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A New Energy Investment Paradigm

Many of today's energy investors face a pressing conundrum. Tackling climate change makes investing in clean and renewable energy businesses an attractive long-term growth opportunity; and some investors have also made specific pledges to reduce their clients' portfolio emissions, over time, to net zero. Over the shorter term, however, most of the energy sector's profit and return is likely to come from carbon-intensive businesses.

We believe there is a way to resolve that conundrum. A new energy investment paradigm is emerging that aims not only to find the right balance between these two time horizons, but also to use some of the energy industry's $4tn of annual net income to help unlock the net-zero economy of the future.

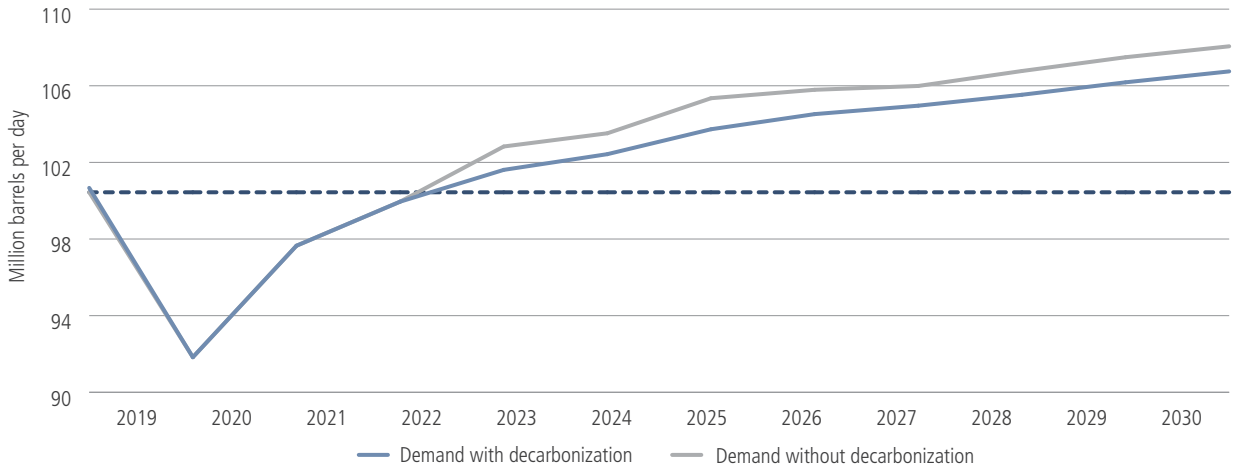
The energy sector is critical for investors in terms of both its size—the 10 largest energy companies alone have a market capitalization in excess of $4tn—and its centrality in the transition to a low-carbon economy.

Over the past 150 years, total annual global energy consumption increased roughly 100-fold, and fossil fuels such as coal, oil and gas currently supply roughly 80% of that energy.[1] Low-carbon energy sources such as nuclear and renewable energy sources such as wind, solar, geothermal and hydroelectric power have a lot of catching up to do.

The need for that catch-up has been apparent for some time, but the obstacles have changed radically over the past decade. Before, the main obstacle was the cost of low-carbon technologies—but the pace of that change has been consistently underestimated, and many sources of renewable power are now very competitive with fossil fuel-based incumbents. By contrast, policy action has been slow, which means the main obstacle is now the pace at which capital can be deployed to transform our global energy infrastructure so that it can support clean energy generation (for example, via wind and solar farms), transmission (for example, via grid and battery technologies) and consumption (for example, via the electrification of our homes and economies). According to the IEA, clean energy investment needs at least to triple by 2030 for the world to be on track to meet the Paris Agreement global warming goals.[2] These are major investments that require long time horizons.

Focusing on the energy sector's near-term profits, which are tied closely to traditional energy sources, would appear to be at odds with the long-term goal of transitioning to clean energy; it also arguably comes with opportunity cost, given the long-term growth associated with the energy transition. If an investor has also pledged to reduce its portfolio emissions over time, it might appear particularly counter-productive. Nonetheless, economic practicality means that fossil fuel demand can only be phased out rather than switched off, and that fossil-fuel businesses will therefore continue to provide an essential and dominant source of current economic return, cash flow and re-investable capital for the energy sector.

FIGURE 1. EVEN WITH DECARBONIZATION, OIL DEMAND IS STILL FORECAST TO GROW



Source: JPMorgan Commodities Research, as of August 2023.

