

Panorama

For marketing purposes

For global professional /
qualified / institutional
clients and investors
and US individual
investors.

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From value to value(s)

“A fool knows the price of everything and the value of nothing.”
Attributed to fellow countryman, Oscar Wilde’s quip has always held relevance to investors. After all, unlocking value – whether at the stock, sector, or market level – is what drives portfolio returns.

However, a wider view of the term ‘value’ has rightly emerged in financial circles. By enhancing our understanding of what constitutes true value, such as incorporating longer-term thinking and the interconnectedness of society and the earth’s ecosystem services, we can shift from a singularly financial interpretation of the word to more multi-dimensional one that places broader values at its heart.



Reflecting this, a (not-always-perfect) confluence of client demand and regulation has begun to drive significant amounts of money towards sustainable investing (SI). This special edition of Panorama is dedicated to the topic and places a marker in the ground for where we all head next.

In *Alpha and outcomes*, I argue that SI must prove its contribution and – dare I say – value on two key levels. My first point is that embedding the enriched insights gleaned from SI is critical to active investment performance. Client outcomes, on the other hand, can be elusive and properly grasping them will determine success in delivering for clients of all types. Hans Christoph-Hirt picks up the baton and elaborates on this theme in *The Future of Stewardship*.

To help understand a major element of SI, we explore the investment opportunities and potential risks arising from the transition to net zero in *Green spending and clean energy investment*. Lucy Thomas talks about customization and how it is unrealistic to expect all clients’ ESG preferences to magically align, along with what that means for asset managers. (See *Morals, markets and menus*). And Michele Gambera, Alexander Eisele and Ryan Primmer analyze the various ESG benchmarks on offer to see the level and flavor of ESG they each offer (See *Benchmarking ESG*).

Natural capital is an area that can no longer be ignored. Inextricably linked to climate change, we cannot afford to think of the erosion of nature as a separate issue. *Putting a price on nature* tries to capture a wide-ranging conversation between Professor Partha Dasgupta, one of the world’s foremost experts on environmental economics, and Adam Gustafsson. They start to explore how we might incorporate natural capital in valuation metrics and models. In *Securing a sustainable food supply* Olivia Muir, Darren Rabenou and Manisha Bicchieri build on this and remind us of the need to balance a more productive global food system while reducing natural resource inputs if we are to tackle food security.

It is often said that geology can be boiled down to two factors: time and pressure. If we think about sustainability in these terms, the forces bearing down on us are huge: The window of time to fix things is getting smaller by the day; and the pressure on asset managers and sustainable finance to prove the validity and worth of our efforts has never been greater. We must sharpen our focus and allocate resources accordingly.

I hope you enjoy reading our latest thinking and welcome any feedback.

Barry Gill,
Head of Investments,
UBS Asset Management

1



Barry Gill

Alpha and outcomes

Sustainable investing faces an important moment of reckoning. With so much money flowing towards it, a risk of resource misallocation is emerging.

Barry Gill argues that now is the time sharpen our focus on sustainable investing to deliver either portfolio-level impact, real-world outcomes, or (ideally) both.



Investing is, first and foremost, a belief

A belief the future will be better than the past; a belief that one type of investment represents a better option than another.

We see this most acutely through the philosophical tethering of investment processes to factor-based masts. Whether it be value, growth, momentum or otherwise, every investor follows some form of belief system.

Keeping the faith

In some ways, sustainable – or environmental, social and governance (ESG) – investing is no different. That investors should extend their market-wide beliefs to include ethical preferences is entirely logical. However, untangling performance motives from moral ones is messy. If individuals themselves find it hard to ascribe the exact proportion of capital outlay dedicated to ethical considerations, then is it any wonder that investment managers, intermediaries and regulators might struggle too? Our brains simply don't label and categorize motivations and values as neatly as this task demands.

That investors should extend their market-wide beliefs to include ethical preferences is entirely logical.

The simple answer, of course, would be to call the whole thing off; to consign sustainable investing to the woke scrapheap and double down on the relentless pursuit of profit above all else. Ardent Milton Friedman disciples would no doubt rejoice as he, after all, became an icon for shareholder value:

“There is one and only one social responsibility of business – to use its resources and engage in activities designed to increase its profits so long as it stays within the rules of the game, which is to say, engages in open and free competition without deception or fraud.”¹

However, giving up the ghost like this would be a great tragedy – not least because Friedman himself went on to clarify that the responsibility of a corporate executive is to “make as much money as possible while conforming to their basic rules of the society; both those embodied in law and those embodied in ethical custom.”

Market failures like climate change, biodiversity loss and inequality pose existential threats and are forcing us to look at the ‘basic rules of society’ more deeply and recognize that they have evolved. Greater transparency is demanded from institutions, governments and investors. Upholding globally accepted standards of human rights is now expected; limiting environmental damage is not just about avoiding fines but also intrinsically tied to our continued future dependency on the environment for societal needs. Societal issues are becoming corporate ones.

Encouragingly, we are already seeing greater levels of customization, enhanced preference collection via digital client surveys and data collection, more product innovation across public and private markets, sharper and more effective stewardship efforts, and more transparent performance attribution metrics. All these can improve matters and make a tangible difference.

Regulation is clearly trying to steer capital allocations in more sustainable directions, and at a minimum it is forcing improved disclosures. Although at times the implementation of the regulation feels blunt and missing the mark, the directionality is clear and – ultimately – welcome.

All this leads me to conclude two things about the resources being deployed towards sustainable investing. First, they must contribute meaningful levels of alpha to active mandates. Second, and just as importantly, sustainability efforts must achieve real-world outcomes consistent with clients' values.

¹ The Social Responsibility of Business is to Increase Its Profits, The New York Times Magazine, September 13, 1970

The alpha edge

This is the most straightforward and well understood of the two issues at hand. Few investors nowadays ignore the reality that sustainability factors can and do have a material impact on asset valuations. Only by properly understanding sustainability issues and trends can we better spot opportunities and manage risk more effectively.

As a result, ESG integration – i.e., embedding sustainability data and perspectives into the investment process – must be thought of as more than a mere hygiene factor; it is a critical informational tool and input in the arms race to gain an investment edge.

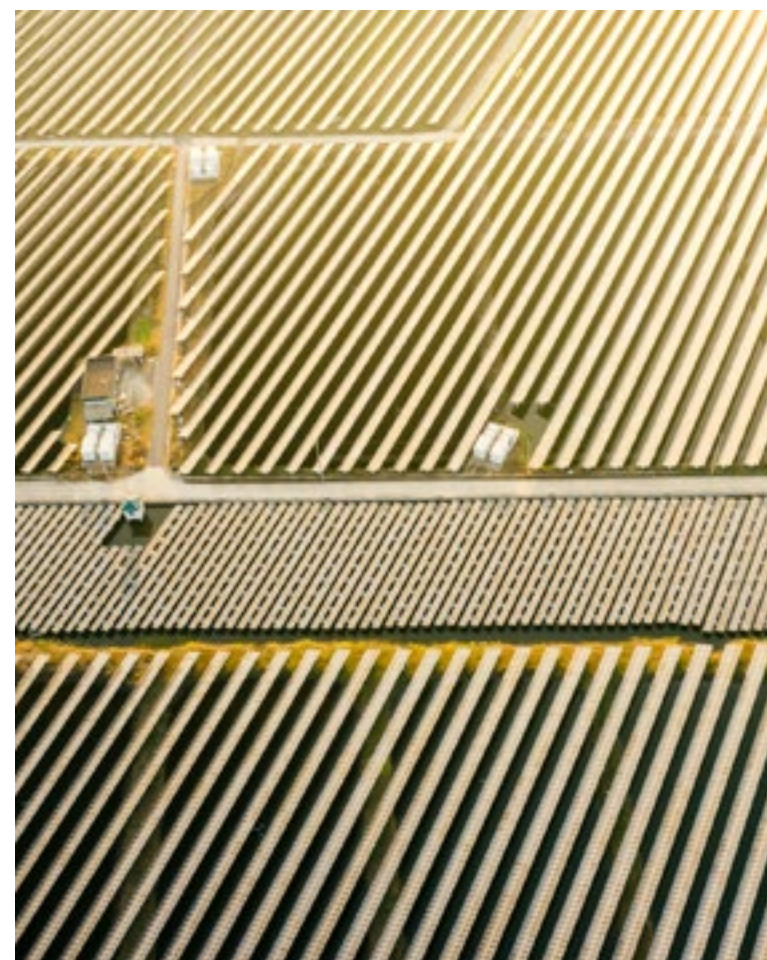
Indeed, Alex Edmans, author of *Grow the Pie* and Professor of Finance at London Business School, recently invoked economist Richard Thaler's 1999 quip about the "The End of Behavioral Finance", by titling a recent paper "The End of ESG"². Contrary to the respective titles' surface logic, both argue their subjects should become so mainstream as to dissolve the need for any explicit mention. His views are perhaps best summed up by this quote: "Considering long-term factors when valuing a company isn't ESG investing; it's investing. Indeed, there's not really such a thing as ESG investing, only ESG analysis."²

There's not really such a thing as ESG investing, only ESG analysis.

