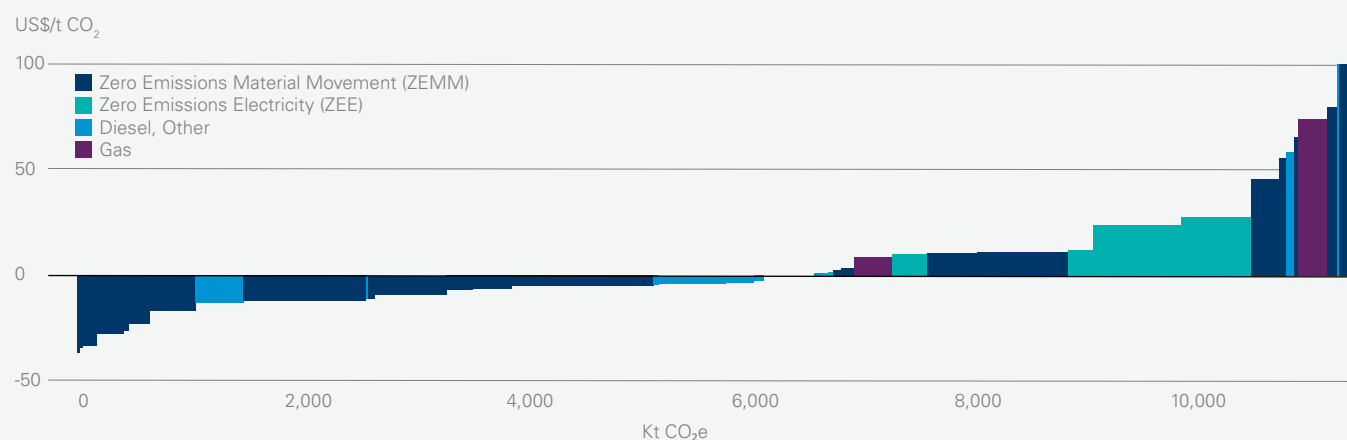
Source: Lazard, Trucost, Sustainalytics, FactSet

way that financial performance can be, with the understanding that the two combine over time. The juncture for these two methodologies is in understanding the costs and benefits associated with corporate net zero plans. As companies increase the ambition of their commitments to target net zero emissions, analysts will need to understand the capital costs and phasing of any investments in emissions reductions, as well as associated open savings where they exist. In many emissions-intensive industries, cutting emissions will involve a fundamental shift in the balance of opex and capex of those businesses, with important implications for profitability and capital structure.

These tradeoffs can be shown through a corporate marginal abatement cost curve, where the financial cost, or benefit, of each marginal unit of emissions reductions, as in that of BHP, is shown below (Figure 13). Once these abatement measures are analyzed for cost, companies can also decide on the appropriate financing model. Global mining company Rio Tinto announced a \$7.5bn capex plan to deliver their emissions-reduction targets in October 2021, while in March 2022, peer Anglo American announced a partnership with EDF to decarbonize their South African electricity supply. The latter model includes external capital and thus a reduced capex burden for Anglo American.

While abatement costs have started to creep into corporate disclosures, they are likely to be part of mandatory climate reporting over time, consistent with the way in which other forms of ESG disclosure have moved from voluntary to mandatory over time. As this takes place, standardized disclosure formats will be needed for corporate abatement costs. CPP Investments for example has recently proposed a standardized template for reporting corporate abatement capacity, based on a division of emissions by Scope, from 1 to 3, economic viability of abatement, and the categories of abatement measures they fall into (Figure 13). We believe such a disclosure will help analysts to properly evaluate the probability that a decarbonization plan can be delivered, or, if delivered, how it will change the financial characteristics of a company. As companies increasingly disclose their marginal abatement cost curves, by taking this a step further and translating the information into the abatement template proposed by CPP Investments, investors are provided with more comparable information, without risking disclosure of potentially commercially sensitive information on the part of the company. (Figure 14).

Figure 13
Corporate Marginal Abatement Cost Curve



Source: BHP

Figure 14
 CPP Investments' Proposed Disclosure of Abatement Costs

Illustrative example:		Scope 1	Scope 2	Scope 3	Total	Scope 1	Scope 2	Scope 3	Total	
GHGs	G	G ₁	G ₂	G ₃	G _t	1,500	800	2,500	4,800	
Efficiency	E	E ₁	E ₂	E ₃	E _t	400	100	1,100	1,600	33%
Investment	I	I ₁	I ₂	I ₃	I _t	200	100	200	500	10%
Renewables	R	R ₁	R ₂	R ₃	R _t	100	200	1,000	1,300	27%
Long-term (proven) PAC	C	C₁	C₂	C₃	C_t	700	400	2,300	3,400	71%
as % of total		C₁/G₁	C₂/G₂	C₃/G₃	C_t/G_t	47%	50%	92%	71%	
Economic @ \$75tCO ₂ e	Ec@75	Ec ₇₅₋₁	Ec ₇₅₋₂	Ec ₇₅₋₃	Ec _t	50	200	–	250	5%
Economic @ \$75tCO ₂ e	Ec@150	Ec ₁₅₀₋₁	Ec ₁₅₀₋₂	Ec ₁₅₀₋₃	Ec _{150-t}	400	200	100	700	15%
Long-term (probable) PAC	L	L₁	L₂	L₃	L_t	450	400	100	950	20%
as % of total		L₁/G₁	L₂/G₂	L₃/G₃	L_t/G_t	30%	50%	4%	20%	
Closure/Abandonment	A	A ₁	A ₂	A ₃	A _t	150	–	100	250	5%
Transformative Technology	T	T ₁	T ₂	T ₃	T _t	150	–	–	150	3%
Removal of Offsets	O	O ₁	O ₂	O ₃	O _t	50	–	–	50	1%
Uneconomic to Abate	U	U₁	U₂	U₃	U_t	350	–	100	450	9%
as % of total		U₁/G₁	U₂/G₂	U₃/G₃	U_t/G_t	23%	–	4%	9%	

As at 31 March 2022

Source: Canada Pension Plan Investment Board

Understanding Rates of Decarbonization

While aggregate global emissions-reductions targets, such as reducing global emissions by 50% from 2020 to 2030, provide a reference point for how the global economy will need to transform to deliver net zero, security-level decarbonization pathways are often idiosyncratic, varying by industry, geography, and starting point. Lazard Asset Management's use of greenhouse gas forecasts is designed to allow these idiosyncratic pathways to be reflected in an assessment of an asset's net zero alignment, instead of comparing all assets to a common pathway. Therefore, we believe a portfolio decarbonization pathway should be considered a weighted average of idiosyncratic asset-level pathways.