While many investors have employed 'net-zero' index products or an immediate fossil-fuel divestment program to meet their climate goals, we agree with the Institutional Investors Group on Climate Change (IIGCC) that inclusion of, and engagement with, traditional energy companies, based on critical assessment of alignment with net-zero pathways, represent best practice in this arena.[3]

[1] Brookings Institute, "Why Fossil Fuels Are Hard to Quit" at https://www.brookings.edu/essay/why-are-fossil-fuels-so-hard-to-quit/; Environmental and Energy Study Institute at eesi.org.

[2] The Paris Agreement is a legally binding international treaty adopted by 196 Parties at the UN Climate Change Conference (COP21) in 2015, which seeks to hold the increase in the global average temperature to "well below 2°C above pre-industrial levels" and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels." https://unfccc.int/process-and-meetings/the-paris-agreement.

[3] See our recent paper "Net-Zero Alignment: Beyond the Numbers", at https://www.nb.com/en/link?type=article&name=whitepaper-net-zero-alignment-beyond-the-numbers.

Indeed, we believe this approach creates a way to reconcile the two investment time horizons described above by thinking of today's fossil fuel profits as the funds that will help grow tomorrow's clean-energy businesses. The mechanism we have designed to do this aims for what we call the "Synthetic Transition" of an investor's energy portfolio and for the "Synthetic Decommissioning" of companies that are not committing to credible transition pathways.

Four Investment Sleeves, Three Investment Activities

We think this challenge requires a new, active energy investment paradigm, which we call the "Energy Transition Accelerator" approach.[4]

Under this paradigm, an investor would take their existing energy sector portfolio and split it into **four investment sleeves,** under the guidance of a **three-step process** that dynamically determines the balance among the four sleeves over time.

The four sleeves are:

Sleeve I: Energy companies whose transition plans are *aligning or aligned with* a net-zero pathway

Sleeve II: Energy companies that are *committed to* aligning their transition plans with a net-zero pathway

Sleeve III: Energy companies that are *not aligned with* or *committed to* a net-zero pathway

Sleeve IV: Established clean and renewable energy companies benefitting from and enabling the transition to a clean energy system in areas like wind and solar power, smart grids, energy storage; and leaders in the decarbonization of the utilities and power sectors

The three steps are:

1 **Assess** energy companies' current and expected alignment with net-zero pathways

This assessment will determine the initial classification of the investor's existing energy sector exposure into Sleeves I, II and III. As an ongoing process, it will also contribute to the dynamic reclassification of portfolio companies over time as they become more or less aligned with net-zero pathways.

A dynamic, proprietary classification process and categorization system may be required to assess net-zero alignment in the absence of suitable, third-party measurement and monitoring datasets. Ideally, it should be informed by fundamental research capabilities that can fill the gaps in the data with specialist, real-time insight: as active managers, we strongly believe that data is only the starting point when it comes to ESG analysis, and that analyst judgment is essential. Neuberger Berman's Net-Zero Alignment Indicator is designed to answer this need.[5] Being forward-looking and sector-specific are important considerations evident in the Net-Zero Investment Framework (NZIF) developed by the IIGCC, which sets out the criteria a company should meet to be considered net-zero aligned.[6] This framework provided the starting point for development of our own Indicator.

The NB Net-Zero Alignment process has three stages:

I. Generating a quantitative score for six net-zero alignment sub-indicators, drawing on more than 30 binary and numerical data points from third-party vendors. (See figure 2 for more detail on the six sub-indicators).

II. Analyst validation, with the option to override the initial quantitative scores. While we find third-party data to be valuable, it can have coverage gaps or errors. Analysts with multiyear experience of an issuer may have more up-to-date or nuanced intelligence on particular net-zero alignment criteria.