² The End of ESG, Alex Edmans, January 4, 2023

But as with any active investment strategy, it is what you do with said information that makes the difference. A cursory glance at an ESG dashboard is not the same as a full-blooded debate about the likelihood and effects of a carbon tax or the potential impact of water scarcity on a company's operations. Unfortunately, though, ascertaining the level of integrational difference from the fund's regulatory label – such as Article 8 under the EU's Sustainable Finance Disclosure Regulation – is fiendishly hard at present.

Perhaps somewhat overlooked is the use of engagement as a tool to unlock value. Given the above, genuine active ownership (i.e., outcomes-based and measurable) could well be the next edge to create portfolio value and sustainability outcomes in tandem. Though probably too early to conclude with great certainty, there are studies showing how engagement can help to protect long-term investment value. Dimson, Karakas and Li's (2015) analysis of 2,152 engagement exercises with 613 public firms between 1999 and 2009 being the most notable.



Real-world and client-driven outcomes

Things aren't quite as cut and dried when it comes to 'outcomes'. The word itself is woolly; and the sheer number of activities regularly bundled into the catch-all term is huge. As already alluded to, this poses a great challenge to investment marketing departments the world over.

For us, real-world outcomes are those that are linked to client preferences and that emphasize quality over quantity when judging impact and effectiveness. There has to be a robust level of measurability involved, while also recognizing that 'not everything that counts can be counted', as the old adage goes.

Given sustainable investing cannot be reduced to one simple activity, such outcomes span across integration, screening, thematic and impact, and active ownership. They also apply to an investment manager's own values and purpose and cover indexing and active, as well as public and private markets.

A key outcome we should all be focused on is market stability and integrity. This might surprise many, as ever since Harry Markowitz famously codified investing and risk taking with his work on Modern Portfolio Theory, there has been a contingent assumption that the 'market' cannot be influenced – that it simply 'is what it is'. Indeed, Eugene Fama – famed for creating the Efficient Market Hypothesis – acknowledged this when interviewed by Andrew Lo: "Every asset pricing model basically says the market portfolio is the core, and you start with that."³

Every asset pricing model basically says the market portfolio is the core.

But as systemic risks rise, market participants are increasingly recognizing the limitations of this belief. Jon Lukomnik, co-author of the 2021 book *Moving Beyond Modern Portfolio Theory: Investing That Matters*, sums the situation up nicely: "Prevailing investment orthodoxy just can't simply deal with systemic risks, which has

³ 'In pursuit of the perfect portfolio: The stories, voices, and key insights of the pioneers who shaped the way we invest', Andrew W. Lo and Stephen R. Foerster, August 17, 2021

led investors to focus on the manifestation of risk as volatility but do nothing to tackle the underlying risk."

Beta therefore matters regardless of the type of investor you are. We must look at alpha and beta in harmony because only by bundling them back together can we get a true understanding of the return profile investors experience – investment performance being a critical and uncontroversial outcome for clients.

Furthermore, regulators and standard-setters are increasing their focus on these issues. For example, the UK's Financial Reporting Council (FRC) state that in order to improve outcomes for their clients and beneficiaries, as well as develop sustainable benefits for the economy, environment and society, "market participants should work with other stakeholders or participate in relevant initiatives to address market-wide and systemic risks and promote well-functioning financial markets."⁴

“Prevailing investment orthodoxy just can't simply deal with systemic risks.”

Jon Lukomnik

The need for market reform efforts and policy-level engagement as part of overall active ownership work is key to maintaining the integrity of markets. (See: *The Future of Stewardship*). For stewardship efforts, we are taking steps to clarify and align our objectives with clients. We broadly split the possible outcomes into three categories: addressing investment opportunities and risks; real-world outcomes relating to systemic risks; and real-world outcomes relating to global norms.

These buckets allow us to hone in on the materiality of issues in a more systematic way. A complementarity should exist here between issuer-level engagement and systemic risk priorities. For example, by targeting the leading companies in a sector to improve human rights standards this should raise best practice standards for that whole industry.

⁴ Effective Stewardship Reporting - Examples from 2021 and expectations for 2022 FRC, November 2021

Focusing on what matters

Beyond the inevitable increases in customization to meet clients' varied sustainability preferences (see: *Morals, markets, and menus*), we are also likely to see an increased alignment of end client and asset manager values as clients' selection criteria decisions extend out to include purpose; especially when it comes to defining issues of our time like climate change and biodiversity loss. Some corporate-level circles will simply have to be squared with portfolio-level realities as net-zero commitments and deadlines hurtle towards us.

There are no silver bullets or magic solutions to sustainability's thorniest questions. What we can say with confidence though is that there is a key role for finance in helping society transition to a more sustainable future while at the same time serving the financial needs of end clients. If investment managers are to meet them, we need to be laser focused on the opportunities for alpha and managing risk, real-world client outcomes, and the resource model best suited to achieve all this.



2



Alex Leung



Andrew Farnell



Ellis Eckland

Green spending and clean energy investment

Exploring the opportunities

Many are dubbing the transition to net zero as the 'largest investment project in history'. We spoke to three investment experts from across our business to gauge the pace and scale of developments, as well as understand where the opportunities and risks are emerging.

Imagine outgunning the achievements of more than two centuries in a couple of decades; or completing a life's work in a few short years.

It is a daunting prospect. Yet that, and arguably more, has to happen if the world is to achieve its green energy revolution. Put simply, the transition to a net-zero energy system will be the largest investment project in human history. That might sound dramatic, but it is a reality.

Ellis Eckland, research analyst, active equities, Alex Leung, infrastructure analyst in Real Estate and Private Markets, and Andrew Farnell, senior analyst, UBS O'Connor, help explain why.

We have to reduce our overall use of energy

Over the 200 years between 1800 and 2000, demand for energy – mainly from fossil fuels – grew at a rampant pace. This growth was the result of massive global expansion, as economies industrialized, science and engineering flourished, and the world's populations grew and urbanized.

However, while newer and more efficient energy sources gradually became dominant – oil displaced coal, which itself displaced wood – we continued to increase our use of existing fuels. Now, we are attempting to make renewables the dominant energy source, and we have to do it by 2050 at the latest if we are to achieve net-zero emissions and win the battle against climate change.

But there are complicating factors. First, we have to do what has never been done before: to dramatically cut our use of fossil fuels. According to the International Energy Agency's (IEA) view of how the energy system needs to evolve in order to meet net zero, oil and coal usage should already have peaked, and should start to decline rapidly over the next three decades. Furthermore, we have to reduce our overall use of energy, bearing in mind that there is a close correlation between demand and economic growth.