Following the publication of the IPCC's Special Report on Global Warming of 1.5°C in 2018, the international community has increasingly focused on emissions pathways that deliver this temperature objective. Put simply, it requires an ~45% reduction on emissions from 2010 to 2030. Given growth in global emissions from 2010 to 2020, the required cumulative reduction is now ~50%.

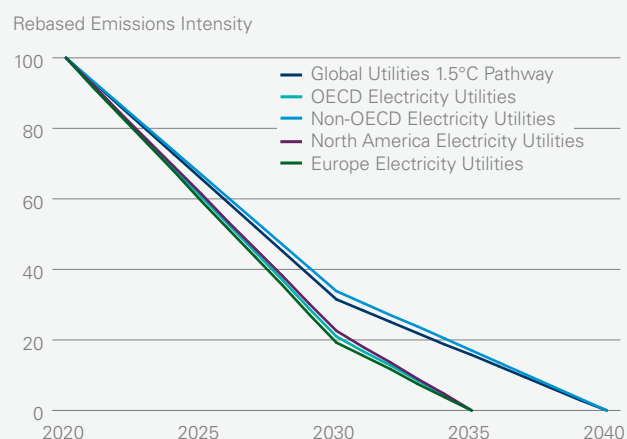
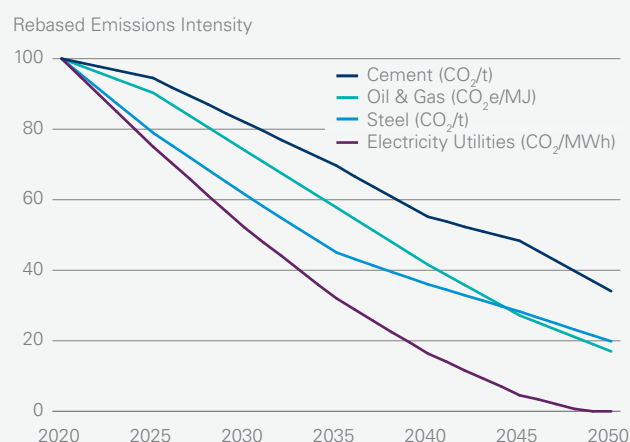
This explains why much of the industry's guidelines focuses on a 50% emissions-reduction target to 2030. The EU Technical Expert Group on Sustainable Finance mandate an annual

decarbonization rate of -7% pa, meaning a 52% cumulative reduction from 2020 to 2030. In their new Net Zero Standard, the Science-Based Targets initiative require a minimum 42% reduction in emissions from 2020 to 2030, based on the Cross Sector Pathway. The Net Zero Asset Managers Initiative, though, includes a clause that hints at the complexity of these targets by asking for reductions "consistent with a fair share of the 50% reduction." This is crucial, as it acknowledges that the 50% target is a global all- industry starting point, and that companies, and so portfolios, will each have different starting points and industrial and geographic pathways. Guidance on how to interpret such regional and industrial differences is starting to emerge. In November 2021 the Transition Pathway Initiative published an update to their Electricity Utilities methodology to provide four regional pathways—Europe, North America, OECD, and non-OECD.³⁹ In March 2022, CDP published a review of CDP disclosure levels in Asia Pacific, noting the challenge of dealing with a region where only 8% of respondents to CDP had a net zero target in 2021.⁴⁰

The best demonstration of the different net zero expectations faced by various industries can be found in emissions- intensive sectors, where the Transition Pathways Initiative provides industry frameworks that reflect different decarbonization challenges (Figure 15). In their Below 2°C scenario, electric utilities, considered a sector that is relatively easy to decarbonize, are required to decarbonize at -6.3% pa in CO₂/MWh from 2020 to 2030, while cement has a rate of -2.0% pa in CO₂/t over the same period, representative of being "difficult to decarbonize." These pathways are further complicated by the

fact that emissions-intensive industries work off the Sectoral Decarbonization Approach, a “convergence” methodology, so each industry participant will have an idiosyncratic emissions pathway based on industry and starting point. In a convergence pathway, all participants in each industry must converge on a terminal rate of emissions per unit of output, meaning that for a company with a portfolio of low carbon assets, they may have a shallow required reduction trajectory that does not equate to 50% from 2020 to 2030. As such, we believe, this means a portfolio-level emissions-reduction target should really be understood as a weighted average of each company’s idiosyncratic pathway.

Figure 15
Industrial Decarbonization Pathways



As at 31 March 2022

Forecasted or estimated results do not represent a promise or guarantee of future results and are subject to change.

Source: Lazard, Transition Pathway Initiative

Climate Solutions and Avoided Emissions

Reducing emissions in a net zero designated portfolio does not by itself align an investment approach with the Paris Agreement. To do this, capital must also be directed to climate solutions, or entities that facilitate the energy transition, climate adaptation, or associated activities.

Lazard Asset Management will set dual-targets for net zero portfolios—the degree to which portfolio emissions will be reduced over time, and the extent to which revenue and capex exposure to climate solutions activities will increase over the same period.

