PGIM

ESG FUNDAMENTALS

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INTRODUCTION

Are you confused by ESG? Outraged? Think it's all hype? You're not alone. Plenty of ink has been spilled, speeches made and policies enacted that have added to the misunderstandings and misinterpretations surrounding this increasingly contentious term. Making sense out of ESG can be hard even for professional investors, and this lack of clarity has led to many issues investors and companies are navigating today, such as greenwashing, regulatory uncertainty and anti-ESG campaigns.

All of that is true, and yet — a basic understanding of ESG is absolutely essential to protecting clients' financial interests in our rapidly changing world.

ESG stands for Environmental, Social and Governance, three influential factors that can impact the performance of any investment. The acronym was first introduced in the 2004 United Nations report, "Who Cares Wins,"[1] which asserted a clear connection between sustainable, healthy societies and shareholder value. As Gary M. Pfeiffer, CFO of DuPont, said at the time, "every corporation is under intense pressure to create ever-increasing shareholder value. Enhancing environmental and social performance are enormous business opportunities to do just that." [2]

Since then, ESG has become the fastest-growing segment in global investment management, with ESG-related investments expected to reach $34 trillion of global assets under management (AUM) by 2026 — representing a fifth of all AUM worldwide. [3] Globally, more than 5,300 investors managing more than $121 trillion of AUM support the world's leading framework for responsible investing, the United Nations Principles of Responsible Investment (UN PRI). [4]

Whether you are an investor, advisor, or simply curious to understand why ESG investing is such a big deal, this paper will explain what ESG actually is — not a philosophy, product or trend, but a powerful and useful investment tool that can be applied to serve different purposes.

1 Who Cares Wins (WCW) was initiated by the UN Secretary General and UN Global Compact in 2004 in collaboration with the Swiss government. The initiative was endorsed by 23 financial institutions collectively representing more than $6 trillion in assets.
2 "Who Cares Wins," The Global Compact, 2004. https://www.unepfi.org/fileadmin/events/2004/stocks/who_cares_wins_global_compact_2004.pdf
3 "Exponential Expectations for ESG," PwC, 2022. https://www.pwc.com/gx/en/financial-services/assets/pdf/pwc-awm-revolution-2022.pdf
4 As of June 30, 2023. AUM is based on 3,826 signatories. https://www.unpri.org/download?ac=19120

ESG: AN INVESTMENT MULTI-TOOL

Critics of ESG often say it prioritizes environmental and social good over investment performance. In reality, most investors today use ESG as a tool to understand how the performance of their investments may be impacted — positively or negatively — by relevant environmental, social and governance issues. These issues are varied but generally include:

Environmental factors	Social factors	Governance factors
These relate to the natural world such as our use and interaction with land, forests, water, minerals, ecosystems, climate and our planet's biodiversity.	These relate to the lives of humans such as working conditions and standards, health and safety, product safety and human rights.	These relate to how a company or even a country governs itself, including quality and integrity of leadership, independence of oversight, robustness of internal controls, investor rights, and ethical conduct.
Climate change	Human capital and labor management	Business ethics and conduct
Biodiversity and land use	Health and safety	Tax compliance
Water	Supply chain standards	Quality of board and management
Waste	Product safety and quality	Independence and quality of oversight
Pollution	Consumer protection	Accounting and audit
	Human rights	Executive pay

The risks and opportunities that arise from these issues may be poorly understood and not reflected in the price of an investment. Therefore, an active investor who identifies and analyzes these issues appropriately can gain an advantage — finding hidden opportunities or avoiding potential traps.

An investor in a mining company, for example, may consider that any risks the company's mines pose to the environment are reflected in the valuation, but may still be concerned about the impact a tailings disaster would have on its long-term cash flows. Applying a tool like ESG can help investors better understand the dangers and long-term costs, potentially limiting one's exposure to major negative events.

Active investors might also use the ESG tool to avoid or pay less for stocks and bonds of companies with poor health and safety records, compared to companies in the same industry with good health and safety records. Some observers might interpret this investor behavior as a desire to "penalize" companies that do not protect their workers. However, health and safety incidents often lead to delays, stoppages of operations and potentially tragic disasters, resulting in additional costs to companies, negative impacts on the companies' performance, and lower investment returns.

CASE STUDY
VALE S.A.

On January 25, 2019, a tailings dam at the Córrego do Feijão iron ore mine just outside Brumadinho in Minas Gerais, Brazil, suffered a catastrophic collapse. A deluge of toxic mud flowed downhill, crushing homes and offices, and killing 270 people. The dam belonged to Vale S.A., the world's largest iron ore producer, which had experienced a previous tailings dam collapse in the country four years earlier, killing 19 people. On January 28 when markets opened, the Vale S.A. stock price fell 24%, losing 71.3 billion reais ($19 billion) in market capitalization, the biggest single-day loss in the history of the Brazilian stock market to date. [5] The disaster in Brumadinho galvanized investors, among others, around the world to call for an industry wide response to the problem of tailings storage facilities and highlighted the critical importance of understanding and analyzing potentially mispriced ESG risks.

CASE STUDY
RANA PLAZA

On April 24, 2013, Rana Plaza, an eight-story building that contained five garment factories on the outskirts of Dhaka, Bangladesh, collapsed in 90 seconds. 1,134 people were killed, making it the deadliest accident in the history of the garment industry. The day before the collapse, cracks had been discovered, but managers assured workers it was safe and ordered them to come to work. These factory workers made garments for major international retailers including Benetton, Bonmarché, Joe Fresh, Mango, Matalan, and Primark. Many brands had outsourced manufacturing to emerging markets like Bangladesh, where overheads and human labor were cheap, to satisfy the Western demand for fast fashion. Few of these companies had previously verified the working conditions in the factories they used. The disaster led to a reckoning around workplace safety and human rights in the garment industry and highlighted the failure of brands to ensure their outsourced factories respect and protect the lives of their workers and mitigate the risk to their companies and investors.

5 Brumadinho Dam Disaster, "Wikipedia," 14 June 2023, en.wikipedia.org/wiki?curid=59769876

However, the ESG tool can do more than simply pare away risks — it can also unearth opportunities.

Investors may seek companies that are likely to benefit from societal trends or shifting consumer preferences, or they can identify companies with potential to improve their valuation by adopting better ESG practices. [6] Investors may opt to take an active role in encouraging companies to adopt more sustainable practices or make improvements in how they manage their ESG risks and opportunities through "active stewardship." Investors may also choose to put their capital toward solving some of the world's most pressing environmental and social issues in the form of "impact investing." Often (but not always) this can produce a win-win situation, where doing good can also be good for investment performance.

While a lot of emphasis is placed on environmental and social factors, governance can be even more important. Governance is all about how businesses or assets are managed, and whether these are operated in a way that would ensure their long-term economic sustainability. ESG tools and analysis foster transparency and accountability that allow for the assessment of the prudent management of the business, robust oversight from the board, ethical conduct, and careful balance between long-term economic sustainability and short-term returns.

Gaining information and assessing ESG risks can be difficult and require specialist knowledge and skills. ESG analysis and tools can therefore provide quantitative and qualitative insights that can improve and differentiate investors' assessments of an investment's long-term value.

Today, most institutional investors collect information on a broad range of E, S, and G risk factors, while regulators in many markets are looking at ways to standardize information available to investors to make it easier and cheaper for investors to analyze and compare the environmental, social and governance risks to their investments.

With all this in mind, it's clear that ESG, as a tool, extends the investment risk management lens beyond financial metrics and has many practical uses, each of which will appeal to a different subset of investors.

CASE STUDY
TESLA

In 2009, Jennison Associates * embarked on a tour of the EV (electric vehicle) ecosystem and was impressed with Tesla's unique business model.