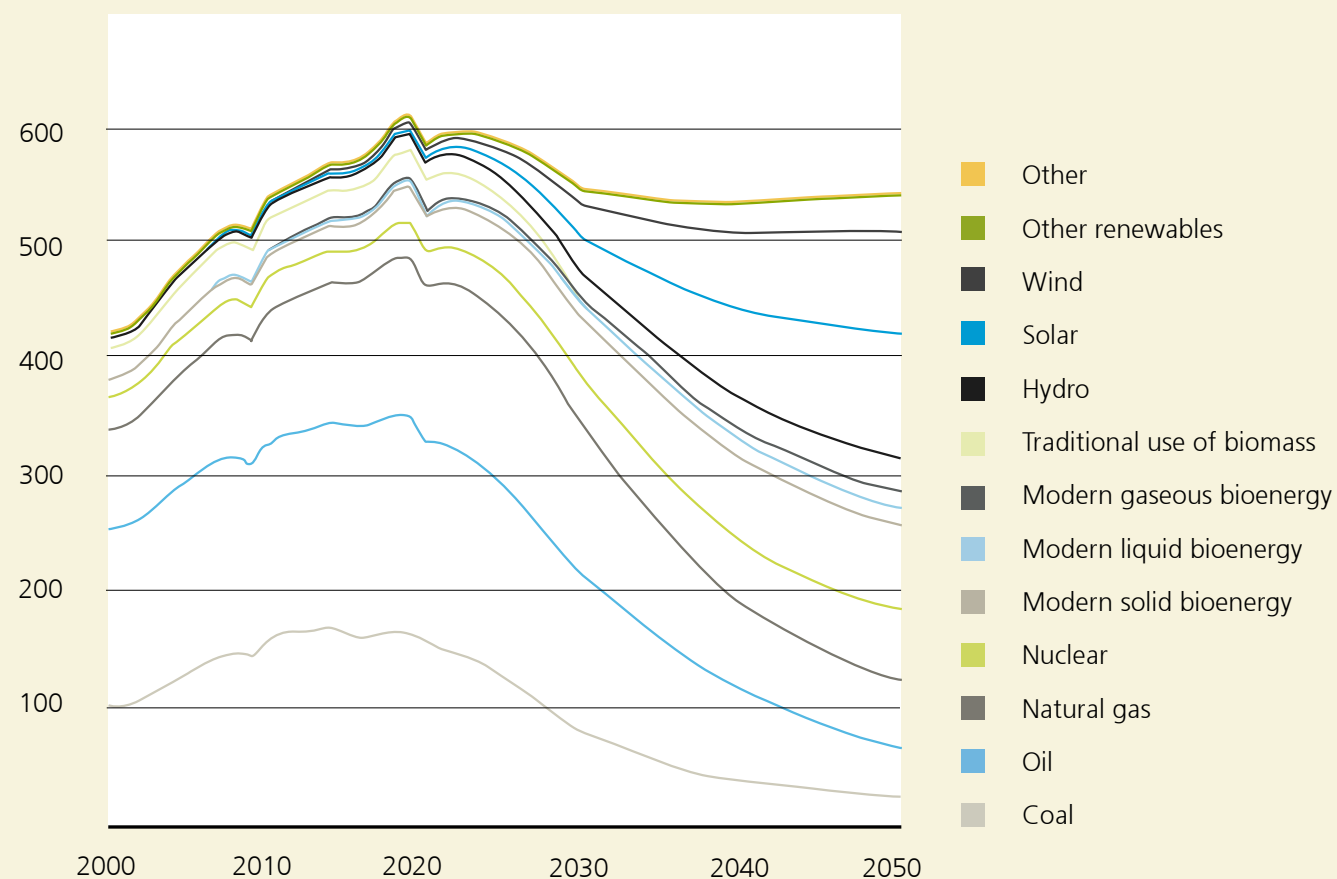
As Ellis Eckland, research analyst in the active equities team at UBS Asset Management puts it: "It took more than 150 years for coal to replace wood as the dominant source of energy. After that it took oil over 50 years to displace coal. If the IEA's projections are to be met, the world is going to have to effectively replace oil, gas and coal in less than 30 years. To make this challenge even tougher, total energy use is projected to fall during this period, implying that economies will have to contract as part of the process."



Eckland notes that the economics of the current transition also fly in the face of history. "In the past we replaced coal with oil because it was cheaper and better and that resulted in high growth. Now we are going to replace oil with more expensive renewables in a time of slow growth at best," he says.

What will our future energy system look like?

IEA's vision of the future energy system of 2050



Source: International Energy Agency (IEA), May 2021
URL: <https://www.iea.org/reports/net-zero-by-2050>

Five key energy investment areas

There are five key areas where energy-related investment will be concentrated, according to analysis by UBS: renewable electricity, advanced biofuels, hydrogen, carbon capture and storage, and grid stability. And each has its own component parts.

The most straightforward is renewable energy. There have already been very significant investments in wind and solar power, but capital also needs to be put into the renewables supply chain. Much more copper, silver and rare metals will be required, as well as lithium, iron and steel.

"I'd argue that the renewables supply chain probably represents the biggest bottleneck in the transition to net zero," Eckland says. "It is underinvested as a sector but less so for renewables themselves."

There are issues here as well, including a likely shortage of copper, where it takes 20 years to build a new mine. "Demand for copper is projected to increase by as much as 40%, with some estimates suggesting demand will double by 2035. It is not at all clear where all this copper is going to come from," Eckland says.

Advanced biofuels effectively represent the future of air travel. In our view, using sustainable aviation fuel – which can be produced from recycled animal and vegetable oils – combined with lengthening the lives of existing fleets of planes, is the most sustainable way of continuing to use the air as a means of transport.

Advanced biofuels effectively represent the future of air travel.

Projections for the growth of hydrogen range from "massive to super-massive," according to Eckland. The world needs hydrogen to decarbonize industrial processes, such as the production of steel or cement, which require high levels of heat but are essential to building renewables.

Carbon capture and storage (CCS) is among the least explored of the five themes. However, given that, for example, air travel and agriculture are likely to remain net carbon emitters, it is going to be crucial in handling some of that CO₂ produced. Indeed, the latest IPCC Report confirms the need for CCS, stating "CDR (Carbon dioxide removal) will be needed to "counterbalance" hard-to-abate residual emissions in some sectors, for example "some emissions from agriculture, aviation, shipping and industrial processes."¹

"The most optimistic projections in the IEA's net zero scenarios and other similar studies imply that by 2050 we are going to need to capture 25% of the carbon we emit today, which is absolutely massive," says Eckland, who says that equates to an estimated 2.5% of global GDP.

Grid stability is an issue because most renewables, with the exception of geothermal and hydro power, are intermittent and unstable. Eckland says that investment in grid stability will come in areas ranging from batteries and biomass to artificial intelligence and new concepts such as pumped hydropower and gravity storage, which uses the gravitational pull of rock.

¹ AR6 Synthesis Report: Climate Change 2023, Intergovernmental Panel on Climate Change, March 2023

Creating scale and certainty

However, the ways investment in these areas is playing out and being cultivated is changing the landscape, including the dynamics of the relationship between the private and public sectors. Government incentive schemes, particularly in the US, are prompting investors, and asset owners, to locate new projects where the subsidies are the most attractive, sometimes going back to markets they previously left behind.

Alex Leung, infrastructure analyst in the Research & Strategy team in UBS Asset Management's Real Estate & Private Markets unit, highlights US President Joe Biden's Inflation Reduction Act (IRA), introduced last year, which he describes as "possibly the most important clean energy legislation in US history."

He says that the IRA legislation, which runs to 700 pages, contains three key features. The first is that it lasts for at least 10 years, bringing an end to the previous trend of extending existing subsidies year by year. This led to an artificial "stop-start" cycle among developers, which would suspend work on a project, a new wind farm, say, until tax breaks had been renewed.

"It creates a boom-and-bust cycle that's really not healthy for the growth of any industry – just think about the workforce, the manufacturing capacity, the supply chain capacity, each of which pretty much goes from start to stop each time. This is something we now don't have to worry about for the next 10 years," Leung says.

There will be a big increase in the variety of clean energy projects.

"The second feature is the sheer scale of the clean energy tax credits and subsidies that are given to all these different technologies – not just to wind and solar, but to standalone energy storage, to renewable natural gas, to hydrogen and to other sectors," he says.

The process of financially benefiting from tax credits has also been streamlined, Leung says, meaning there will be a big increase in the variety of clean energy projects, which will be backed by a more efficiency financing market.

Thirdly, the IRA is designed to shore up the US's domestic clean supply chain and increase the resilience of its manufacturing sector, making it as much as industrial policy as an energy programme. As a result of the IRA, the US will spend at least an additional USD 1 trillion over the next 10 years on clean energy investments, according to Princeton University's Net-Zero America Project.



Healthy competition

Although it is essentially a US policy, the IRA is having a global impact, prompting other countries worldwide to come up with their own policy response, equally designed to attract inward investment, and in competition with their counterparts in America.