A focus on climate solutions requires an understanding of what activities are relevant and how they can be measured, which increasingly means a discussion of both revenue exposure, a taxonomy approach, or avoided emissions. The inclusion of avoided emission metrics can be an important enhancement to a taxonomy type approach, given the way in which \$m amounts of climate solutions revenues or capex deliver varying degrees of real-world greenhouse gas impact. Not all climate investments are created equal in greenhouse gas terms.

Lazard Asset Management will look to consider calculations of avoided emissions in the discussion of an asset or portfolio’s climate solutions characteristics as avoided emissions methodologies evolve.

In our view, the simplest way to track exposure to climate solutions is through categorizing asset-level revenue activities according to a revenue classification such as the EU Taxonomy. To extend this to become a forward-looking metric, the same approach can be applied to capex, although few companies currently give sufficient disclosure for this to be possible. When using methodologies such as the EU Taxonomy for measuring exposure to climate solutions, it’s important that the appropriate measure is used given the variety of revenue exposure levels that can be generated across different benchmarks, as shown in Table 5 below. A third approach is to consider the avoided emissions of a company. An avoided emission is a simplified concept for an emissions saving associated with a product or service,⁴¹ and borrows some concepts from project and policy standards in carbon accounting as well as those used in carbon credits/offsets.

Table 5
EU Taxonomy Exposure across Equity Benchmarks

Index	EU Taxonomy Eligible (%)	EU Taxonomy Potentially Eligible (%)	EU Taxonomy Total Eligible (%)	EU Taxonomy Full Alignment (%)	EU Taxonomy Potentially Aligned (%)	EU Taxonomy Total Aligned (%)
MSCI ACWI	13	4	17	2	5	7
MSCI World	14	3	17	2	5	7
MSCI EAFE	12	6	18	1	2	3
MSCI EM	15	4	19	5	1	6
S&P 500	15	2	17	2	7	9
Russell 1000	14	2	16	2	6	8

As at 31 March 2022

Source: Lazard, Clarity AI

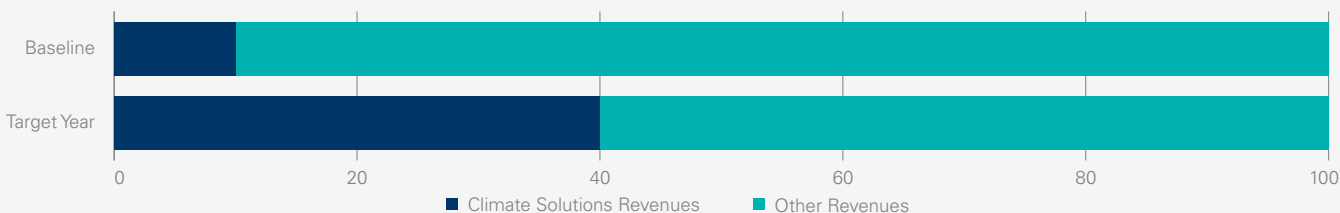
The concept of an avoided emission is not a new one in carbon accounting, but widespread use of avoided emissions calculations, sometimes termed “Scope 4” in corporate usage, is on the rise. Avoided emissions are associated with the products or services a company provides, not their operations and their supply chains used to produce these products. As such, use of “avoided emissions” is preferable to “Scope 4 emissions” as the latter implies continuity with Scope 1–3. In simple form, where a company claims an avoided emission from their product, it is already being counted in the Scope 1–3 emissions of the companies and supply chains they sell into.

Avoided emissions are embedded in carbon offset calculations, project analysis, and product claims. They can be performed on an “attributional” basis, or a “consequential basis.”⁴² In the former, product life cycles are compared between an existing, or “reference” product, and the new product (Figure 17). The

avoided emission value is the difference in the emissions life cycle analysis. In the latter, system-wide impacts are considered between a “baseline” emissions scenario and an “intervention” which attempts to calculate system-wide change resulting from the new product, rather than a side-by-side product analysis. An example of the system-wide change could be that a more efficient product in emissions terms lower costs, and so encourages additional usage in a way that negates the like-for-like product savings as demonstrated in the attributional analysis. Both methods share two key characteristics. First, the emissions are not actual emissions, but the absence of them, and second, they are spread over time. These two factors make it difficult to compare avoided emissions with those from the Scope 1–3 boundaries as defined by the Greenhouse Gas Protocol, albeit with more computational overlap with Scope 3 emissions which include life cycle calculations.

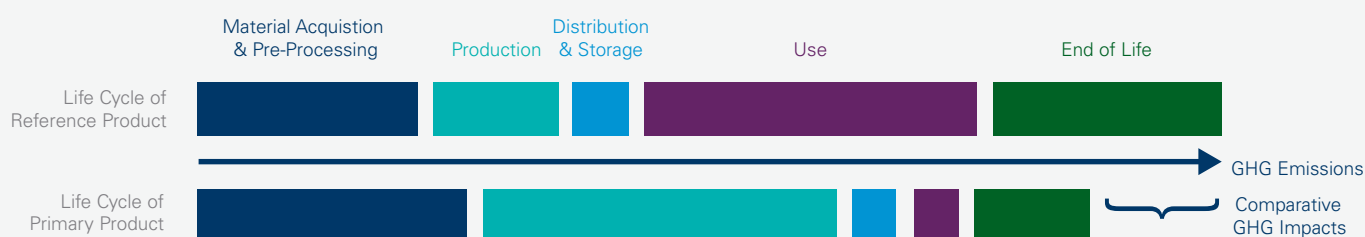
Figure 16
Illustrative Portfolio Revenue Exposure to Climate Solutions

Change in Climate Solutions Revenues over Time (%)



Source: Lazard, IIGCC

Figure 17
Calculation of Comparative [Avoided] Emissions



Source World Resources Institute

Both methods are also subject to far more assumptions than Scope 1–3 calculations, especially around the emissions associated with the reference product or scenario. This risk is usually referred to as baseline manipulation and is partly because baselines are counterfactual scenarios and cannot be observed or measured.