Jennison became an early investor. The investment thesis was underpinned by a conviction that the company would be a major beneficiary of the accelerating adoption of EVs. This was based on Jennison's view that the company was well prepared for growth, with industry-leading capacity and battery supply and attractive unit economics relative to the auto industry overall.

The company was assessed positively for its leading position in the effort to reduce carbon emissions from transportation (EVs) and energy generation (solar). It was also assessed as maintaining robust policies and audits related to critical raw materials. However, the team assessed that board oversight and the public presence of the CEO presented ESG risks — warranting engagement with the company to express their views and desired outcomes.

Since their IPO in 2010, Tesla stock has returned more than 20,000% (as of July 21, 2023). [7]

* Jennison Associates is a PGIM business.

6 Alex Edmans, Marcin Kacperczyk, "Sustainable Finance," Review of Finance, Volume 26, Issue 6, November 2022. https://doi.org/10.1093/rof/rfac069

7 Business Insider, 2023 PGIM ESG Report. This information is provided solely as an illustration of our ESG research evaluation. It is not intended to represent a specific portfolio's performance or characteristics. This information should not be construed as investment advice. Past performance is not indicative of future results.

USING THE TOOLS OF ESG

Consideration of ESG factors can be applied for a large number of purposes. We distinguish four main uses, each associated with different inherent motivation, investment philosophy, implementation in the investment process, and likely impact on investment returns.

APPLICATION I

USE ESG ANALYSIS AS PART OF INVESTMENT RISK MANAGEMENT

Economic activities are not insulated from environmental and social factors. Commercial success of many industries is heavily dependent upon their environment — particularly, availability of natural resources and favorable climate conditions.

For example, water stress brought on by climate change impacts a range of industries, including those one might not expect:

- **Agriculture –** Research suggests roughly 40% of global croplands have already experienced water scarcity, and the upper end of future estimates are nearly twice that figure. Europe is emerging from a drought that may be its worst in 500 years, and yield forecasts for corn, wheat and other staple crops are being slashed by 25% or more. [8]
- **Semiconductors –** Nearly half of chip production facilities supplying components to the 50 largest chipmakers are exposed to water stress. [9] This represents a critical threat to semiconductor manufacturers who rely on ultrapure water during every step of the manufacturing process. Competition with local citizens and businesses for scarce water resources could also adversely impact companies' reputations and hurt their sustainability ratings. [10]
- **Pharmaceuticals –** 85% of publicly traded pharmaceutical companies are exposed to water stress in at least a quarter of their facilities. Additionally, many pharmaceutical drugs and key ingredients can degrade quickly and must be stored at precise temperatures to maintain their efficacy. Episodes of extreme heat can lead to increased energy costs for cooling and lost product should heat waves lead to power outages or other disruptions. [11]

Consideration of ESG factors in assessing investment risk is not new. Any seasoned active investor, be it a public equity or debt analyst/portfolio manager, a real estate or private equity investor or a private debt underwriter, will say that they have always looked at the quality of management, transparency and accuracy of financial information, robustness of internal controls, pay and incentives structure for leadership teams, business conduct issues, and corporate culture. In fact, many experienced investment professionals would argue that large corporate failures that have led to significant value destruction for investors have come as a result of E, S, or G factors.

8 "Food for Thought," Megatrends white paper, PGIM. https://www.pgim.com/megatrends/food-for-thought
9 Weathering Climate Change. https://insights.pgim.com/pgim/insights/pdf/PGIM-Megatrends-Weathering-Climate-Change-2021.pdf
10 Ibid.
11 Ibid.

CASE STUDY
VALUE DESTROYERS

ENRON

Enron was one of the largest companies in the United States and the largest U.S. company to ever go bankrupt. At its peak, the company's shares were trading at $90.70, giving it a market capitalization of around $70 billion. In December 2001, just before filing for bankruptcy, the share price fell to $0.26. The underlying reasons behind Enron's collapse were serious governance failures, which led to Enron's board waiving conflict of interest rules to allow the creation of private partnerships that did business with the firm. These partnerships appeared to have concealed debts and liabilities from investors and creditors, misleading regulators with fake holdings and off-the-books accounting practices. Many Enron executives, including the board chairman and the CEO, were indicted on a variety of charges and sentenced to prison. Lost were $74 billion of shareholder value, 4,500 jobs, and billions of dollars in employee pension benefits.

BP

On April 20, 2010, the oil drilling rig Deepwater Horizon, operating in the Macondo Prospect in the Gulf of Mexico, exploded and sank, resulting in 11 deaths and severe damage to the environment and communities along the Gulf Coast region, as an estimated 4.2 million barrels of oil flowed from the damaged well over an 87-day period, polluting nearly 800 km of coastline in Louisiana, Mississippi, Alabama and Florida. This was the largest oil spill in the history of marine oil drilling operations. [12]

BP's share price fell by 51% in 40 days, going from $60.57 on April 20 to $29.20 on June 9, 2010, as investors were taking into account future revenue losses due to the cost of cleanup, environmental and economic damages, penalties, claims and settlements BP would have to bear over the coming years. The total cost of the Macondo disaster to BP has exceeded $60 billion.

While the impact of the Macondo disaster was environmental and economic, the risks leading to it were social and governance in nature. Specifically, for years preceding the Macondo disaster BP had exhibited a poor safety record with multiple smaller-scale incidents happening across its operations that were seemingly unaddressed by the company's management. ESG-mindful investors, who made BP underweight prior to the Macondo disaster, did so predominantly due to safety and governance concerns rather than for environmental reasons.

MALLINCKRODT

According to the CDC, from 1999 to 2021 more than 645,000 people in the United States died from an opioid overdose. [13] Currently, more than 100 people in the country die every day from opioids, and the crisis has been credited with lowering the overall U.S. life expectancy. As the social impact of opioid abuse became wider known, attention turned to the pharmaceutical companies producing and distributing the drugs — and as it turned out, with full knowledge that they were being wildly overprescribed.

A spate of lawsuits torpedoed the share prices of publicly traded companies involved in opioid sales, including generic drugmaker Mallinckrodt. From 2006 to 2012, during the height of the crisis, a DEA database tracked that a subsidiary of Mallinckrodt supplied 28.9 billion oxycodone pills to U.S. pharmacies — more than 80 pills for each person in the United States.

DEA officials confronted the company with data that showed the doses of oxycodone it shipped to distributors corresponded with high numbers of arrests for illegal oxycodone possession and sale in those areas. Mallinckrodt eventually paid a $35 million fine, acknowledging their system to detect suspicious orders did not meet DEA standards.

In October 2020, Mallinckrodt filed for Chapter 11 bankruptcy, as the result of more than $1 billion in lawsuits over its role in the opioid crisis. The company, which denied wrongdoing, agreed to pay $1.7 billion in settlements. In 2023, a new bankruptcy plan was approved that reduced the settlement payments to $700 million and transitioned ownership of the business to the company's creditors, cancelling all equity shares. [14]

12 EPA, https://www.epa.gov/enforcement/deepwater-horizon-bp-gulf-mexico-oil-spill
13 Centres for Disease Control and Prevention, Opioid Data Analysis and Resources https://www.cdc.gov/opioids/data/analysis-resources.html
14 Reuters, https://www.reuters.com/business/healthcare-pharmaceuticals/mallinckrodt-gets-approval-restructuring-1-billion-cut-opioid-settlement-2023-10-10

As examples of large ESG failures in the past and the significant losses incurred by investors demonstrate, ESG considerations have long helped investors avoid costly investment mistakes.

Of course, not all ESG risk factors will be equally relevant for all companies. For example, whereas high costs from a potential environmental disaster undoubtedly a risk for a mining company, a bank would be more exposed to governance risks, such as facilitating money laundering or criminal activities or fraud.