The boldness of the US policy has caused tensions in areas such as Europe, which has previously criticized the US for being too profit-motivated while neglecting the climate issue. However, attacking the most important US clean energy legislation for not being free trade friendly would also appear hypocritical, which is why the EU is now pursuing similar industrial policies.

Leung says the EU is trying to find ways of introducing policies that benefit all of its member states, rather than simply boosting the industrial powerhouses of France and Germany. "One idea is to create an EU sovereignty fund that provides finance for clean energy projects across all member states," he says.

Andrew Farnell, a senior analyst at UBS O'Connor, agrees that government regulation is helping to unlock a powerful investment response from the private sector. The White House has estimated that some USD 300 billion of investment capital has returned to the US since the IRA was passed, he notes, which is meaningful in comparison to base manufacturing capital expenditure (capex) of roughly USD 700 billion.

"If you look at all of the proposed onshoring schemes that are coming forward over the next four to five years, that equates to 4% to 5% growth in capex alone, and that is without the standard increases," Farnell says.

"The themes that I would identify to explore as an investor around this include capital equipment, the obvious one being semiconductor capex, automation – as we see manufacturing buildout in the US with electric vehicles and batteries, for example – and construction, including building materials, but also equipment rental."

The sheer scale of investment and the size of projects being undertaken is transforming some markets, Farnell adds. "With equipment rental serving the construction industry, there are only two or three companies that can provide the level of equipment needed for these mega projects. So you go from a highly fragmented and competitive industry to one where you've basically got two major players that are likely to take a disproportionate share of the market."

Commercial property is a further case in point, given that buildings account for 40% of global emissions. In a recent report the European Commission (EC) classified 75% of the EU building stock as inefficient, implying that the rate of energy-related renovation needs to double from current levels in order to meet future emission targets. In response, the EC produced harmonized legislation to encourage funding for renovations at a local level and remove bureaucratic hurdles.

Buildings account for 40% of global emissions.

The most powerful signals are coming from the markets, which motivates the private sector to respond alongside government support. We see clear evidence of this in property values for buildings renovated to the most energy efficient standards, with premiums of 25% in London and 35% in Paris observed by MSCI. Given the increasing emphasis on decarbonization in government policy and the considerable bifurcation of market values the renovation of the building stock is likely to accelerate in the coming years.

Ultimately, the scale of disruption in moving to a low carbon economy being squeezed into a relatively short time period is creating opportunities (which are not always obvious). And will likely continue to do so for investors that want to be on the right side of change, as an albeit accelerated history plays out in front of us.

3



Lucy Thomas

Morals, markets and menus

It is unrealistic to expect clients' sustainability preferences to perfectly align. Morals, after all, are personal and one investor's priority is another's indifference.

Lucy Thomas discusses the growing need for customization within ESG and how both active and index investing can play a role.



How the democratization and customization of sustainability preferences could shape the future

Sustainability means different things to different people. Stances on major environmental, social and governance (ESG) topics usually come down to our personal belief system. I think about this belief system in two dimensions.

First, sustainable investment beliefs: what you believe about the future and your associated view of risk and return. This could be how moving to low carbon economy will lead to huge disruption that is not priced in.

Second, sustainability preferences: what you may want to avoid, achieve, align with as an individual or institutional investor. For example, a sovereign wealth fund may want to promote sustainable development in its region, or a pension fund representing the education sector which is predominantly female may want to make sure diversity, equity and inclusion standards are high in how it allocates capital. Alternatively, an individual or organisation may simply want to ensure that the capital it allocates does not breach global human rights norms.

Avoiding reputational damage from sustainability issues is also a valid sustainability preference and does not require any belief about the materiality of ESG issues on returns for preferences to be included in a portfolio.

Part of the reason it is so hard to pin down a definition of sustainability is because it is constantly evolving. An intricate dance between science, media, regulation as well as global and societal norms helps shape our opinions of how the world should look; what is important to us and what is not.

There are parallels with the rest of investing in the sense that there is no one-size-fits-all portfolio for any investor. Value vs. growth is a long held debate; as is the active/passive divide. Some investors can stomach illiquidity but it is not within the risk envelope for others. It is about matching risk appetite and investment objectives.

When it comes to sustainability, we also need to match sustainability preferences to the individual or the organization. So far as I can see, we are not particularly mature as an industry about articulating those preferences. We often conflate sustainable investment beliefs (e.g., are human rights a financially material issue or is climate risk priced into markets) and sustainability preferences (preferred outcomes from allocating capital such as not breaching minimum human rights standards or not damaging the environment or even achieving positive environmental outcomes through capital allocation).

Investors need to spend more time working out what their sustainability preferences are as individuals and organizations. This should then help navigate the plethora of ESG confusion and find the best suited portfolio to meet all objectives.

But we also need to remember that this work is never 'done'. Sustainability, like the law, is a fluid concept. In the movie about the late Supreme Court justice Ruth Bader Ginsberg, 'On the Basis of Sex', there is a great line expressing this:

"Judges are bound by precedence, but they cannot ignore cultural change. A court ought not be affected by the weather of the day, but will be by the climate of the era. ... The law is never finished. It is a work in progress ... and ever will be."

"The law is never finished. It is a work in progress."

Ruth Bader Ginsberg

We must therefore acknowledge that sustainability is continuously evolving and that investors should also continue to evolve their portfolios to ensure their sustainability preferences reflect the preferences of their beneficiaries.

A veritable ESG buffet: Customization preferences and aligning corporate values

We can therefore confidently assert that there will never be a one-size-fits-all solution to sustainability. However, if carefully managed, the variability of client preferences also provides us with a great opportunity to innovate and offer a range of solutions to our clients.

We can and already do address varying investor ESG preferences through portfolios that target a range of particular outcomes meaningful to them. And these can and should span active and indexing, as well as public and private markets. The growth of impact and sustainable thematic strategies, as well as sustainable indexing and ETF solutions is testament to this.

In addition to providing traditional ESG portfolios that screen out firms involved in controversial practices, investors are now able to allocate to active or passive investment strategies targeting sustainability-linked themes like climate change, biodiversity, the blue (marine) economy, the circular economy, waste management, nutrition and gender equality. The targetable themes can be even more granular: for example, investors can choose from a number of ETFs that take exposure to lithium – a crucial component of the batteries playing a vital role in the transition to net zero.

Meanwhile, there has been a proliferation of investment products designed to promote progress towards the United Nations' Sustainable Development Goals.

68%

Predicted growth of
ESG as a category in
Fintech by 2025³

¹ [Review of Stewardship Reporting 2022](#),
Financial reporting Council, Nov 2022

From proxy to precision: Democratizing shareholder voting

There is also a growing movement to put the votes at annual general meetings into the hands of actual shareholders. Regulations and technology are currently colliding here to give investors a greater say over their portfolios' stewardship impact. The European Union has been leading the charge: the EU Taxonomy attempts to clarify what the playing field should look like for ESG investments.

Since August 2022, financial firms operating within EU states have had to comply with the new requirements of MiFID II. Distributors now also have to obtain information about clients' sustainability preferences to determine their suitability for a particular product.

In the UK, meanwhile, the Stewardship Code – which has been signed by 235 organizations¹ – requires investment managers to offer fuller and more personalized reporting, including on ESG. "Investor stewardship is important for maintaining focus on the creation of long-term sustainable value for a wide range of economic and societal needs," explained CEO Sir Jonathan Thompson in the Stewardship Code's latest report.²

As pressure mounts for institutions to reflect investors' wishes, the number of ESG fintech firms clamoring to help them is growing. In fact, ESG is the fastest-growing category within fintech. It is expected to grow by 68% over the three years to the end of 2025 to become a USD 53.5 billion industry.³

Collaboration between standards and corporate reporting agencies, proxy advisors like Glass Lewis and ISS, and research consultants have led to examples of 'pass-through' voting powers being transferred to investors. "Pass-through voting" is a technique that gives investors a say proportionate to the size of their holding.

The intermediated nature of our industry means that much of the onus for securing such end-investor insight is on others within the value chain. However, we have an annual review process of our voting policy, which guides all our votes and includes consultation with clients, to ensure alignment.

² [Review of Stewardship Reporting 2022](#),
Financial reporting Council, Nov 2022.

³ [Enabling tomorrow: The emergent ESG Fintech ecosystem](#),
KPMG, 2020.