For these reasons, we believe it is not suitable for avoided calculations to be used to net against Scope 1–3 emissions figures as part of a net zero trajectory. There is no Science-Based method for net zero where organic YoY reductions in Scope 1–3 emissions can be replaced with Scope 4 emissions. In fact, the SBTi is explicit in saying that avoided emissions “do not count as a reduction of a company’s Scope 1, 2, and 3 inventory.”⁴³

There is no replacement to an abatement journey that reduces corporate emissions by 90% and then balances residual emissions with removals. The use of an avoided emission claim in a net zero setting is akin to claiming carbon neutrality through use of offsets without making emissions reductions that are aligned with global net zero goals.

Carbon neutrality claims are increasingly considered low integrity as best practice has shifted to adoption of Science-Based Targets.

There are, however, multiple helpful use cases for avoided emissions, meaning we should support their use in a corporate setting but with specific goals in mind. Avoided emissions calculations can help us understand why we should, only in the short term tolerate Scope 1–3 emissions that are not currently reducing at a Paris-aligned rate or are even likely to increase in the short term. This is because avoided emissions calculations can help us think about the environmental payback, or emissions payoff, of the Scope 1–3 emissions at a company level.

Table 6
Calculation of Emissions Payoff

Vestas 2021 Emissions Profile		
Scope 1–3 (tCO ₂ e)	Avoided Emissions (tCO ₂ e)	Emissions Payoff
10,664,021	532,000,000	50x

Source: Lazard, CDP, Company Reports

Avoided emissions are also an interesting additional measure to substantiate exposure to climate solutions. If we see a rising avoided emissions calculation at a company, at a rate that is faster than overall group revenue growth rates, then avoided emissions calculations can be used to demonstrate the company is increasing its exposure to climate solutions. Therefore, Lazard Asset Management would consider (as necessary and appropriate) including avoided emissions as a metric alongside revenue and capex exposure to climate solutions, as an increasing number of corporations make claims of avoided emissions.

ESG and Greenhouse Gas Emissions Data

Committing to net zero at a firm level and relevant portfolio level requires new data sources, approaches, and portfolio tools when compared to existing portfolio management approaches. Since signing up to the Net Zero Asset Managers initiative in March 2021, Lazard Asset Management has conducted an extensive search for what we believe to be the best data sources and analytics. Lazard is also developing a proprietary internal analytics tool, the Net Zero Dashboard, to enhance risk management and client reporting across relevant net zero-designated portfolios.

In 2020, Lazard Asset Management created a proprietary framework for holistically assessing and quantifying the sustainability profile of selected corporate issuers. Underpinned by Lazard’s ESG philosophy, which emphasizes companies’ use of human and natural capital, Sustainability Scorecards focus on three components of a firm’s business: 1) products and services, 2) operations, and 3) governance. Two of these metrics—emissions intensity and emissions performance—explicitly address corporate greenhouse gas emissions, or their level, and what the company is doing to address them. For companies with a Sustainability Scorecard, these analyst-level judgments can be used alongside mainstream sources of emissions data and performance—from CDP, the SBTi, or Trucost.

In 2020, Lazard Asset Management started utilizing Sustainalytics as the main source of ESG research, given their alignment with Lazard Asset Management’s focus on Materiality Mapping. Lazard Asset Management also added Trucost as a main source of greenhouse gas emissions data, in addition to standalone corporate disclosures and those made to CDP. Most recently, Lazard Asset Management has added Clarity AI, to provide the firm with ESG metrics for a universe of nearly 30,000 companies, 198 countries, and 187 local governments. Clarity AI also provides assessments on the EU Taxonomy at both the portfolio and company level, which can be used to enhance our work on climate solutions as part of our net zero framework. Crucially, Lazard Asset Management conducted a thorough due diligence process in selecting their ESG data providers.

As discussed in the earlier section on use of emissions forecasts, we expect to increase the use of bottom-up greenhouse gas emissions forecasts from Lazard Asset Management’s research analysts, as these increasingly become a part of mainstream financial research. To this end, Lazard Asset Management has started to produce bottom-up emissions models (Figure 18) for certain emissions-intensive sectors, combining research analyst inputs on a corporations’ operational profile with carbon accounting.

Figure 18
Sample Lazard Greenhouse Gas Model

Absolute emissions															
Index	tCO ₂ e	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
LAM Credible	Scope 1	105,509,815	94,794,693	69,981,902	45,255,000	41,437,990	38,762,630	36,260,000	35,793,829	35,333,652	34,879,390	34,430,969	33,988,313	33,551,347	33,120,000
	Scope 2	5,365,386	5,365,386	5,365,386	4,990,685	3,723,935	3,483,507	3,258,601	3,216,708	3,175,353	3,134,529	3,094,231	3,054,450	3,015,181	2,976,417
Company Target	Scope 1	105,509,815	94,794,693	69,981,902	45,255,000	41,437,990	38,762,630	36,260,000	35,793,829	35,333,652	34,879,390	34,430,969	33,988,313	33,551,347	33,120,000
	Scope 2	5,365,386	5,365,386	5,365,386	4,990,685	3,723,935	3,483,507	3,258,601	3,216,708	3,175,353	3,134,529	3,094,231	3,054,450	3,015,181	2,976,417
Trucost	Scope 1	106,694,736	95,801,488	69,981,891	69,981,891	69,981,891	69,981,891	69,981,891	69,981,891	69,981,891	69,981,891	69,981,891	69,981,891	69,981,891	69,981,891
	Scope 2	439,000	1,089,612	5,365,386	5,35,386	5,365,386	5,365,386	5,365,386	5,365,386	5,365,386	5,365,386	5,365,386	5,365,386	5,365,386	5,365,386
1.5 degree	Scope 1 (SBTi)	105,509,815	94,794,693	69,981,902	45,255,000	83,076,145	75,775,646	69,116,694	63,922,111	59,117,935	54,674,825	50,565,645	46,765,297	43,250,571	40,000,000
	Scope 1 & 2 (Goldman)	110,875,201	100,160,079	75,347,288	50,245,685	98,470,900	99,004,019	99,269,917	100,619,874	87,481,179	83,954,651	79,456,168	73,863,276	67,040,869	58,840,000
Well below 2 degree	Scope 1 (SBTi)	105,509,815	94,794,693	69,981,902	45,255,000	91,526,153	91,719,714	91,630,000	92,495,832	93,005,119	93,706,135	94,019,458	93,537,432	92,863,687	91,600,000
	Scope 1 & 2 (Goldman)	110,875,201	100,160,079	100,160,079	50,245,685	100,671,469	101,331,754	101,732,167	103,260,735	104,475,751	106,571,080	108,420,645	109,977,765	111,190,280	112,000,000