Determining how “material” a risk is — and how big the impact would be — can be a difficult task. ESG analysis driven by the considerations of financial materiality of environmental, social and governance issues requires sophisticated analytical frameworks, data tools and knowledge. Hence, investment managers are building this kind of expertise by investing in data and modeling, and employing specialist ESG analysts who work hand-in-hand with traditional fundamental analysts to assess existing and potential investments on a holistic basis. Indeed, many fundamental analysts are developing expertise in assessing ESG issues, thus increasingly merging financial and ESG analysis to improve assessments of investment risks.

Finally, while many ESG risks are company or asset specific, some ESG risks are more systemic in nature and are likely to affect the entire economy with negative impacts on investment portfolios.

When it comes to investment performance implications, using ESG for risk management can have a positive impact on investment returns. The more information investors get about potentially material risk factors, the more accurately they can value potential investments; the better judgment they can exercise, the better decisions they are likely to make.

ESG: WHY ARE INVESTORS INTERESTED?

Why has ESG only gained so much attention in the last few years? A number of reasons have contributed to the rise in ESG:

- The frequency and magnitude of risks arising from ESG factors have increased significantly compared to previous decades, with governments prepared to take strong action to both prevent and punish major environmental, social and governance failures through regulation, penalties and sanctions against businesses involved.
- Increased frequency of flooding, wildfires, hurricanes, droughts, heat waves and the impact of human economic activities on water, air, fertility of land and biodiversity have created more uncertainty and risks with long-ranging effects.
- Globalization has created a lot of interconnectedness, and events such as the Russian invasion of Ukraine and the COVID-19 pandemic have highlighted both the importance and fragility of global supply chains.
- Consumer preferences are changing due to growing awareness among consumers of the impacts on the natural environment and people’s livelihoods that arise from economic activities of different industries and companies. The rise of social media, which makes it very easy to express preferences and like or hate brands, has been a major contributor to increasing consumer awareness.
- ESG-related information is becoming increasingly available either through mandated ESG-related disclosures, investor demand, or because companies realize that demonstrating their credentials as responsible and caring corporate citizens is good for business. Availability of ESG data allows for a more structured approach to ESG.

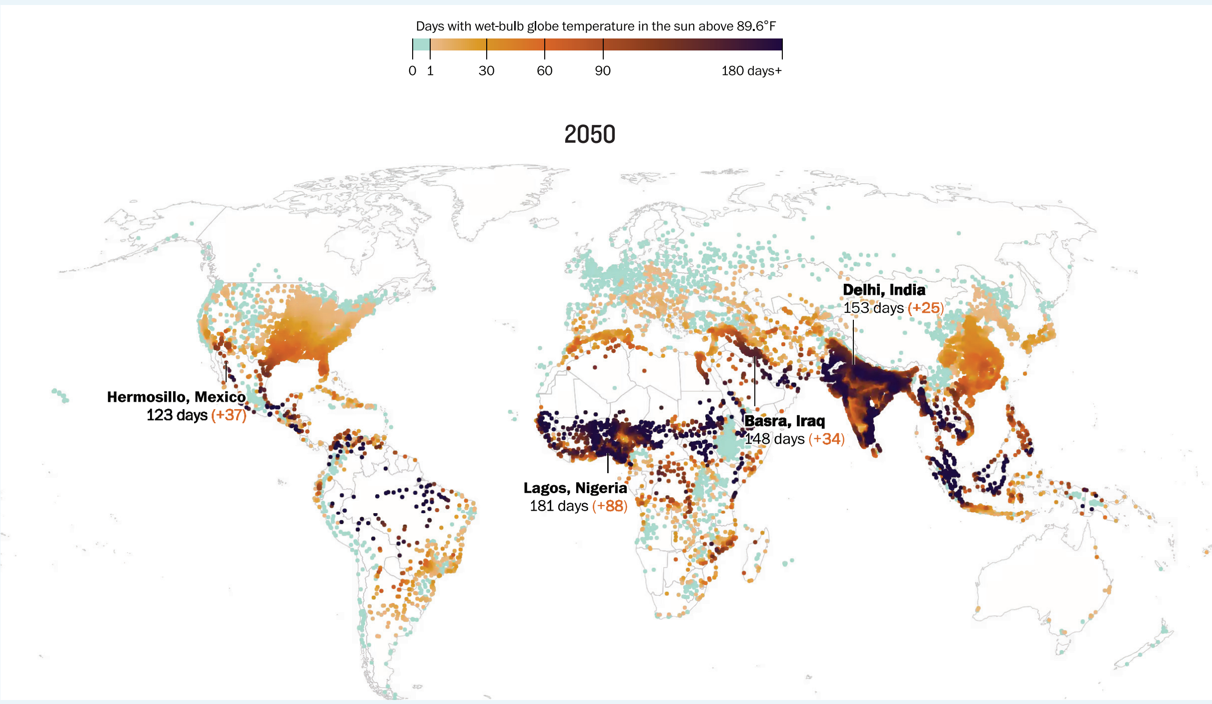
CASE STUDY
THE SYSTEMIC RISK OF CLIMATE CHANGE

The impact of rising temperatures on climatic conditions will be different in various geographic locations and, as a result, will affect some companies and assets more than others.

If an investor owns a concentrated portfolio of companies or assets, they may be able to mitigate such risks by carefully selecting investments that will not be significantly affected. However, a rise in passive index-based investing means that index investors often invest across economies of many countries all over the world. This means droughts, heat waves, flooding, hurricanes and wildfires are likely to affect many different businesses and assets in the portfolio, as well as their supply chains and customers, within the same time period, thus leading to weaker investment performance of such broad diversified portfolios.

For this reason, large index investors and large asset owners (e.g. pension funds, insurance companies and sovereign wealth funds) who invest in big parts of the global economy are deeply interested in mitigating the risks presented by climate change, using their influence to encourage companies to reduce carbon emissions and governments to implement policies that enable mitigation of global warming and adaptation to climate change.

Where people experience highly dangerous heat



Source: "Where Dangerous Heat Is Surging," Washington Post, September 5, 2023.
https://www.washingtonpost.com/climate-environment/interactive/2023/extreme-heat-wet-bulb-globe-temperature

APPLICATION 2

USE ESG LENS TO IDENTIFY / CREATE ATTRACTIVE INVESTMENT OPPORTUNITIES

ESG is not all about risk. The need to deal with systemic issues, such as climate change, or meet changing consumer preferences to reduce negative impacts on the environment also create significant investment opportunities.

Many investment products that bundle attractive opportunities in the ESG/sustainability space focus on environmental and social themes not because they want to create public good, but because they want to make money. They believe selected investments will deliver attractive investment returns by catering to powerful socioeconomic trends catalyzed by global initiatives such as the United Nations Sustainable Development Goals (SDGs) and consumer preferences.

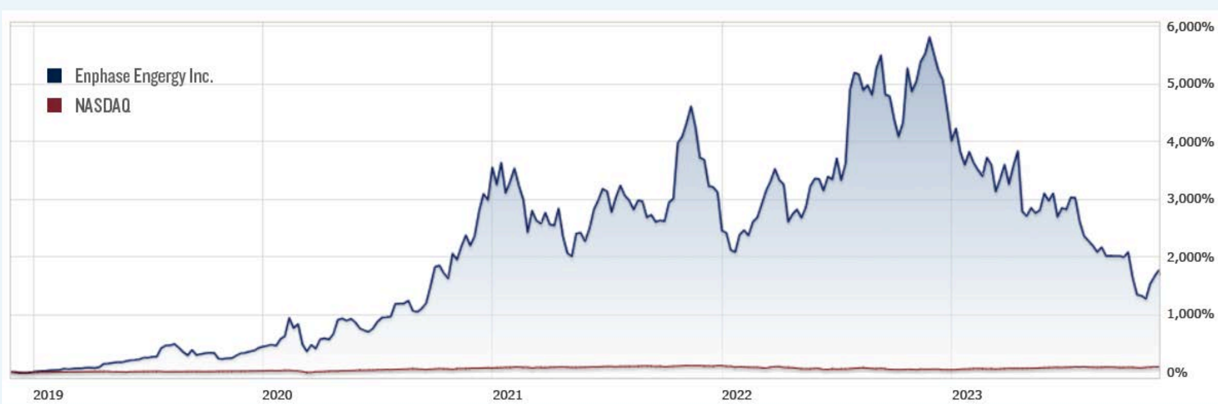
Investors use different frameworks — such as the SDGs or the EU green taxonomy — to think about and identify such opportunities in a more structured way. The past few years have seen a variety of data and analytical tools being developed by investors and third-party service providers to identify industries, businesses, assets and commodities that may benefit from the massive public and private investments in global decarbonization and sustainable development.