Dish of the day

The headline trend is clear: For asset managers to stay relevant, we must continue to innovate and focus on enhancing personalization. Only by offering our clients customized products, solutions and client experiences – including stewardship services – will we be able to stay relevant.

But as any successful restaurant owner will tell you, the key is not to create an endless menu of options whereby each dish served is of mediocre quality. Instead we must identify areas (recipes) of competitive advantage and where we can add tangible value.

4



Michele Gambera



Alexander Eisele



Ryan Primmer

Benchmarking ESG

A brief analysis of different sustainability indexes.

By Michele Gambera, PhD, CFA; Alexander Eisele, PhD; and Ryan F. Primmer, CFA

When shopping for sugar, we are spoiled for choice. Yet white refined granulated sugar is a commodity, virtually identical across brand names.

At first glance, ESG ETFs can seem the same. However, they can differ from each other materially, with significant variations in selection criteria, tracking error and performance.

The asset management industry is often accused of being commoditized, offering little differentiation between investment products. While we refute the charge, the proliferation of products in recent years makes the conclusion understandable – particularly when it comes to passive investing.

With this in mind, we decided to take a closer look at the major ETFs to see how they differed from their traditional benchmark counterparts in terms of exposure, tracking error and – by inference – performance. And while index funds replicate their benchmark exactly, many active funds use a benchmark index portfolio to identify the investment universe. This analysis is therefore of relevance to both active and passive investors as active funds are often merely subsets of the index.

Tracking the errors

The table below shows that many indexes used by popular ETFs tend to have high diversification and a close relationship with their traditional versions.

For example, even in the turbulent twelve months ending March 2023, the MSCI USA ESG Select Index had a beta of 1.02 and a correlation of 100% with the traditional MSCI USA Index; its tracking error was also below 2.29%.

The MSCI USA Select has limited exclusion (e.g., cluster weapons manufacturers) and some overweighting of high ESG-rated stocks, but with the objective of matching performance with the traditional index. This makes it what we call a ‘conventional ESG index’; such indexes seem more relevant to investors with a preference to avoid the most common activity-based exclusions and have a slightly higher ESG-rated portfolio profile.

We can also see that the MSCI USA Leaders Index has slightly lower beta, slightly lower correlation and a tracking error close to 3%, compared to 2% for the select index. This confirms MSCI’s index description, as the index overweights companies with high ESG ratings and excludes most of the laggards.

More negative screening (exclusion) and more positive screening (overweight of highly-rated stocks) leads to higher tracking error and more discrepancy in performance between the ESG and the traditional index. The Leaders index therefore seems more relevant to investors with a preference to have a significantly better ESG-rated portfolio.

Calculating ESG exposures

For investors with strong ESG preferences it is reasonable to ask: How much ESG exposure is achieved by tracking some of the most popular ESG indexes? For the different ESG dimensions, MSCI provides scores on a scale from 0 to 10, where 0 is the worst and 10 is the best possible score.¹

In the following chart we calculate the ESG score improvements of the different indexes relative to the respective traditional benchmark and disaggregate the E, S and G dimensions.

The largest tilt to higher ESG score can be achieved with the MSCI USA ESG Select Index (a 23% improvement relative to its traditional benchmark). Interestingly, according to the MSCI methodology, moving from FTSE US Index to the FTSE US ESG version doesn’t have a positive impact on the overall ESG score.²

ESG Index Name	Traditional Benchmark	Beta to Benchmark	Correlation to Benchmark	Tracking Error	MSCI ESG Score	MSCI E Score	MSCI G Score	MSCI S Score
MSCI USA ESG Select	MSCI USA	1.02	100%	2.29%	8.31	7.08	6.04	6.02
MSCI USA ESG Leaders	MSCI USA	1.00	99%	3.10%	7.52	7.27	5.69	5.13
MSCI KLD 400 Social	MSCI USA	1.03	99%	3.15%	7.49	7.22	5.70	5.46
FTSE US All Cap ESG	FTSE US All Cap	1.05	100%	2.46%	6.63	6.82	5.53	5.08
NASDAQ Clean Edge Green Energy	NASDAQ 100 / MSCI USA	1.28 / 1.35	93% / 90%	13.39% / 16.82%	6.30	6.42	5.71	4.74
MSCI USA	N/A	N/A	N/A	N/A	6.62	6.72	5.51	5.13
FTSE US	N/A	N/A	N/A	N/A	6.62	6.74	5.50	5.12
NASDAQ	N/A	N/A	N/A	N/A	6.66	6.66	5.16	5.27

Source: MSCI, FTSE, NASDAQ; UBS Asset Management. For illustration only. It is not possible to invest in indices directly. Data as of March 2023.

¹ The overall ESG score contains metrics across all dimensions and is computed using industry-adjusted scores. The industry-adjustment implies that achieving a high ESG score requires investments into assets which score well relative to sector peers. As an example, with this methodology investments into fossil fuel companies are possible, but the investments should be focused on the best fossil fuel companies from an ESG perspective. In line with expectations, the overall ESG score is usually better for the ESG index than for the respective traditional benchmark with the NASDAQ Clean Edge Green Energy being an exception.

² It is worth mentioning that MSCI is one of the many ESG rating methodologies available. FTSE uses a different methodology, which apparently weighs different ESG factors (that is, we expect that if we used the FTSE scores)

MSCI ESG Score improvements relative to traditional benchmarks.

A striking result in the following chart is the ESG underperformance of the NASDAQ Clean EDGE Green Energy vs. the NASDAQ. The large NASDAQ index weights in information technology as well as communication services are excluded, and, in particular, these companies have on average very high ESG scores. Microsoft as an example has an ESG score of 9.8 out of 10. Thus, along the ESG dimension the NASDAQ is a tough benchmark.

There are also discrepancies among the different ESG dimensions if we look at percentage differences.

The biggest improvement in the environmental dimension can be achieved by switching from an MSCI USA equity allocation to an MSCI USA ESG Leaders allocation. From the view of the governance pillar, the MSCI USA ESG Select provides the largest improvement relative to the MSCI USA.

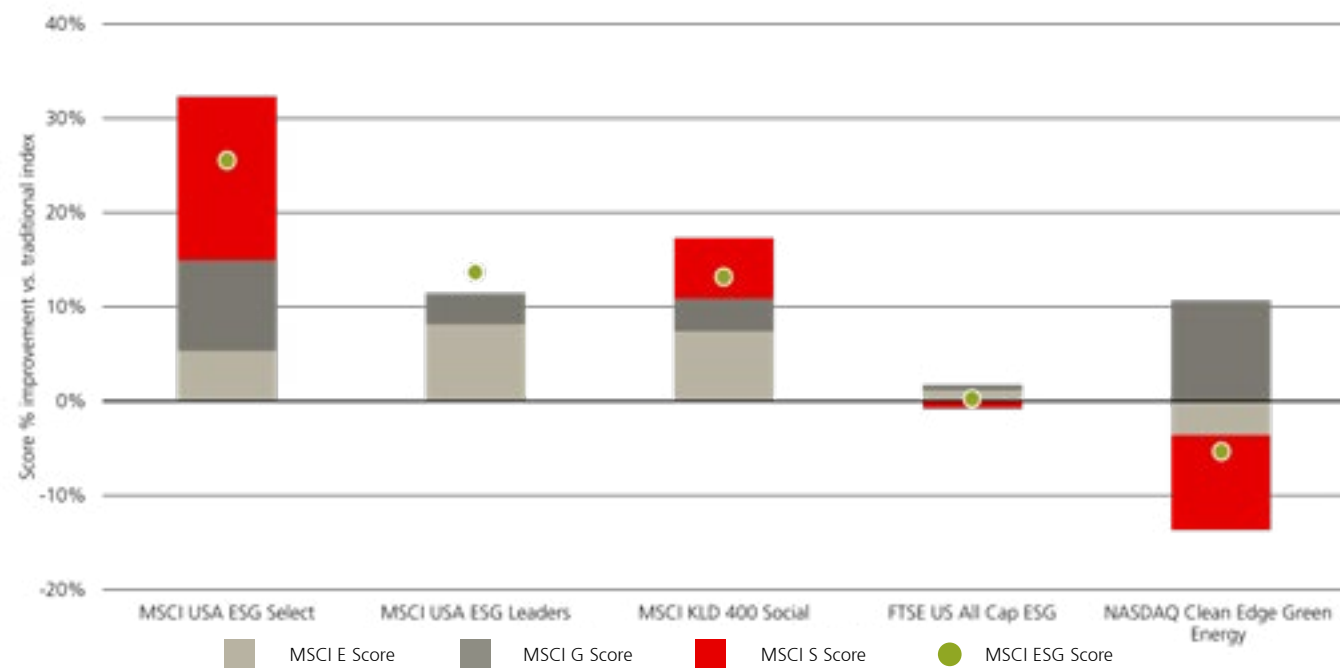
Finally, evaluating the social dimension requires a different set of questions and analysis. The MSCI USA Select Index provides the largest improvement here.