Emissions intensity															
Index	tCO ₂ e/MWh	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
LAM Credible	Scope 1	0.41	0.37	0.31	0.22	0.19	0.17	0.15	0.14	0.13	0.12	0.11	0.10	0.09	0.08
	Scope 1 & 2	0.44	0.39	0.33	0.24	0.21	0.18	0.16	0.15	0.14	0.13	0.12	0.11	0.10	0.09
Company Target	Scope 1	0.41	0.37	0.31	0.22	0.19	0.17	0.15	0.14	0.13	0.12	0.11	0.10	0.09	0.08
	Scope 2	0.44	0.39	0.33	0.24	0.21	0.18	0.16	0.15	0.14	0.13	0.12	0.11	0.10	0.09
Trucost	Scope 1	0.42	0.38	0.31	0.34	0.32	0.30	0.29	0.27	0.25	0.23	0.22	0.20	0.19	0.17
	Scope 2	0.42	0.38	0.33	0.36	0.34	0.33	0.31	0.29	0.27	0.25	0.23	0.22	0.20	0.19
1.5 degree	Scope 1 (SBTi)	0.41	0.37	0.31	0.22	0.38	0.33	0.28	0.24	0.21	0.18	0.16	0.13	0.12	0.10
	Scope 1 & 2 (Goldman)	0.44	0.39	0.33	0.24	0.45	0.43	0.41	0.38	0.31	0.28	0.25	0.21	0.18	0.15
Well below 2 degree	Scope 1 (SBTi)	0.41	0.37	0.31	0.22	0.42	0.40	0.37	0.35	0.33	0.31	0.29	0.27	0.25	0.23
	Scope 1 & 2 (Goldman)	0.44	0.39	0.33	0.24	0.46	0.44	0.42	0.39	0.37	0.35	0.33	0.32	0.30	0.28

For illustrative purposes only

Source: Lazard, CDP, GS, SBTi, Transition Pathway Initiative, Trucost

Figure 19
Lazard's Net Zero Dashboard

Lazard's Net Zero Dashboard is a climate analytics tool, currently under development in SIMON (Systematic Investment Management Online), the firm's proprietary portfolio intelligence system. The dashboard includes climate portfolio-level and security-level metrics that are required for net zero portfolio management and client reporting. We envision that these analytics can also be deployed outside SIMON for portfolio management, engagement, or client reporting ends.



Source: Lazard

Prioritizing Organic Decarbonization

In all forms of greenhouse gas emissions accounting and net zero targeting, decisions must be made about the boundaries that are covered. As a result, there can often be differences between the change in emissions as captured by a specific reporting boundary and change in emissions in real-world terms.

As climate change is agnostic to ownership of emissions or the accounting standards attached to them, we believe net zero portfolio implementation must be designed so that they prioritize a reduction in real-world emissions, and not the artificial optimization of reported emissions. This, in our opinion, is organic decarbonization. We believe it is possible to change the composition of a portfolio without sacrificing or abandoning the pursuit of organic emissions, introducing the need to re-establish a baseline for portfolios where a meaningful change in asset allocation has taken place.

An overriding principle of Lazard Asset Management's approach to net zero is the emphasis on supporting real-world, or organic decarbonization, ahead of decarbonization in accounting terms. Differences between the two approaches can be seen in most aspects of greenhouse gas accounting. At a national level, a country may show a reduction in emissions on a territorial basis, but still grow emissions on a consumption basis by outsourcing emissions-intensive industries to other countries. This principle also applies to portfolio decarbonization, and asset-level decarbonization.

At a basic level, investors and corporates both can hold a portfolio of assets, albeit one in the form of operating assets and the other in the form of financial assets. The easiest way to decarbonize those portfolios is to simply sell the most emissions-intensive assets and recycle the capital into assets with lower emissions profiles. In the case of a fossil fuel company, this might mean selling a producing oil asset and investing in an offshore wind asset. For an investment

portfolio, this might mean selling the shares or bonds in said fossil fuel company and redeploying the proceeds into a technology company.

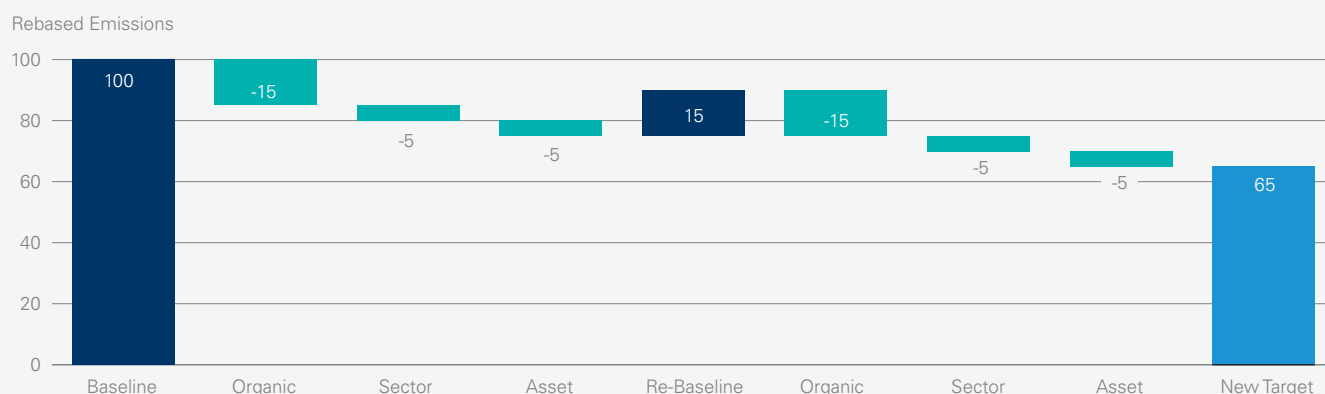
In both cases, we should ask what happens to the emissions associated with the assets that are sold. They might disappear from a corporate greenhouse gas emissions boundary, or disappear from portfolio emissions metrics, but they almost certainly don't disappear from the real world. In fact, the risk is that assets find new homes, with owners who are subject to a lower level of environmental scrutiny.