CASE STUDY

LIVING ON SUNSHINE

Enphase Energy, Inc. (NASDAQ: ENPH), a leading manufacturer of solar microinverter and storage solutions for the residential market, provides individuals with the ability to access, store, use and sell their own solar power. The company leverages a number of long-term tailwinds including the federal investment tax credit (ITC) and the addition of a storage-only ITC in the United States. The business has also added capacity to take advantage of the domestic microinverter manufacturing credits in the Inflation Reduction Act (IRA) and continued strong demand from European markets.

5 year historic share performance Enphase Energy, Inc. (NASDAQ: ENPH v NASDAQ Composite)



Source: Morningstar
The chart is provided solely as an illustration of our ESG research evaluation. It is not intended to represent a specific portfolio's performance or characteristics. The information should not be construed as investment advice. Past performance is not indicative of future results.
At the time of writing, PGIM and its affiliates hold a very small position in the common stock of Enphase Energy Inc. (Nasdaq ENPH).

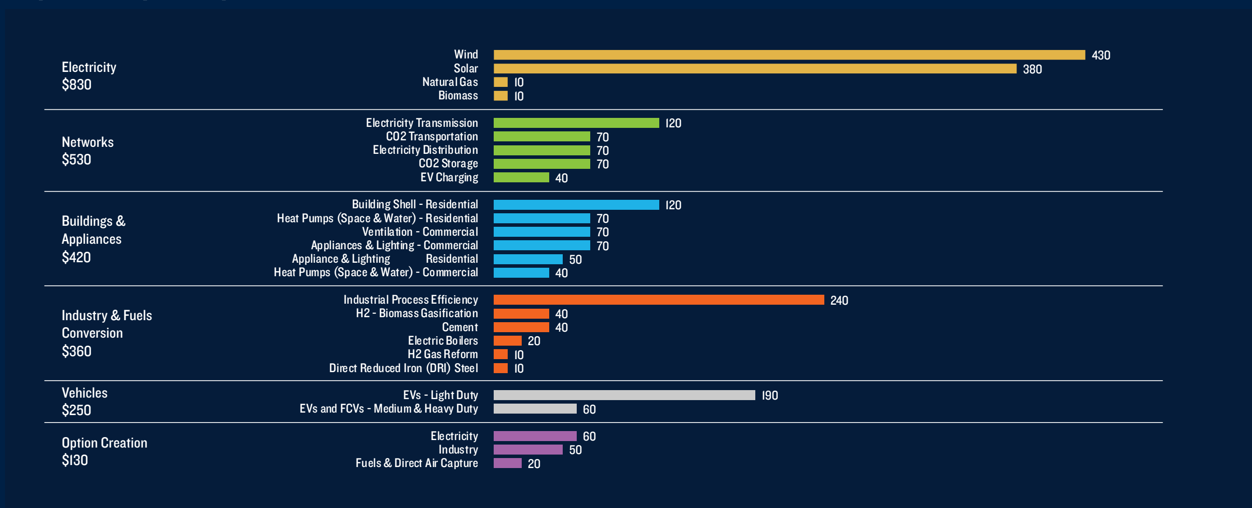
A PRUDENT EXAMPLE

The International Energy Agency's (IEA) Stated Policies Scenario (STEPS) is a conservative benchmark for future growth in the "decarbonization economy." It assumes that many governments will be unable to fully meet their currently stated climate objectives. Instead, STEPS assumes that only current policies and announced plans will be implemented.

Even through this lens, capital investments to reduce greenhouse emissions are expected to be massive. According to STEPS, spending on global clean energy is estimated to reach more than $2 trillion a year by 2030, an increase of more than 50% from current levels.

Given the scope of greenhouse gas emissions across sectors, the investment opportunity set is expected to be broad based:

Expected capital expenditure on decarbonization, 2021–2030 ($ billions)



Source: Princeton Net Zero America Report, December 2020. https://environmenthalfcentury.princeton.edu/. Figures in 2018 billions ($). Includes capital invested pre-financial investment decision (pre-FID) and capital committed to projects under construction in 2030 but in-service in later years. All values rounded to nearest $10 billion and should be considered order of magnitude estimates. Incremental capital investment categories totaling less than $5 billion excluded from graphic. Other potentially significant capital expenditures not estimated in this study include establishment of bioenergy crops and decarbonization measures in other industries besides steel and cement, non-CO2 greenhouse gas mitigation efforts, and establishing enhanced land sinks.

Innovative technologies that seek to address or mitigate issues related to climate change can additionally be good targets for investors. For example, technology and innovation will play a crucial role in finding new ways of growing and producing food, as fertile ecosystems are under stress and food demand grows:

- New compounds created from living organisms or natural materials — known as biologicals — use nature's own biology to safeguard plants against pests, prevent disease and improve yields. The global market for agricultural biologicals is expected to more than double in size by 2030.
- Precision agriculture, such as sensors embedded in crops, can monitor variables like temperature, moisture, and levels of key nutrients in the soil and air. This real-time data serves as an input for predictive analytics software to enable farmers to reduce their cost of inputs and boost productivity while also minimizing water usage and reducing some environmental impacts. [15]

Attractive investment opportunities related to ESG/sustainability issues can also be created by identifying assets or investee companies who are improving their material environmental, social and governance credentials — even those in so-called "brown" industries, like the energy sector. High carbon emitters may actually have the most impactful role to play in the transition to a decarbonized economy as they modernize their operations.

ESG-related investment opportunities are available across the entire investment risk spectrum, and feature regularly in mainstream investment portfolios as well as in dedicated ESG strategies. As one would expect, the actual returns on such investments vary considerably, but the motivation behind such investments is to leverage specialized research and analysis as well as robust tools and methodologies to achieve market or above-market rates of return.

15 As highlighted in our recent report "Food for Thought" such as rising income and global population growth. https://www.pgim.com/megatrends/food-for-thought

CASE STUDY
TRANSFORMING THE UNUSED INTO THE INVALUABLE

Darling Ingredients (NYSE: DAR), a Texas-based global company, turns edible by-products and food waste into value-added products, such as green energy, collagen, fertilizer, animal proteins, pet food ingredients and renewable diesel, through its Diamond Green Diesel joint venture, the largest renewable diesel producer in North America. Recognizing the growing challenges facing the global food system, Darling Ingredients identified long-term competitive advantages in shifting toward the circular economy and is well positioned to take advantage of the increasing demand for renewable diesel and sustainable aviation fuel, as well as from the favorable regulations and incentives in the United States.

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APPLICATION 3
USE ESG ANALYSIS TO INVEST IN LINE WITH CLIENTS' VALUES, VIEWS AND PREFERENCES

Given an opportunity, many people want to invest in line with their values, life choices and preferences. A religious institution would likely want to avoid investments in industries whose products, services or practices go against their religious beliefs (e.g., weapons, stem cell research, pork products, alcohol, tobacco, pornography, gambling, etc.). A pacifist would want to avoid having any association with weapons. A person worried about climate change may want to avoid supporting the fossil fuel industry.