III. Summing those scores into a final net-zero alignment score, mapped to a net-zero alignment status.

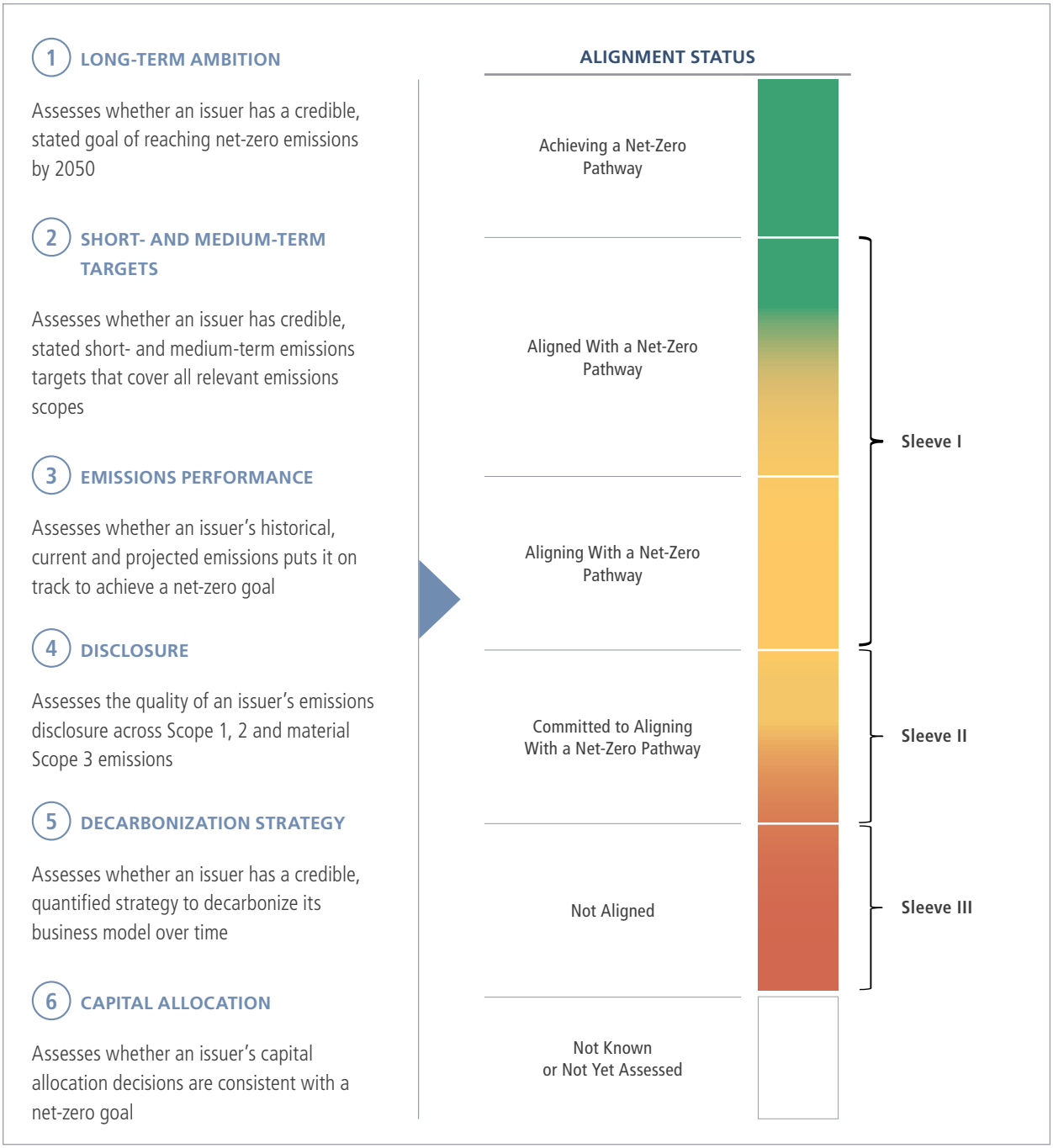
[4] Neuberger Berman developed the Energy Transition Accelerator as a potential alternative approach for investors with allocations to the energy sector. Other energy portfolios, and energy investments in multi-sector portfolios, are managed with different approaches, as appropriate.

[5] For details of Neuberger Berman's proprietary Net-Zero Alignment Indicator, see our paper "Net-Zero Alignment: Beyond the Numbers", at https://www.nb.com/en/link?type=article&name=whitepaper-net-zero-alignment-beyond-the-numbers.

[6] IGCC-Net-Zero Investment Framework

FIGURE 2: NET-ZERO ALIGNMENT AND THE PORTFOLIO SLEEVES

How the sub-indicators and alignment categorizations of Neuberger Berman's Net-Zero Alignment Indicator would define the three traditional-energy sleeves of the proposed Energy Transition Accelerator portfolio



Source: Neuberger Berman. For illustrative purposes only.

2 **Engage** with companies to catalyze and support their emissions-reduction goals

Through positive engagement, investors can point to fundamental research insights to help make the investment case for transition and realize progress, while gradually reallocating capital from companies not adequately or fully committed to credible energy transition plans. As active managers, engagement is a key part of Neuberger Berman's investment process. Our analysts and portfolio managers conduct between 4,000 and 5,000 engagement meetings with company management each year, and usually around a third of those involve conversations on climate topics.