For operating assets, the list of potential owners with lower emissions standards might include smaller or private operators, private equity vehicles, or state-owned enterprises. In financial markets there is similar evidence of the presence of "willing buyers" in the performance of fossil fuel assets that have been spun-out of larger fossil fuel businesses.

For major asset sales at corporates, we believe investors should consider a "responsible owners test" whereby corporates selling a high emissions asset should be asked to demonstrate the suitability, or environmental intentions of the buyer of an asset. It would also be beneficial for increased requirements around re-establishing a baseline for corporate emissions-reductions targets, something that is currently reliant on the GHG Protocol. In the example of BHP's sale of their oil and gas assets to Woodside, think tank Carbon Tracker pointed out that the transaction *"would bring significant GHG emissions under the umbrella of Woodside's weak emissions targets."*⁴⁴

For financial portfolios, investors should be expected to show how the decarbonization of their portfolio has taken place—or the attribution of those emissions cuts. Only by breaking out the contribution of organic decarbonization from single assets can an investor claim to link their portfolio emissions reductions to real-world outcomes. Where a portfolio has changed, or re-established their baseline, this should also be displayed as part of the decarbonization attribution (Figure 20, below). By providing this breakdown of the decarbonization of a portfolio, or the way in

Figure 20
Illustrative Decarbonization Attribution Report



For illustrative purposes only
Source: Lazard, IIGCC

which a portfolio target is delivered, asset managers can provide a transparent audit of how successful their attempts have been to guide emissions reductions at portfolio companies. For example, where organic decarbonization forms the largest portion of a decarbonization attribution, a link can be made to a reduction in real-world emissions, whereas portfolio decarbonization through sector- or asset-level changes has no link to underlying corporate decarbonization. This approach is consistent with how the IIGCC have discussed reporting progress towards decarbonization targets in a portfolio.

This is a topic Lazard explored in our Demystifying Sustainability blog, in the article [Can Companies and Investors Sell Their Way to Decarbonization?](#)

Climate Engagement and Proxy Voting

As outlined in the Climate Alignment Assessment, Lazard Asset Management puts engagement and proxy voting at the heart of the net zero-designated portfolio process, to drive improvement in both corporate and portfolio-level emissions. Our overall objective is to encourage companies to transition their operations, products, and supply chains towards a Net Zero 2050 goal. We will measure success by the extent to which companies progress through the stages of our Climate Alignment Assessment framework.

Engagement Candidates

We have two tiers of engagement:

1. For Net Zero portfolios we will use proprietary carbon models to assess the level of alignment for individual companies based on our Climate Alignment Assessment. Our focus will be on companies with “insufficient data” and top 5 highest emitters that have “transition potential.”

2. For corporate engagements we will use our net zero dashboard to help identify material holdings in companies with either “insufficient data” and high emitting companies with “transition potential.”

In addition to the two focus areas above, we will continue to discuss climate transition in company meetings (as necessary and appropriate), as well as learn from companies who are classed as “aligned” or have achieved “net zero” status. This will help us to understand evolving best practice, which in turn will help inform our engagements with sector laggards.

Engagement Plan

Once priorities have been identified, our relevant investment professionals will engage with support from the sustainability team using the process outlined below:

1. Insufficient data or not aligned will trigger an information gathering type engagement to encourage disclosure of emission performance, targets, decarbonization strategy, etc.
2. Engaging with high emitters to move them towards Aligned and Net Zero status will trigger a purposeful engagement, the proposed escalation of these engagements is mapped out below.

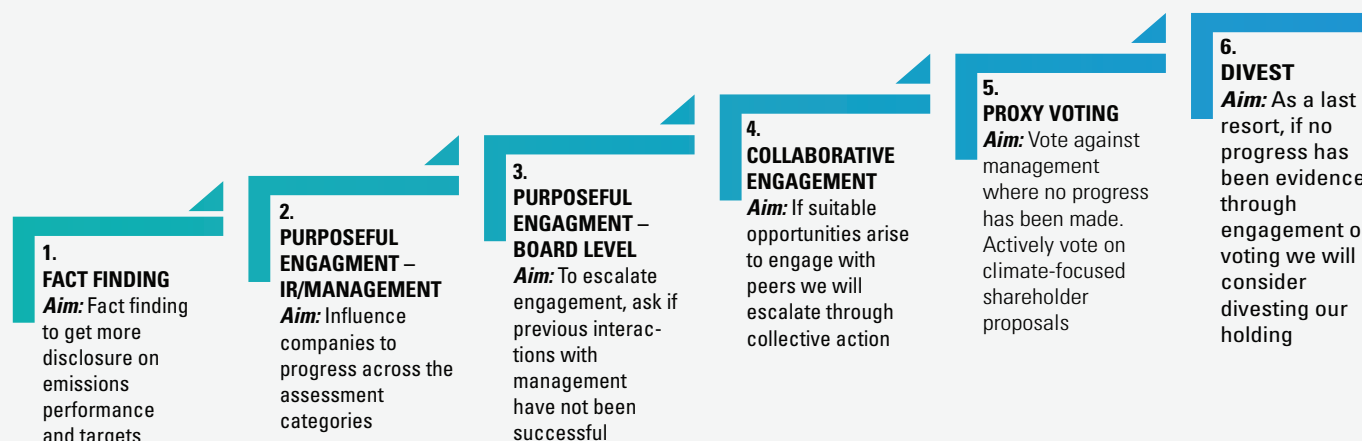
Our approach is designed to encourage greater alignment with a 1.5°C pathway while considering how this will be achieved progressively without negatively impacting employees and communities.