All the major ESG indexes provide material sustainability rating improvements to their respective traditional benchmarks on at least one of the major dimensions.

Investors in ESG benchmarks clearly need to study the details before buying.

Given the large correlation between the ESG and traditional indexes as well as the low tracking error implications of moving to one of the major ESG indexes, the benefits of moving to a conventional ESG index do seem to outweigh the costs. Furthermore, none of our conclusions change when using UBS [Global Wealth Management](#) (GWM) or [Sustainalytics](#) data, although the scores are slightly lower on average.

MSCI ESG Score improvements relative to traditional benchmark



Source: MSCI, FTSE, NASDAQ; UBS Asset Management. Data as of December 2022.

The devil is in the detail

Sustainability benchmarks may differ from their traditional counterparts materially, or they may differ very little. Based on their preferences and objectives, investors should carry out due diligence to understand the implications of the benchmark for any investment product they choose.

Ultimately, higher adherence to sustainability principles is likely to bring more tracking error due to both negative screening (exclusion of low-rated assets) and positive screening (overweight of high-rated assets). However, tracking error is not the only metric investors need to consider; factor exposures, country and industry biases, turnover for friction costs, and so on are all important considerations too.

Sustainability principles are also different for all investors and do not necessarily equate to simple tilting on the basis of scores from the providers which, as a starting point, are lowly correlated. The choice of the index provider is how much tracking error (performance discrepancy between ESG and traditional index) to allow when producing a benchmark.

Investors in ESG benchmarks clearly need to study the details before buying.

5



Adam Gustafsson Sir Partha Dasgupta

Putting a price on nature

A conversation between Adam Gustafsson and Professor Sir Partha Dasgupta

Few individuals on the planet understand environmental economics better than Partha Dasgupta, Professor Emeritus of Economics at the University of Cambridge.

He is a founding member of the UBS Sustainability and Impact Forum, established in 2022 to drive the discourse on sustainable finance, and his full academic credentials could fill an entire article.

Having studied the link (or lack thereof) between nature and economics long before it became fashionable to do so, he led a landmark UK study called [The Economics of Biodiversity: The Dasgupta Review](#). It is widely known and cited, marking a step change in corporate and financial market awareness of issues relating biodiversity loss. Dasgupta encourages us to think of nature as an asset;

Adam Gustafsson: “Nature needs to enter economic and finance decision-making.” This is a quote from your Biodiversity Review summary. While society recognizes the importance of preserving and restoring nature, it is not explicitly reflected in models and frameworks used for making decisions. How much of a factor is this in holding back progress?

Partha Dasgupta: It is a key factor. There are many forms of natural capital that aren't being accounted for. If you have a garden, in addition to your labor, the land, soil, sun, rain and insects are all providing a critical service. A decline in insects will have a negative impact on your harvest. Hence, this is an asset with a tangible value to you. However, car drivers on a nearby road polluting the air and damaging the insect population and reducing the productivity of the garden, are not paying a direct price for their role in degrading the service.

The main problem is that we don't have pricing models for natural capital. Even if we expanded our decision-making models to include the value of natural capital, we don't know what number to plug in. This is a problem that deserves more attention.

AG: Carbon emissions come to mind as a form of natural capital for which we do have a price, at least in some markets. Is carbon potentially showing a way forward for other types of natural capital or can the value be recognized in other ways?

in doing so he reminds us of our collective custodian duty to protect and manage it on behalf of future generations.

Building on portfolio-level thinking already developed with respect to carbon emissions (See: [The value of a green transition](#)), I wanted to ask Partha Dasgupta about the viability and challenges of incorporating natural capital into valuation metrics and models. What follows is the start of on-going dialogue to try and figure this out. It is also timely given the imminent roll-out of our natural capital engagement program.

Dasgupta also recently appeared as a guest on the Monocle's The Bulletin UBS Podcast where he discussed the impact economy (See link [here](#)).

PD: A clear price is necessary. Today, we don't pay for resources, so we overuse them. Similarly, a store with lax security will have more shoplifters. Unfortunately, that is human nature. We recognize the value of a good but still need systems enforcing payments.

Regulatory limits work too – e.g., fishing quotas or emission restrictions for automakers. Still, pricing is a more elegant and efficient approach to solving the problem.

AG: Most economists see gross domestic product (GDP) as a metric with significant shortcomings. Do you believe we need to scrap GDP and start over? Or can we evolve GDP to incorporate nature?

PD: While I don't agree with the premise of the question, we do need to move away from GDP.

To start with, companies in the private sector are not concerned with GDP. They care about return on invested capital and maximizing long-term shareholder value. Also, we already have alternatives to GDP and I'm not necessarily only talking about frameworks like doughnut economics and measures of happiness. We need to move from an income statement-centric mindset and shift focus to the balance sheet. GDP was not designed for long-run economic assessment; it only measures economic activity and has incorrectly been adopted as a measure of wealth. Importantly, growth in GDP measures growth in economic activity, but doesn't account for asset depreciation. We all need to become asset managers of a balance sheet that includes the value of natural capital.



“In an ideal price system, prices reflect the desire of the shareholder and society. But until we get there, engaging with investment companies and encouraging positive change can still make a difference.”

Partha Dasgupta

In the UK we are trying to create a natural capital account. The wealth a country holds includes natural capital. Even if you cannot measure the price, you can obtain a sense of wealth by estimating stocks of natural capital. We need to move towards measuring the wealth of nations, including natural capital, instead of GDP.

AG: This makes sense at a country level. But private companies rarely hold natural assets on their balance sheets, so how can they adopt this line of thinking?

PD: You are right. In the private sector, pricing natural capital is the most important step forward.

AG: Is there a mismatch in time-horizon here? Investors looking more than three years out are usually labeled “long term.” Is this short-termism part of the problem and can we overcome it?

PD: That should not be the case. That there is trade-off between short- and long-term opportunities is not a novel thought. But perhaps we need to adopt a more thoughtful discount rate framework for natural capital.

For example, if you invest in a forest that will yield 20 years from now the value of cash flows appears small. But remember that the quantity of produced goods in the economy is increasing and the amount of natural capital is declining. Cash flows in terms of produced capital tomorrow are worth less than today but arguably the opposite is true for the forest and other types of natural capital. Hence, it makes sense to apply different discount rates. There are monetary financial implications of ecosystem degradation that are not reflected in discount rates.

To complicate this further, apart from climate economics with a single global metric, other forms of natural capital require a geographic consideration. A unit of biomass in a rainforest in Brazil has a different value than a unit of biomass in a garden in Cambridge. So what is the equivalent of the service provided by the biomass and how can we consider locality when pricing natural capital? The quality of the product is dependent on the services that ecosystem provides.

AG: Cash flows and discount rates are the two main drivers of the valuations that underpin investment decisions. Sustainability as a driver of cash flows or as a factor reflected in the discount rate is an ongoing debate among sustainability focused investors. Do you have a view on this?

PD: Both. I can see clear arguments for including in income statements items that report natural capital being utilized or restored, and hence positive value created. Likewise, I have just mentioned reasons for discount rate differentiation. Projects with significant negative externalities are inherently riskier.

AG: Will the most critical catalysts of change come from government and/or the supranational level, or can meaningful large-scale change happen more organically in the private sector, perhaps driven by consumers?

PD: I believe we may be overly reliant on governments, which may be dangerous given the state of leadership we see in many countries.

Rumors, morals, social customs, norms of behavior all matter. Companies will take nature seriously if customers take nature seriously. With an incomplete price system, consumer-driven demand matters even more. Look at vegetarian burgers. We have not taxed meat, at least not in a meaningful way on a global scale. Still, the price for vegetarian burgers has gone up due to demand and they are taking up more space on the shelves.