Today it is possible to screen public and private companies for a multitude of factors, and advances in AI are only likely to make such screens even more granular and targeted to specific preferences and needs.

Investors, should they wish, can customize their portfolios to:

- Avoid undesired investments. For example, a charitable foundation raising funds to support treatment of cancer may want to avoid indirectly supporting companies whose products exacerbate the problem they are fighting against (e.g., tobacco).
- Tilt their portfolios toward better-performing companies on a variety of selected environmental, social and governance indicators. If two companies provide the same product or service, the portfolio would opt for the company with better ESG characteristics.
- Choose to invest to support specific issues that are of interest to them and their beneficiaries and where they want to make a difference. For example, an animal lover may only want to invest in companies with strong animal welfare policies or those innovating in the animal health sector.

Individual investors also have a much greater selection of investment products with different ESG/sustainability features, while the development of the ETF market offers even greater possibilities of building portfolios customized to their preferences and needs.

In fact, the use of exclusionary screens has risen sharply in recent years. In 2023 more than 20% of total global AUM now use at least one restriction screen, an increase from just 2% in 2019. In Europe, almost 60% of AUM use screens, compared to 8% in Asia and less than 2% in the United States. [16] Controversial weapons, thermal coal and tobacco are the most commonly used screens, but the use of screens is rising across a number of themes. Some of the typical screens available to institutional and retail investors include:

16 "Sustainable Reality," Morgan Stanley, 2023. MS_Institute_for_Sustainable_Investing_Sustainable_Reality_1H_2023_report_FINAL.pdf (morganstanley.com)

Environmental factors	Social factors		Governance factors
• Carbon and fossil fuel • Environmental controversies in operations and supply chains • GMOs (genetically modified organisms) • Nuclear power • Palm oil • Pesticides	• Abortion and contraceptives • Adult entertainment • Alcohol • Animal welfare • Child labor • Defense and weapons • Fur and specialty leather • Human rights controversies	• Gambling • Labor and human capital-related controversies • Lending practices • Pork • Stem cell • Supply chain controversies • Tobacco	• Bribery and corruption • Fraud • Governance and business conduct-related controversies • Government sanctions

The frequent criticism of values-based investing is that investment products in question rarely deliver on their promises of doing good, that they are placebos, a feel-good factor that does not create any real-world change. It is true that the link between investment preferences and real-world change is notoriously difficult to prove; however, it is entirely possible to identify assets, companies, products and services that are more environmentally and socially beneficial than others, and position investment portfolios in a way that supports and promotes these positive features.

There are many different "positive alignment" techniques that use relative and absolute ESG performance measurements. Some of the common approaches include:

- "Best-in-class," where only top performers on selected ESG parameters in each sector are included in the portfolio.
- "Best-in-universe," which is similar to "best-in-class" but focuses on top performers in the entire universe rather than a particular sector.
- "Tilting," whereby companies with desired ESG characteristics are overweighted in the portfolio at the expense of companies with less desired ESG characteristics.
- A threshold approach, whereby only companies meeting a specified threshold ESG standard/rating can make it into the portfolio.

Positive alignment strategies are often used in combination with exclusionary approaches. When considering positive alignment strategies, investors must carefully review the methodology behind the ESG approach used in such strategies, the level of ambition of the strategy, key performance indicators used to track ESG performance and, importantly, risk/return profile of the strategy. It is also useful to understand what exactly positive ESG performance means in real-world terms.

A lot of additional homework needs to be done when selecting values-based or positive alignment strategies, mainly to ensure that the ESG methodology underpinning the product is robust, and that both the methodology and end portfolio reflect ethical and sustainability-related values and preferences of the investor.

Many securities market regulators are focusing on the issues of transparency and integrity of the ESG-labeled investment products, and it should become easier in the future for investors to make investment choices that are right for them from both a risk/return profile and a sustainability preferences perspective.

As ESG disclosures by businesses improve and investors become more experienced and sophisticated in optimizing for both financial performance and ESG features, the ESG product offering will undoubtedly grow in variety, quantity and quality, particularly as regulation is moving fast to mandate greater transparency and integrity of ESG-labeled products.

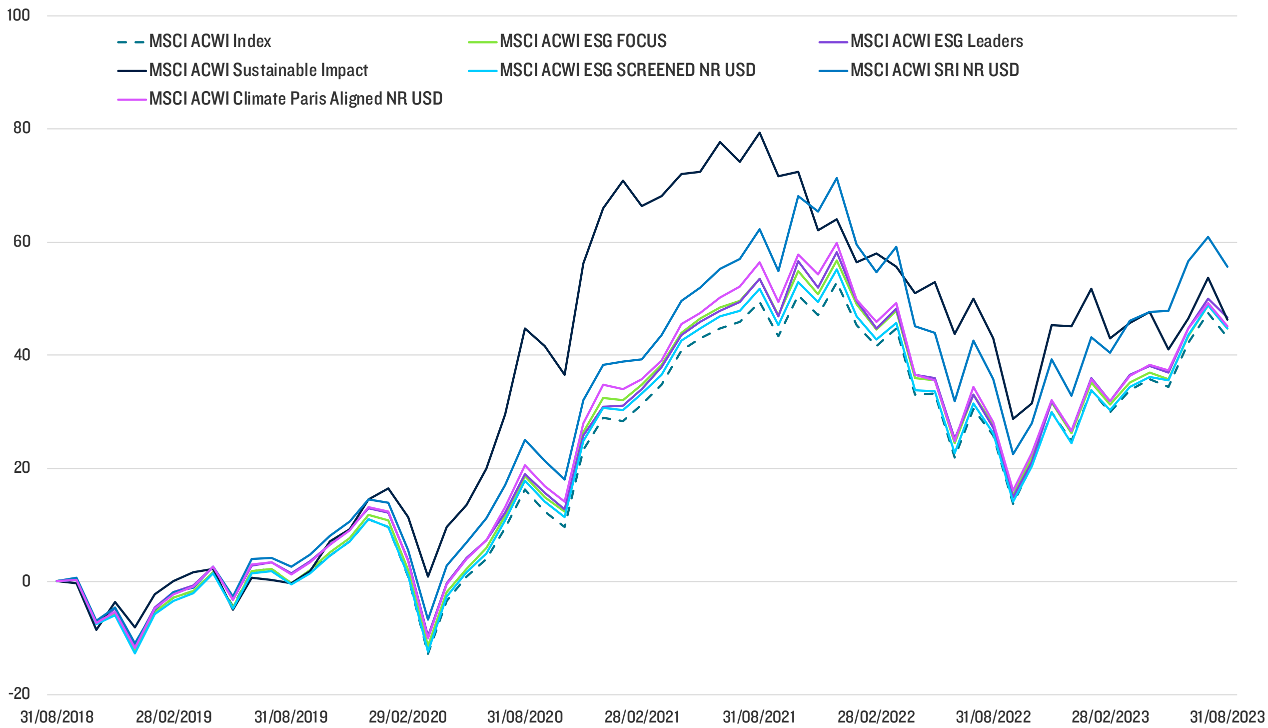
The use of ESG to facilitate values-based investing or positive alignment approaches is generally associated with the concept of forgoing some return in exchange for ESG-related benefits. There is much debate and disagreement in both the investment industry and academic literature as to whether this performance trade-off actually happens and whether values-driven or positive-alignment focused ESG strategies systematically underperform non-ESG strategies. The debate is not likely to be settled anytime soon.

In theory, a significant reduction in the opportunity set available to the portfolio manager can either lead to lower expected returns or require taking more risk to maintain the same level of returns as a similar strategy with no restrictions on investment. Mathematically and logically such a trade-off on either the risk or the return side exists every time an opportunity set is significantly reduced due to restrictions (including those that have nothing to do with ESG).