We believe this step in the process involves identifying priority companies for engagement; establishing engagement objectives to improve net-zero alignment; monitoring progress; and escalating the engagement approach should that progress be deemed insufficient. If engagement efforts result in companies taking tangible steps toward addressing shortfalls in their energy transition plans, or if they fail to respond adequately to these efforts, their classification and portfolio sleeve may change.

3 **Reallocate** investment returns to accelerate the energy transition

The cash dividends of **Sleeve I companies** (aligning or aligned with a net-zero pathway) should be reinvested back into those companies, where they can continue to finance proven alignment efforts.

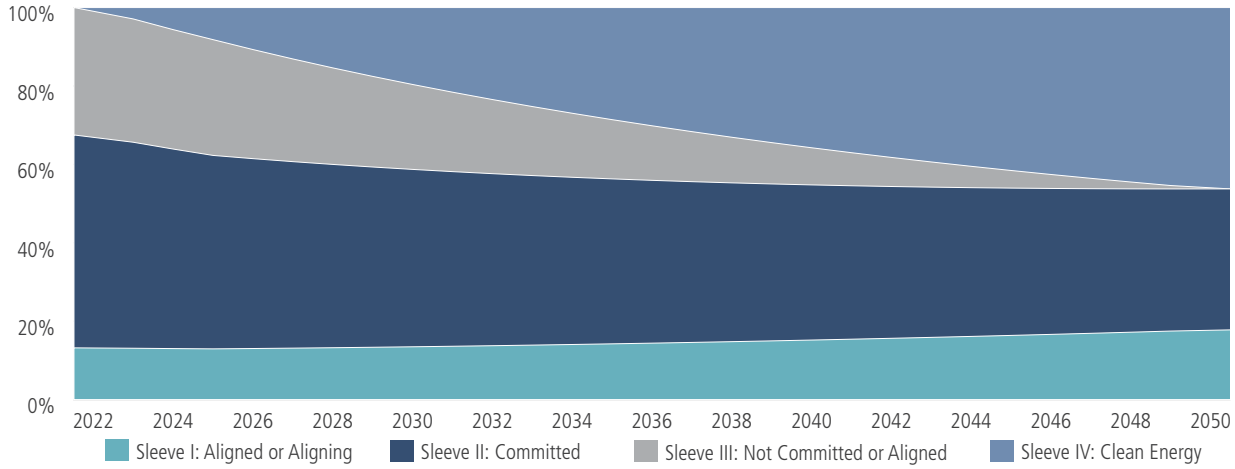
The capital allocation to **Sleeve II companies** (committed to aligning with a net-zero pathway) can be retained, but their cash dividends should be invested into the **Sleeve IV companies** to accelerate the energy transition. This results in the "Synthetic Transition" of an investor's exposure away from energy companies whose transition plans are not yet aligned with a net-zero pathway.

Sleeve III companies (not aligned with a net-zero pathway) should be "Synthetically Decommissioned": cash dividends and, over time, the capital allocation, should both be invested into **Sleeve IV companies**. The starting point and rate of divestment can be customized based on preference for tracking error versus any portfolio climate goals that may be in place.

The universe of clean-energy **Sleeve IV companies** is both large and liquid, and cuts across a number of sectors and geographies—which, in our view, offers opportunities for active stock pickers with expertise in climate technologies, renewable energy, regulation and policy.

FIGURE 3. HOW A HYPOTHETICAL ENERGY TRANSITION ACCELERATOR PORTFOLIO EVOLVES
Reallocation based on ongoing net-zero alignment assessments…

… should eliminate Sleeve III companies and grow the Sleeve IV allocation over time.



Source: Neuberger Berman. For illustrative purposes only, as of September 2023.

Such a dynamic reallocation process is key to balancing net-zero priorities with risk-adjusted return goals over short-term, medium- and long-term investment horizons.

This forward-looking paradigm acknowledges that, while some legacy, carbon-intensive energy businesses are not moving successfully toward net-zero goals (and are at risk of becoming stranded assets), others are—and they remain a dominant source of cash flows and reinvestable profits. We think today's energy sector investor can maintain exposure to these companies, thereby maximizing estimated return while carrying minimal climate change-related risk, and receiving valuable cash flows to reinvest not only in their ongoing journey to net-zero emissions, but in the clean and renewable energy businesses of the future.

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