Proxy Voting

As shown above, for equity holdings, proxy voting is another tool that helps to improve climate alignment across firm- wide holdings. There are broadly three ways we plan to exercise voting rights:

1. Use our climate alignment assessment to help us determine whether we should support companies’ “Say on Climate” votes.
2. Use the same framework to help us assess whether we should support climate-focused shareholder resolutions. We note that

Figure 21
Climate Engagement Roadmap



For illustrative purposes only
Source: Lazard

the issues may be broader than our framework, for example the focus on lobbying. Our view is that emerging best practice is for companies to disclose; first, how much they're spending, secondly, with which political parties, trade associations, and industry bodies, and finally, alignment between the actions of these groups and the company's own public commitments.

3. As we see an increase in the prevalence of corporate climate targets, we will seek to ensure that these targets are a core component in determining executive compensation that will increasingly influence our decisions on votes related to remuneration.

Industry Involvement

Climate change is a systemic risk and while direct engagement with corporates will influence the ambitions and pace of decarbonization, our support of industry-wide initiatives and standard setters will also play an important role. We are members of industry bodies including the CDP and IIGCC and we regularly engage with standard setters to promote greater disclosure and action on climate change.

Net Zero Implementation across Asset Classes

While Lazard Asset Management expects to make its initial net zero portfolio commitments across its equity offerings, as the firm expands the portion of AUM in net zero portfolios, further asset-specific methodologies will be required.

A sovereign framework may draw on a variety of factors, including high-level environmental commitments, Nationally Determined Contributions under the Paris Agreement, Current Policies scenarios, and an assessment of the willingness and ability of a country to transform their economy. For example, we believe countries with natural resources suitable for renewable power generation, such as sun and wind will have a stronger economic rationale for transforming their power generation grids. Similarly, those with reserves of transition metals or minerals may be more likely to invest in the transition because it may have more immediate economic or security benefits for the population such as cheaper energy sources with less dependence on importing energy and/or jobs.

Overall, a number of metrics across transition willingness and ability can be used to rank and score countries. Work on this continues to progress and we endeavor to update our research as it evolves.

Table 7
Example Sovereign Net Zero Alignment Analysis

Category	Variable	Data Source
Ability	Solar Potential – Theoretical PV Potential	Global Solar Atlas - The World Bank/Solargis/International Renewable Energy Association (IRENA)
Ability	Solar Potential – Practical PV Potential	Global Solar Atlas - The World Bank/Solargis/International Renewable Energy Association (IRENA)
Ability	Solar Potential – Economic PV Potential	Global Solar Atlas - The World Bank/Solargis/International Renewable Energy Association (IRENA)
Ability	Wind Potential	IRENA
Ability	Fiscal Dependence on Fossil Fuel Revenues	Carbon Tracker
Ability	Exposure to Production of Transition Metals and Minerals	International Energy Agency
Ability	Installed Hydro Generation Capacity	IRENA
Willingness	Renewable Energy Consumption (% of total final energy consumption)	World Bank
Willingness	Fossil Fuel Subsidies Relative to GDP	International Energy Agency
Willingness	Renewable Energy Policy Indicator – Part of RISE	World Bank and Energy Sector Management Assistance Program (ESMAP)
Willingness	Renewable Energy Policy Indicator – Part of RISE	World Bank and Energy Sector Management Assistance Program (ESMAP)
Willingness	Employment in Sectors That May Be Negatively Impacted by Transition	International Labor Organization (ILO)

Example sovereign net zero analysis is for illustrative purposes only. Variables considered and data sources are subject to change. Lazard does not currently utilize a sovereign net zero alignment analysis.

Conclusion and Where Next for Net Zero Portfolios?

This paper is intended to provide an explanation of Lazard Asset Management's approach to net zero portfolio implementation, in addition to important background information and general guidance for Lazard's clients. What should also be clear though, is that the standards, metrics, and approaches discussed are all immature and under constant review. The Net Zero Investment Framework was published in March 2021 for example, while the main SBTi documents for Financial Institutions were published in final form in February and April 2022.

Lazard Asset Management has just disclosed our initial commitment to the Net Zero Asset Managers initiative, but this means we are yet to operationalize the climate engagement and reporting requirements of our framework. This will form the next step of our practical implementation.

As work continues on the application of methodologies across relevant portfolios, especially through the TCFD's Portfolio Alignment Team, Lazard Asset Management will seek to update our methodology where we see opportunities for better

data, approaches specific to distinct asset classes, or improved methodologies. On this front we welcome the Transition Pathway Initiative's publication of EM-specific pathways for industries such as Electric Utilities, made available in their tool from April 2022⁴⁵ and will review the results of the UN's sovereign project—ASCOR (Assessing Sovereign Climate-related Opportunities and Risks) when released.⁴⁶ We also note that CDP's database of companies with a temperature rating under their open source methodology now contains ~4,000 records, making this a metric where useability is quickly increasing.⁴⁷ As set out in an earlier section, our concern with this metric has been our ability to implement Implied Temperature Rise with integrity, not the validity of the metric itself.

These are just examples of how our methodology may need to evolve over time, but many more exist from corporate disclosures through to client reporting. As such, this is version one of Lazard Asset Management's Approach to Net Zero Portfolios, and we anticipate we will publish updates with enhancement to our own methodology, as well as learnings from our ongoing implementation, along with our target process.