AG: How can investors better embed nature into investment decisions?

PD: It is up to the shareholders to decide what is acceptable or not. In an ideal price system, prices reflect the desire of the shareholder and society. But until we get there, engaging with investment companies and encouraging positive change can still make a difference.

6



Hans-Christoph Hirt

The future of stewardship

While asset owners and asset managers have renewed their stewardship efforts recently, it is questionable whether more resources and activity is resulting in greater effectiveness. Hans-Christoph Hirt points to a way forward.

Stepping back to move forward

As any self-respecting productivity book will tell you, more activity does not necessarily lead to greater effectiveness in achieving objectives.

Investment stewardship is no different. Granted, the work of the Financial Reporting Council (FRC) in advancing stewardship and launching a much-revised code in 2020 following the damning assessment of the UK's code in a wider review in 2018¹ has moved things along. And the process the FRC has put in place to become a signatory to the code has resulted in renewed efforts and an increased focus on stewardship by asset owners and asset managers over recent years.

Yet, it is questionable whether more resource and reporting is translating into effectiveness. In order to turn all this activity into outcomes that matter to asset owners and ultimate beneficiaries of investments, we need more clarity and alignment of objectives across the investment chain, better measurement of engagement outcomes, enhanced assessment of investor contribution as well as estimation of its impact.

Clarity and alignment of objectives

Stepping back for a moment, stewardship efforts can be targeted at quite different outcomes and dimensions of materiality, specifically regarding real-world outcomes.

Clearly defining objectives is therefore essential to enhancing practice, effectiveness and alignment along the investment chain.

There are three principal categories of company engagement outcomes:

1. Outcomes addressing investment opportunities and risks relating to a specific company/portfolio during a typical holding period of say two to five years which have the potential to enhance alpha. Examples are changes in a company's portfolio of businesses, capital allocation or the composition of the board or senior management.
2. Real-world outcomes relating to systemic risks impacting market returns over time which have the potential to enhance beta (used here as a proxy for market returns). An example would be enhanced or accelerated decarbonization efforts of companies (ideally across a sector) aiming to limit the macroeconomic impacts of global warming, rather than addressing idiosyncratic risk.
3. Real-world outcomes relating to global norms adhered to by investors, such as the UN Global Compact, which may or may not contribute to investment returns over time – or at least they may be very difficult to measure or estimate.

Significant overlap exists. For example, addressing climate-related opportunities and risks at the company level will contribute to the management of related systemic risk at the market level.

¹ Independent Review of the Financial Reporting Council (December 2018) (Kingman Review), [Link to document](#).

There can also be tensions between the different outcomes categories, particularly over different time horizons. These can highlight differences in assessing and preferences for addressing sustainability issues between asset owners, who often have long-term objectives, and asset managers, who tend to be measured and rewarded on shorter time horizons.

Addressing systemic risk

The outcomes categories are also particularly helpful when considering the role of investors in addressing systemic risks. Lukomnik and Hawley have argued that long-term overall market returns, which can be affected by systemic risks, impact the value of aggregate portfolios more than the performance of specific companies and, by extension, specific portfolios in the short to medium term.²

The Thinking Ahead Institute, for example, estimates that climate tipping points could result in a 50%-60% downside to existing financial assets by 2100, given a business-as-usual scenario. In contrast, they estimate that taking action to transition to a well below 2°C world might lead to a loss of only 15% of existing assets, which could be partly offset by the positive benefits from new primary investment.³ Long-term investors should therefore arguably be much more focused on addressing systemic risks.

The ability to measure and report engagement progress and outcomes will require a systematic approach to engagement.

When considering how to address systemic risks, asset owners and managers should consider their ability or efficacy to take effective action on particular issues, individually or in collaboration, both at the policy and company level, and ask whether they are best placed to achieve a desired outcome through stewardship.⁴

While direct engagement of investors with companies is and will remain an important part of investment stewardship regarding systemic risk, it has limitations and needs to be part of an overall strategy of addressing such risks which requires changing the playing field.⁵ Through policy work this could involve support for regulation and incentives changing the economics of mitigating emissions or investing in new technology, or creating demand for climate solutions. It could also include involvement in sector and value chain initiatives to address industry wide challenges.

Incentive challenges and the risk of free-riding peers abound. In order to help manage these, active asset managers typically focus their stewardship activities on enhancing relative performance of specific portfolios (alpha) by prioritizing outcomes that address company specific investment opportunities or risks rather than systemic issues. While the cost/benefit analysis of addressing systemic risks does not change for individual asset managers, there is an argument that it is particularly relevant regarding passive strategies, enhancing beta.

The asset managers that do invest in addressing systemic risks will be those that recognize the value of long-term partnership with their clients and seek to contribute towards addressing their biggest challenge: Securing sustainable, long-term returns across portfolios.

Measurement of outcomes, assessment of investor contribution and estimation of impact

Unfortunately, even after clarifying stewardship objectives, considerable challenges regarding company engagement remain.

The ability to measure and report engagement progress and outcomes will require a systematic approach to engagement, including capturing of company specific objectives and interactions, supported by adequate systems and processes. This will allow investors to establish a link or correlation between their activities and outcomes in reporting. Progress and outcomes metrics should complement activity metrics and qualitative reporting should be enhanced by case studies describing the work undertaken with companies and resulting outcomes (ideally with an acknowledgement of the company engaged).

More visibility about the contribution of asset managers to outcomes is also required. Engagement management systems can be used to set and track objectives. Asset managers, can then evidence when, how and how often a concern and potential solution to deal with it (which was subsequently adopted) were raised with a company. This way a credible link between activities and outcomes in the sense of correlation (rather than causation) can be established and reported.

2 J Lukomnik and J Hawley, *Moving Beyond Modern Portfolio Theory – Investing That Matters* (Routledge, 2021)
3 <https://www.thinkingaheadinstitute.org/research-papers/pay-now-or-pay-later/> (2022)
4 London Business School/Investor Forum, What does stakeholder capitalism mean for investors? (January 2022)
5 Net-Zero Asset Owner Alliance, The Future of Investor Engagement: A call for systematic stewardship to address systemic climate risk, (April 2022)

Making a contribution as an investor, particularly when working in partnership, will require an evolved approach: engagement will need to be more focused (quality rather than quantity), investment-centric and informed, and genuinely two-way, with information flowing between the investor and engaged company.

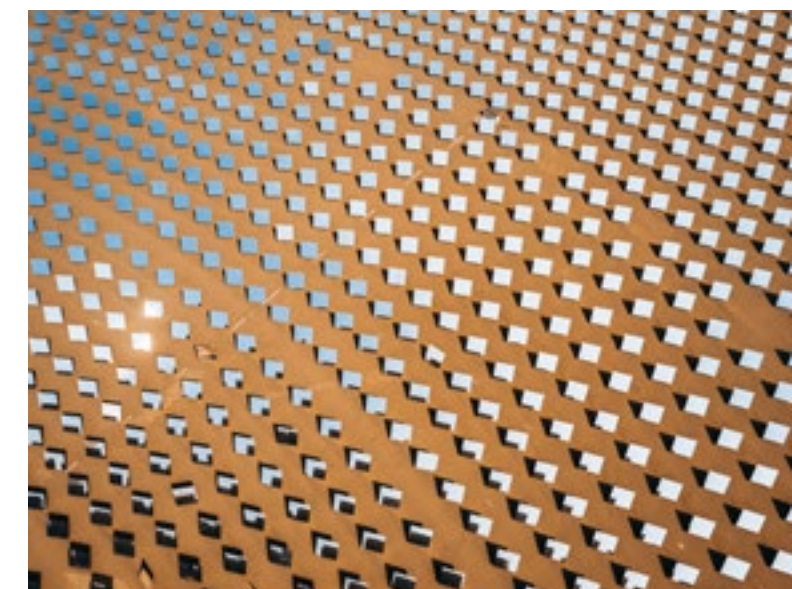
This means asset managers will need to bring something to the table when engaging with companies. Such a contribution could be: proprietary research and benchmarking; insights derived from an understanding of industries; supply chains and key drivers therein; knowledge about sector specific capital allocation; and management or connections across the ecosystem or companies.