In practice, however, the expected performance of an ESG strategy against its most relevant non-ESG benchmark would differ depending on the asset class, the chosen ESG methodology, the time horizon and the risk appetite of an investor.

Below are a couple of illustrative examples of how ESG equity and fixed income indices performed against their respective non-ESG benchmarks over the past five years.

Example 1. Cumulative performance of equity indices based on exclusionary and positive alignment methodologies that restrict investment in a portion of the investment universe against non-ESG global benchmark.



Source: PGIM ESG

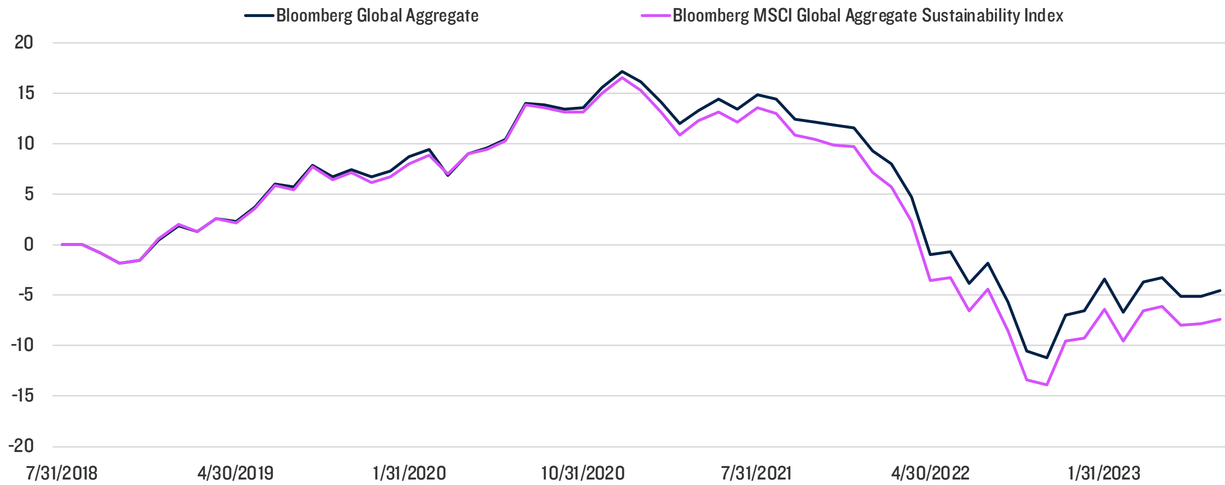
The chart is provided solely as an illustration of our ESG research evaluation. It is not intended to represent a specific portfolio's performance or characteristics. The information should not be construed as investment advice. Past performance is not indicative of future results.

The MSCI ACWI Index comprised 2,934 constituents based on the MSCI Global Investable Market Indexes Methodology. [17]

	Number of Constituents	Strategy	Exclusions
MSCI ESG Screened Index	2,692	Minimum 30% reduction in carbon emission intensity and exclusions.	Controversial weapons, nuclear weapons, civilian firearms, tobacco, thermal coal, oil sands global compact violators, and red-flag controversies.
MSCI ESG Leaders	1,218	Designed to represent the performance of companies that have high ESG ratings relative to their sector peers. The indices target a 50% sector representation vs. the parent index, aiming to include companies with the highest MSCI ESG ratings in each sector.	Excludes companies involved in severe controversies.
MSCI Climate Paris Aligned Index	925	Minimizes exposure to transition and physical climate risks and captures opportunities arising from the transition to a lower-carbon economy while aligning with the Paris Agreement requirements.	Excludes categories of fossil fuel–linked companies.
MSCI ACWI SRI Index	614	Values-based exclusions and best-in-class tilting.	Nuclear power, tobacco, alcohol, gambling, military weapons, civilian firearms, GMO, thermal coal, fossil fuel reserves ownership, fossil fuel extraction, adult entertainment, global compact violators, and red-flag controversies.
MSCI ACWI ESG Focus	530	Maximizes exposure to positive ESG factors.	Tobacco, controversial weapons, fossil fuel extraction, thermal coal power companies, and red-flag controversies.
MSCI ACWI Sustainable Impact	162	Designed to identify listed companies whose core business addresses at least one of the world's social and environmental challenges, as defined by the UN SDGs. Companies must generate at least 50% of their sales from one or more of the Sustainable Impact categories and maintain minimum ESG standards.	

17 MSCI Global Investable Market Indexes Methodology https://www.msci.com/documents/1296102/1330987/ChinaA_QA_Mar2014.pdf/8996621b-8755-4363-835c-f30e3becdcfc

Example 2. Cumulative performance of Treasury, government-related, corporate and securitized fixed-rate bond benchmarks versus ESG-agnostic benchmark.



Source: PGIM ESG

The Bloomberg Barclays MSCI Global Aggregate Sustainability Index includes Treasury, government-related, corporate and securitized fixed-rate bonds from both developed and emerging markets issuers with strong, positive ESG ratings and excludes those involved in severe controversies. The chart is provided solely as an illustration of our ESG research evaluation. It is not intended to represent a specific portfolio's performance or characteristics. The information should not be construed as investment advice. Past performance is not indicative of future results.

Thus, in practice, restrictive ESG strategies will vary in performance in the same way many non-ESG investment strategies do. Given that one cannot generically state ESG portfolios always underperform or outperform non-ESG portfolios, investors who want to invest in line with their values and environmental and social goals should be clear about which ESG characteristics are really important for them, be specific regarding how much risk they are willing to take, and be clear about their return expectations.

APPLICATION 4
USE ESG TO ACHIEVE REAL-WORLD IMPACT

The final distinct application of ESG is to create tangible, measurable real-world impact. Such impact is hard to create and perhaps even harder to measure; hence, the offering of high-quality impact-focused investment products is much smaller.

Traditionally, impact-focused strategies were centered on private markets and private assets, where investor ability to effect change, either by directly operating impact-generating assets or by exerting influence over how investee companies are operated, is higher. However, there have been more impact-focused strategies launched in the public markets, which aim to identify and invest in impactful companies, thus sharing in the real-world impact created by such companies.

While there is still debate around the definition of impact and how "intentional" and "additional" investor contribution should be, it is indisputable that there are different ways to create environmental and social good alongside financial returns, whether it's private investment in affordable real estate development, or retail investment in a firm with a deep dedication to social purpose.

Impact investments can encompass many different types:

- **Asset class** – Investors can choose to make impact investments across real estate, private equity, infrastructure, public equity or public debt.
- **Theme** – They can focus on one topic (e.g., water, renewable energy, affordable housing) or a range of themes.
- **Ambition** – From investing in available impactful assets, such as recycling infrastructure or educational facilities, to creating impactful assets, such as affordable housing, solar farms or renewable power grids.

Historically, impact strategies used to be concessionary, which means they would intentionally forgo some investment return in order to generate positive impact. This perception that impact investing generates below-market return persists today, but it is no longer true.

CASE STUDY
THE VALE, WASHINGTON, D.C.

For nearly a decade, the decommissioned Walter Reed Medical Center sat dormant, contributing to blight in a low- to moderate-income neighborhood in northwest Washington, D.C. After an extensive community planning process, PGIM Real Estate's Impact Value Partners (IVP) fund, a private equity real estate investment fund investing in affordable housing and transformative development, and other partners redeveloped the property as a mixed-use, mixed-income community, with at least 20% of all residential units affordable at 80% of the area's median income.

The Vale, a 301-unit apartment building, was the first realized asset in the broader redevelopment of the site. Throughout construction, the partnership was able to exceed the standards set by the community for local hire and the Office of Small and Disadvantaged Business Utilization. The development team also started a partnership with the nonprofit organization YouthBuild, which placed opportunity youth in construction-related jobs during the build-out of the project.