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Table 8
Major Climate Organizations—Asset Management

Organization Name	Key Points and Commitments	Applicable Frameworks
Net Zero Asset Owners Alliance (NZAOA)	Now 71 institutional investors with \$10.4tn AUM Initial targets for -16% to -29% portfolio emissions-reductions targets at YE2024 on YE2019 base	Target Setting Protocol: Second Edition
Net Zero Asset Managers Initiative (NZAMI)	Now 236 asset managers with \$57.5tn AUM Lazard committed in second wave March 2021 Net zero portfolio targets can be set via NZAOA (above), SBTi (below), or PAII (below) methodologies	The Net Zero Asset Managers Commitment Net Zero for Financial Institutions
Science-Based Targets Initiative (SBTi)	De-facto standard for external validation of corporate emissions reductions Financial sector framework targets Scope 3 financed emissions in portfolios Full corporate net zero target validation from Spring 2022	Financial Sector Science-Based Targets Guidance The SBTi Net-Zero Manual & Criteria
Taskforce on Climate-related Financial Disclosures (TCFD)	Led by Mark Carney with aim of enhancing and standardizing climate risk reporting, through annual TCFD report Advocates of temperature scores as portfolio metrics	Measuring Portfolio Alignment Measuring Portfolio Alignment: Technical Supplement
Institutional Investors Group on Climate Change (IIGCC)	European investor association focused on climate change Net zero portfolio work now done via the PAII (below)	
Paris Aligned Investment Initiative (PAII)	Established under the IIGCC using the four regional investor networks (IIGCC, AIGCC, Ceres, IGCC) Portfolio targets must be “consistent with a fair share” of 50% reductions in global emissions in 2030 Widespread asset manager adoption of Net Zero Investment Framework	Net Zero Investment Framework: Implementation Guide Net Zero Investment Framework: Portfolio Testing Results The Paris Aligned Investment Initiative Net Zero Asset Owner Commitment
Glasgow Financial Alliance for Net Zero (GFANZ)	Led by Mark Carney with aim of standardizing and consolidating finance industry approaches to net zero	COP26 and the Glasgow Financial Alliance for Net Zero
European Commission	Recommendation that portfolio emissions fall 7% pa from 2020 to 2030 to meet 1.5°C trajectory, or ~50% cumulative reductions Recommended use of Enterprise Value Including Cash (EVIC) as the main metric for financed emissions	Handbook of Climate Transition Benchmarks, Paris-Aligned Benchmarks and Benchmarks’ ESG Disclosures
Partnership for Carbon Accounting Financials (PCAF)	Methodologies for financed emissions across absolute emissions, economic intensity, physical intensity, and Weighted Average Carbon Intensity (WACI)	The Global GHG Accounting and Reporting Standard for the Financial Industry
CDP (formerly the Carbon Disclosure Project)	Default platform for self-reporting corporate environmental data, initially across emissions and now water/deforestation Translates short-medium (5–15 years) emissions targets from SBTi	Temperature Rating Methodology

Source: Lazard

Table 9
Major Climate Organizations—Corporates

Organization Name	Key Points and Commitments	Applicable Frameworks
The Intergovernmental Panel on Climate Change (IPCC)	UN body tasked with establishing and reporting the scientific consensus on climate change Publishes work in assessment cycles (currently on AR6) as well as issue-specific topics—land use, oceans	Special Report: Global Warming of 1.5°C Climate Change 2021: The Physical Science Basis
Science-Based Targets initiative (SBTi)	Collaboration between CDP, UN Global Compact, World Resources Institute, and WWF. Main standard for validation of corporate emissions-reductions plans, initially at 2°C, Well-Below 2°C, but now moving to only 1.5°C. Targets originally up to 15-years out but full net zero from 2022 onwards	The SBTi Net-Zero Manual & Criteria SBTi raises the bar to 1.5°C SBTi Corporate Manual The Sectoral Decarbonization Approach Quick Start Guide for Electric Utilities
The Transition Pathways Initiative	Climate alignment methodology developed by the Grantham Research Institute at the LSE, based on carbon and management performance. Carbon performance uses Sectoral Decarbonization Approach. Announced new 1.5°C benchmarks September 2021	Methodology and indicators report TPI introduces 1.5°C benchmark for Carbon Performance
Climate Action 100+	Ten-point assessment for corporate climate alignment Led by regional investor agencies AIGCC, IGCC, Ceres, IIGCC, PRI. Technical input from TPI, Influence Map, Carbon Tracker, 2 Degree Investing Initiative	Climate Action 100+ Net Zero Company Benchmark Climate Action 100+ Disclosure Indicators
Taskforce on Climate-related Financial Disclosures (TCFD)	Led by Mark Carney with aim of enhancing and standardizing climate risk reporting, through annual TCFD report TCFD compliance already a major item in assessment of corporate climate preparedness, such as in Climate Action 100+	Proposed Guidance on Climate-related Metrics, Targets, and Transition Plans Recommendations of the Taskforce on Climate-related Financial Disclosures
CDP (formerly the Carbon Disclosure Project)	Default platform for self-reporting corporate environmental data, initially across emissions and now water/deforestation Disclosures rated across the three major categories	Using CDP's Disclosure Platform - Companies The A List 2021
Institutional Investors Group on Climate Change (IIGCC)	European investor association focused on climate change	Net Zero Standard for Oil and Gas
World Benchmarking Alliance (WBA)	Ranking of 450 companies in heavy-emitting sectors against 1.5°C alignment. Oil and Gas benchmark of 100 companies using the ACT methodology	Oil and Gas Benchmark ACT & WBA – Technical FAQs
Paris Agreement Capital Transition Assessment (PACTA)	Developed by the 2° Investing Initiative	Paris Agreement Capital Transition Assessment The Disclosure Puzzle: The Role of PACTA

Source: Lazard

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