Finally, investors will need to develop ways to estimate the investment and real-world relevance or impact of engagement and outcomes. If engagement is primarily aimed at addressing investment opportunities and risks relating to a specific company/investment portfolio during a typical holding period (alpha), then, ideally, investors would measure or at least estimate its impact on investment performance.

However, there are significant challenges and limitations to stewardship performance attribution, as there are many other variables influencing share price and other metrics. Beyond the critical question of the causal relationship, it can take a significant amount of time to achieve engagement outcomes and any related performance impact.

Recognizing these limitations, meaningful qualitative descriptions of outcomes and how they might have enhanced performance in case studies and quantitative estimations of the performance impact of engagement building on existing studies are meaningful steps in enhancing current practice.

If engagement primarily seeks real-world outcomes relating to systemic risks impacting market returns in the long term, then investors could measure and report progress on real-world metrics. For example, carbon emissions or the rate of decarbonization across a portfolio of companies or dedicated engagement program.⁶



One step back, two steps forward

In a nutshell, if asset owners and managers are to secure the great potential of investment stewardship at the policy and company level they should further align their stewardship objectives. And in order to protect and enhance returns for ultimate beneficiaries

over different time horizons and with due regard to real-world outcomes, this must include the consideration of systemic risks.

Before we can move forward, it is therefore necessary to pause and take a step back.

6 See, for example, Thinking Ahead Institute, Pay now or pay later?

7



Darren Rabenou



Olivia Muir



Manisha Bicchieri

Securing a more productive and sustainable food supply

Investors, companies, consumers, policymakers and scientists must work together to balance a more productive global food system while reducing natural resource inputs.

If they do not, we are unlikely to be able to address food security in a sustainable manner, argues UBS Asset Management Real Estate & Private Markets' Head of Food & Agriculture Darren Rabenou, Head of Sustainability Olivia Muir and Food & Agriculture Sustainability and Research Analyst Manisha Bicchieri.

As global climate concerns intensify, world food insecurity remains

Despite a goal of Zero Hunger as part of the UN 2030 Sustainable Development Agenda, the first material increase in the percentage of the world population that is undernourished occurred in 2020 and has continued to increase since.

According to the UN Food and Agriculture Organization (FAO), this "dispel[s] any lingering doubts that the world is moving backwards in its efforts to end hunger, food insecurity and malnutrition."¹ With food security – or lack thereof – firmly back at the top of the global agenda, the world's agricultural sector must balance the need for an increased food supply while decreasing natural resource demand.



¹ The State of Food Security and Nutrition in the World 2022, FAO, IFAD, UNICEF, WFP and WHO, July 2022

The demand side: consumption and waste

In addition to increased food demand due to global population growth, wealthier populations are demanding more meat and other animal products. As a result, there is increasing need for feed crops as well as food crops. Alas, the expansion of land for agriculture is the leading cause of deforestation, with much of this land cleared to grow crops and raise livestock.

Investors, companies, policymakers and scientists must support alternative protein adoption by consumers as a means to reduce land use pressures for feed crops and minimize deforestation impacts. Moreover, consumer shifts to food products with lower land use intensities, such as plant-based and/or cultivated protein alternatives, has the potential to result in a material reduction in the agricultural sector's greenhouse gas emissions. The sector currently contributes approximately 30% of global emissions,² with beef and dairy cattle estimated by the UN FAO to be responsible for more than half of the sector's overall emissions.³

Another demand pressure that results as countries develop is food loss and waste. According to the World Resources Institute, one-third of all food produced globally by weight is lost between farm and fork.⁴

In developing countries, food losses typically happen earlier in the supply chain as a result of production, storage, processing, and/or distribution issues. Investments in the improvement of infrastructure and technology, including more available and efficient cold storage solutions, are critical to reducing this type of food loss. In developed countries, food waste most often occurs at the retail and consumer end of the supply chain. Adapting consumer preferences and changing consumer behavior through advocacy and education from scientists and policymakers alike can help to curtail food waste in stores and homes.



2 Food systems are responsible for a third of global anthropogenic GHG emissions, nature food, March 2021
3 Tackling Climate Change Through Livestock, FAO, 2013

4 The Global Benefits of Reducing Food Loss and Waste, and How to Do It, World Resources Institute, March 2023

The supply side: producing more with less

To meet increasing global food demand while abating the climate crisis the world now faces, we must also make supply side improvements. This includes continued increases in land productivity with less natural resource inputs. Investments in the development and distribution of precision agriculture science and technology – that is, the improvement of crop yields through effective management of irrigation strategies, crop protectant applications and fertilizer inputs – are critical to achieving this balance and ensuring long-term food security.

Agriculture uses 70% of the earth's freshwater resources,⁵ with flood irrigation – the most water intensive method of irrigating crops – widely utilized by farmers globally. Though irrigated agriculture is, on average, at least twice as productive per unit of land as rainfed agriculture,⁶ flood irrigation wastes approximately 50% of the water applied.⁷ To address climate concerns regarding rising temperatures and prolonged drought, investors, companies, policymakers and scientists must work to advance irrigation technology that is economical and energy efficient, particularly in developing countries where flood irrigation is principle.

In addition to irrigation improvements, the advancement of crop protectants and fertilizers has resulted in significant increases in crop yields, helping to provide the world a diet of healthy and affordable food. However, excessive use of these inputs has been detrimental to the environment and society. In fact, nitrogen fertilizers represent one of the largest sources of greenhouse gas emissions from global agricultural production. Their overuse has resulted in significant emissions of nitrous oxide, a persistent greenhouse gas with 265 times the climate impact of carbon dioxide.⁸

While continued crop productivity gains are necessary to meet the world's increasing demand for food, judicious use of irrigation, crop protectants and fertilizer inputs is necessary.

When combined with effective technology development and integration, precision agriculture can lessen negative production impacts and reduce unnecessary resource use.

70%
Of earth's freshwater resources are used for agriculture

Continued crop productivity gains are necessary to meet the world's increasing demand for food. However, careful and effective use of crop protectants and fertilizers and more effective technology integration is critical to lessen negative impacts and reduce unnecessary resource use. Utilization of precision agriculture techniques to apply fertilizers more accurately can help to avoid pollution from pesticide drifts: and there are other options, such as organic and natural fertilizers, biopesticides, low carbon fertilizers, based on green ammonia, as well as nanofertilizers.

5 OECD, 2017

6 Water in Agriculture, The World Bank, May 2022

7 Why All Farms Don't Use Drip Irrigation, Water Footprint Calculator, September 2022

8 New research shows 50-year binge on chemical fertilisers must end to address the climate crisis, IATP, Greenpeace International and GRAIN, November 2021

Conclusions and actions

The urgency to address the global climate crisis has never been greater. It demands reform of our use of natural resources across all industries, with the food and agriculture sector of top concern.

Paradoxically, while agriculture is a major contributor to this crisis, it is also one of the most affected sectors. Thus, meeting the increased demand for food from a larger and wealthier population combined with limited land and finite natural resource supplies requires the participation of all stakeholders – investors, companies, consumers, policymakers and scientists alike – in order to secure a global sustainable food supply.





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Rooted in our Zurich home but established across the world, UBS Asset Management has been a dependable partner both at home and abroad for over 150 years.

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Independent thinking...

With distinct specialist teams across active and passive, traditional and alternative, each with their own viewpoints and philosophies, we generate innovative ideas to help meet your investment goals.

...with the benefits of scale

This breadth and depth of solutions at a global scale is combined with local market insight and agility, all under one roof, meaning we can meet your priorities as you navigate the complexities of today's financial markets.

A partner to depend on...

We have a partnership culture embedded in our DNA, built on enduring relationships that adapt with you as your investment and business needs change. We deliver an ecosystem of ideas and expertise to find the right solution for you.

...with disciplined execution

We bring you exacting standards, robust investment processes and a true focus on high-quality client service delivery, all underpinned by the safety and security of the broader UBS organization.

Performance excellence...

Taking a longer time horizon and systematically adopting a sustainability lens to many of our investment decisions is integral to our approach and allows us to bring top-tier products with sustainability built into their core.

...while driving positive change

We also have vision to drive positive change in the industry. Our goal is to set the standard, use our influence at scale and continue relentlessly innovating to help you progress towards a carbon-neutral future.

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Americas

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