The partnership delivered a state-of-the-art cornerstone building that brought high-quality mixed-income housing and community services — including a high-quality daycare — to a moderate-income neighborhood. The impact portfolio management team played a role in making sure the developer received a commitment from the daycare to set aside slots for lower-income residents.

The development remediated a former brownfield site and created local employment opportunities — all while exceeding investor expectations and fulfilling the fund's fiduciary responsibility. [18]

In fact, there is a growing range of investment opportunities where concessionary impact investors and those seeking market-rate or above-market-rate returns work together to achieve desired environmental or social impacts. This is achieved through public-private partnerships or blended finance, whereby an investor who is focused solely on impact — usually a public, development or philanthropic entity — is providing capital, loss buffer or repayment guarantees to reduce investment risk for private investors. This is typically done to attract the private sector.

CASE STUDY
OPTIMIZING WATER

Each year, billions of gallons of water are lost through inefficiency and leaks, wasting precious resources and money. Xylem (NYSE: XYL), a global water technology provider, helps utilities, industries, and business and residential customers worldwide make smarter use of water to create a more water-secure and resilient world. The firm's portfolio of water technology solutions enables customers to treat drinking water as well as prevent polluted water from flooding communities or entering local waterways.

In 2021, Xylem's products helped reduce 440 million cubic meters of wastewater, and 1.0 billion cubic meters of water was treated for reuse in line with the UN global sustainability goals. The company also helped prevent over 1.9 billion cubic meters of polluted water from entering waterways, and 1.8 million people were provided access to clean water and sanitation.

Additionally, through its corporate social responsibility program Watermark, as well as through testing and treatment solutions, Xylem prevents the spread of waterborne and communicable diseases by bringing water, sanitation and hygiene (WASH) and clean water programming interventions and innovation to communities around the world. The company approximates that "40% of our revenue addresses SDG 3 by supporting access to clean water, safe sanitation and pollution prevention." The firm's countless community impact stories and global recognition awards underscore the firm's commitment to real-world and long sustainable impact. [19]

18 For more detail read https://irei.com/news/pgim-real-estates-impact-value-partners-fund-sells-washington-d-c-asset

19 Xylem: Solving Water for a Resilient World: https://ungc-production.s3.us-west-2.amazonaws.com/attachments/cop_2021/502529/original/2020%20Sustaianbility%20Report.pdf?1631473243=

UN Sustainable Development Goals

3 GOOD HEALTH AND WELL-BEING | **5 GENDER EQUALITY** | **6 CLEAN WATER AND SANITATION** | **9 INDUSTRY, INNOVATION AND INFRASTRUCTURE**

Good Health and Well-Being

Xylem reduces water contamination that threatens human health with digital technologies that enable our customers to treat drinking water and prevent polluted water from flooding communities or entering local waterways.

Gender Representation

Xylem is committed to increasing gender representation in leadership positions within the organization, and eliminating pay differences based on gender, race or ethnicity.

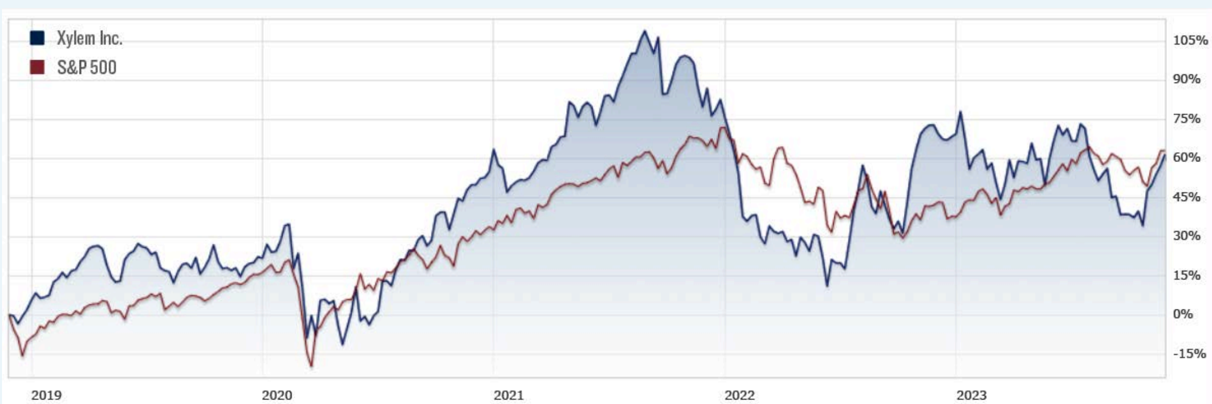
Clean Water and Sanitation

Xylem develops and brings to the market innovative solutions that help solve critical water issues for communities, including those that help the millions of people living at the base of the global economic pyramid.

Clean Water and Sanitation

Xylem develops and brings to market innovative solutions that create major water, energy and cost efficiencies.

5 year historic share performance for Xylem Inc. (NYSE:XYL v S&P 500)



Source: Morningstar

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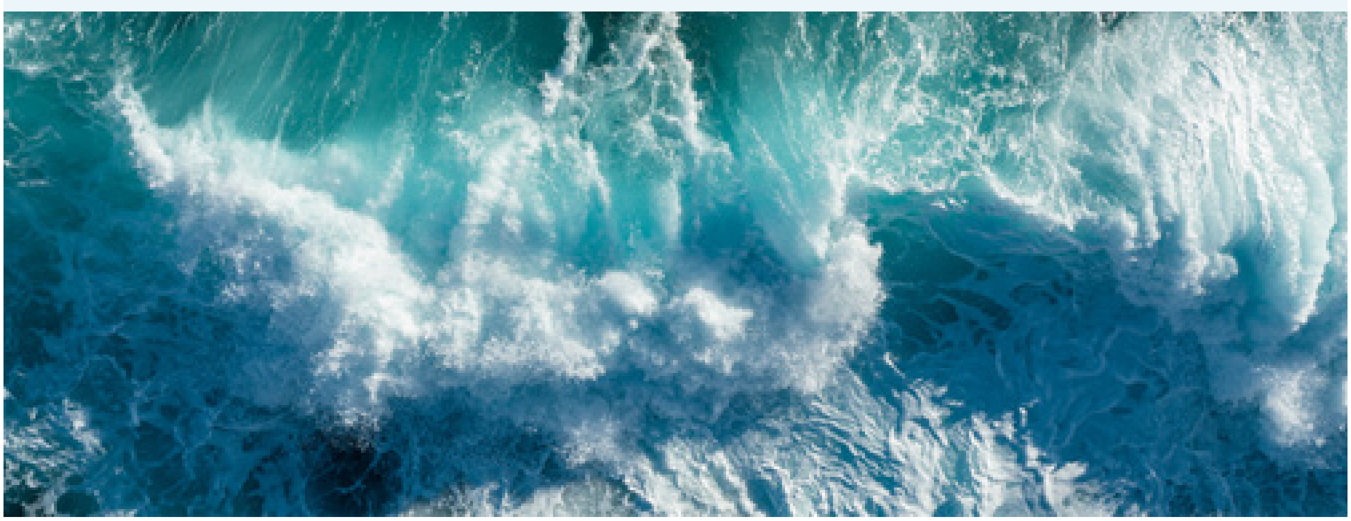


ACTIVE STEWARDSHIP

Another much-discussed aspect of the investment process often associated with ESG is so-called investment stewardship, or active stewardship. In its broadest definition, active stewardship includes everything that an investment manager does to protect and grow the value of their clients' investments. It includes such obvious investment activities as asset allocation or selection of investments, but also other less-obvious activities such as:

- **Engaging in dialogue with policymakers and regulators to promote a well-functioning economy and financial system.**
- **Engaging in dialogue with investee companies or operators of assets to ensure existing and emerging risks and opportunities are managed in a way that enhances investment value.**
- **For equity owners, exercising voting rights in companies in a thoughtful way.**
- **For real estate investors, engaging with tenants, borrowers and communities.**

Stewardship on ESG topics is still largely associated with public equity investments (due to ownership rights pertaining to holding stock in a company), but it is increasingly applied and reported on in other asset classes, such as public fixed income, private credit or real estate.

Stewardship as a whole, including different types of engagement activities and proxy voting, is a highly valuable part of the active investment process and an extremely useful tool. High quality stewardship requires deep knowledge of the issues that can influence the value of the investment and significant resources to work with respective stakeholders to achieve value-enhancing results.

ENGAGEMENT

Large institutional investors build constructive trust-based relationships with investee companies that are valuable for both sides, as they allow for early discussions of emerging risks, including ESG issues; better understanding of respective positions on strategic priorities or value-enhancing commercial opportunities; or changes in regulatory environment, government policies or consumer preferences.

For the majority of mainstream investors, the core motivation for engaging in dialogue with investee companies and other stakeholders on ESG topics would be to address issues — risks, opportunities and impacts — that are likely to influence the value of their investments over different time horizons. This means that most investor engagements are driven by self-interest (i.e., seeking higher risk-adjusted returns) rather than altruistic or philanthropic considerations. Yet, because many of these engagements deliver positive real-world outcomes, it is these outcomes that have become the focus of engagement reporting, precisely because they tell stories that matter to the lives of many people.

Whether the intention of ESG engagement is to secure better investment returns for clients or to create a better world, the former and the latter often overlap. This has led to confusion and frequent misinterpretation of the fundamental reasons behind investor engagement.

The increase in investor engagement means that companies globally are becoming more likely to consider issues raised by investors and change their behaviors and practices. Some stakeholders are advocating for more engagement action, seeing it as a tool for raising awareness of pertinent environmental and social issues that are not being adequately addressed at the public policy level. With this comes increasing concern that companies may be influenced to take actions that are not in the best interest of their business and, by extension, their shareholders.

As a result, asset managers have found themselves between a rock and a hard place — a position further aggravated by the fact that it is very difficult to attribute any particular success in creating positive real-world change to a single investor. Indeed, positive investment and sustainability outcomes are more often than not achieved by a collective weight of multiple interactions and issues raised by many different investors (as well as other stakeholders).

PROXY VOTING

The same is true for proxy voting. Proxy voting is an ability for shareholders in the company to exercise their voting rights without physical appearance at shareholder meetings of companies. In the past, proxy voting was done by sending in paper ballots, whereas these days most votes are exercised electronically.

Each annual shareholder meeting has a number of resolutions that shareholders are being asked to vote on. Typically, these include proposals regarding the election of a company's directors, approval of annual accounts, compensation of top management, election of the auditor, and authorities to raise capital in case of need. The number of proposals per shareholder meeting differs considerably, but on average, a large institutional investor is likely to be voting on tens of thousands of resolutions every year.

To help investors process such a large number of resolutions, proxy voting research services have evolved to provide investors with a summary of resolutions and analysis of companies' performance and practices, aimed at aiding investors in making voting decisions.

While there are still many investors who do rely on proxy voting advisors' recommendations in their proxy voting process, this is entirely a matter of choice. More and more institutional investors are developing custom policies and adding resources to their stewardship teams to ensure their proxy voting decisions are aligned with their investment views. The growth in engagement activity has contributed to a more bespoke approach to proxy voting.

Critics of proxy voting services usually point to a high correlation between proxy voting advisors' recommendations and the votes cast at shareholder meetings, suggesting that someone is placing their thumb on the scales. However, this can be explained by the fact that there are quite established views in the market on what good governance looks like, what rights shareholders would like to defend or what practices they disapprove of. Given that proxy advisors' policies seek to reflect these market views, it is unsurprising that many shareholders and voting service providers tend to agree on many voting items.

ESG-focused proposals tend to attract broad investor support when proponents:

- Seek enhanced disclosures on a particular topic in the context of weak ESG disclosures provided by companies.
- Press management to address financially material environmental, social or governance risks that are not being sufficiently addressed by the company.
- Highlight issues that investors believe would be beneficial for companies, particularly if proposed measures help to attract and retain talent or would be viewed positively by their customers.

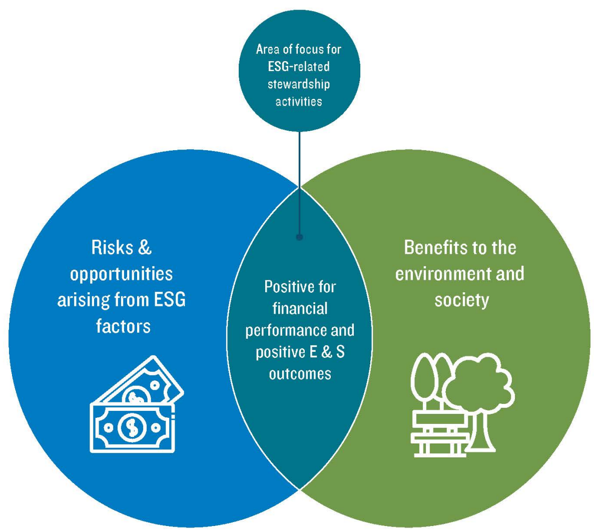
FIDUCIARY DUTY

In both engagement and proxy voting behavior, institutional investors are acutely aware of their fiduciary duty and strive to cast votes in the best interests of their clients. Asset managers do not automatically own voting rights: clients in separately managed accounts would typically delegate voting rights to asset managers as a part of the investment management agreement, but can decide to exercise them directly without delegating to the asset managers. For pooled investment vehicles such as mutual funds, the decision on who should exercise voting rights sits with the fund board. The same fiduciary duty principles apply to exercising voting rights as to other parts of the investment process, which is why asset managers would typically have formal governance and oversight structures, such as proxy voting committees, to ensure that voting policies are developed and applied, and that voting decisions are made in full alignment with the fiduciary duty and in the best interest of the clients.

So if investors raise issues via engagement and cast votes as fiduciaries — i.e., in the best interest of their clients and not to advance their own political agenda — why do they arrive at different voting decisions, particularly on ESG topics? The answer is simple: views on whether certain risks or issues are material vary significantly within the investment industry and between investors and companies.

It is precisely because investors' views on the prospects of the company, its quality of management and its ability to respond to external developments are different, and because investors have different time horizons, that the markets are able to function. If investors were all aligned in their views, sellers would not find buyers, attractive assets would be overpriced to the point of ceasing being attractive and the market will not work.

Engagement and proxy voting are valuable stewardship tools, which are most potent when directed at safeguarding and enhancing value of the asset or investment. While certain types of investors, such as impact investors or mission-driven investors, may dedicate their stewardship activities to the sole pursuit of environmental and social benefits, most mainstream investors focus their stewardship efforts on areas where effective mitigation and management of ESG risks or maximization of ESG-related opportunities can lead to positive environmental or social outcomes. Given the dual benefit of improved financial and sustainability performance, such stewardship efforts make perfect sense from the fiduciary perspective.



CONCLUSION

There is a lot of discussion about what ESG is and what ESG does, whether ESG helps deliver investment returns or whether it costs returns. There has been lots of academic research as well, with many different conclusions, from positive to neutral to negative. The reason? ESG is a tool, and different applications of ESG will lead to different outcomes.

The vast majority of ESG use cases do not automatically imply performance trade-offs, but there are cases when such performance trade-offs are more likely and need to be carefully considered.

The disagreements surrounding ESG investing can generate a lot of noise but should not distract investors from what is truly important: generating investment returns that fit their risk profile and investment horizon. For this reason, no investor should leave ESG out of their toolkit — they should be free to use it as they see fit.

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