

Sustainable finance

Ten trends for 2021

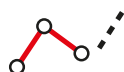




Ten trends shaping sustainable finance in 2021



- 1 | Investor engagement
More influential than regulation in 2021



- 2 | Impact investing
The next wave of growth



- 3 | Electric transport
Adoption sooner than expected



- 4 | Net zero
From aspiration to firm targets



- 5 | Big Oil
The opportunity for reinvention



- 6 | Diversity
The destructive potential of prejudice



- 7 | Plant-based meats
Coming, ready or not



- 8 | Climate stress testing
The transformation of capital allocation



- 9 | Sustainable data
Insights from new lenses



- 10 | Transparency revolution
The convergence of standards underestimated



Axel A. Weber

Chairman
UBS Group



Ralph Hamers

Chief Executive Officer
UBS Group

Dear readers,

For over two decades, UBS has been at the forefront of sustainable finance. 2020 proved that this topic has entered the mainstream – not just as a talking point, but as a driver of valuation and a catalyst for action.

The effects of COVID-19 and the challenges of climate change have underscored the importance of social and environmental factors, including their material implications for corporate profits and reputations, as well as value creation and erosion. We expect that valuable and growing businesses will increasingly embed sustainability, just as successful companies are increasingly technology-enabled companies. Since the outbreak of the pandemic, we have partnered with investors, institutions and corporations to help them adapt to this new reality and achieve their long-term objectives. We have expanded our climate-aware investments to all asset classes and attracted billions of dollars into our 100%-sustainable portfolios. In September 2020, we became the first major global financial institution to make sustainable investing our preferred solution for private clients investing globally, with our 100%-sustainable mandates performing even better than their traditional equivalents. Our Sustainable Finance Hub has been created as a resource for clients and stakeholders with regard to pivotal questions on sustainability. And we recently completed a multi-year project to raise USD 5 billion for impact investments related to the United Nations Sustainable Development Goals, exceeding our target more than a year ahead of schedule.

UBS's approach to sustainability is a constant evolution of our purpose, as we challenge ourselves to do better. For the sixth consecutive year, the Dow Jones Sustainability Indices named us global industry leader for diversified financial services and capital markets, while the CDP awarded us its prestigious A rating for tackling climate change. We have added to the transparency on how we report to shareholders, disclosing our carbon footprint on the basis of the Task Force on Climate-related Financial Disclosures (the TCFD) ever since this standard was first created. We helped lead a number of industry initiatives to drive better outcomes. 2021 will see us work to evolve our position further, while developments such as the 2021 United Nations Climate Change Conference (COP-26) and the new US administration's approach to sustainability will focus the minds of the private and public sectors alike on the road ahead for these important topics.

Since 2017 we have published, as a contribution to the broader debate, white papers on sustainable finance for the annual meetings of the World Economic Forum (the WEF) in Davos. For the WEF's Davos Agenda meetings this month, we are proud to present this publication on sustainable finance trends in 2021, which aims to help our audiences navigate 21st century risks and opportunities. We hope that you will join us this year in putting sustainable commitments into action.



Axel A. Weber



Ralph Hamers





The COVID-19 pandemic has inflicted one of the worst crises of our lifetimes for public health, individuals, businesses and society as a whole.

Amid this crisis, our conversations with asset owners, investors and clients have underlined the increasing interest in financing the transition to a low-carbon economy, supporting sustainable and inclusive growth and managing portfolio risk in the face of 21st century challenges.

Today, we believe markets are undergoing a profound transformation as investors factor in climate change and other sustainable themes with regard to investment risk and return. As investors have reassessed their portfolios during the crisis, we found they have broadly added to sustainable investing

strategies, with fastest growth around funds focusing on energy transition. We think this will shape investments and markets in the years ahead. Given that these are the early stages of this trend, we believe that the full implications of such transformation are not yet reflected in asset prices.

To help advance investors' thinking around these changes, we offer our perspectives on **ten pivotal debates** that we think could have an impact on finance in 2021:



1 | Investor engagement

More influential than regulation in 2021

We expect a crescendo of asset owners' voices calling for companies and investors to provide better sustainability data – alongside clear and measurable energy transition plans – to strengthen their investment decision-making and better assess risks in line with their fiduciary responsibility. This, not regulators, will fast track disclosures and new commitments in 2021.

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2 | Impact investing

The next wave of growth

Investors are increasingly factoring in environmental, social and governance considerations because they can be financially material and useful in analysis and decision-making. We expect the next wave of growth will be driven by investors actively seeking to identify and address sustainability challenges in areas from climate to inequality to healthcare. In a recent survey, 62% of family offices indicated that impact investments will be a key focus.

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3 | Electric transport

Adoption sooner than expected

We believe the transportation sector can be almost fully decarbonized by 2040. Our forecast is that electric vehicles will account for 40% of global new car sales by 2030. Although many industry players think that is too high, we think it could be too low. Rapidly decreasing technology costs, a benign global regulatory environment, government funds and the rising cost of carbon emissions will lead to a fully electric future, not only for cars and trucks.

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4 | Net zero

From aspiration to firm targets

As more and more nations and companies set net zero emission goals for the middle of the century, we think it will be critical to slow and eventually stop new investment in the fossil economy, to target carbon reduction sooner than 2050 wherever possible and to channel more investment toward essential adaption measures. We expect significant acceleration in the pace of capital reallocation, encouraging rapid rotation of investments out of the fossil sector and into clean energy projects.

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5 | Big Oil

The opportunity for reinvention

Rather than viewing the energy transition as an existential risk to the oil majors, and seeing the majors as the problem, we should perhaps regard it as a potential opportunity for them to re-make themselves and become part of the solution. The energy transition could require USD 1.1 trillion in investment per year – inconceivable without the skill sets of the existing players – initially as hybrids and then increasingly as a fully-fledged integrated energy industry.

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6 | Diversity

The destructive potential of prejudice

Diversity and inclusion could become critical issues in determining economic success or failure in the decade ahead. If we want to use technology to its best advantage, we need to hire the right person in the right job at the right time. 2021 could see advances in starting to close the data gap to measure diversity.

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7 | Plant-based meats

Coming, ready or not

Our base case forecasts the global plant-based meat market reaching USD 51 billion in size by 2025, implying a threefold increase in penetration from 2019 levels. The pace at which consumers respond will have major ramifications for investment portfolios on a global basis.

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8 | Climate stress testing

The transformation of capital allocation

2021 will likely be the year when investors and financiers mainstream climate-transition analysis in their loan books and portfolios. Eighteen central banks will run climate transition stress tests in 2021. Over time, the tests could be highly catalytic in repricing the cost of capital between high- and low-carbon companies. Investors will want to get ahead of this trend.

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9 | Sustainable data

Insights from new lenses

The major index providers and market-data firms are racing to build or buy sustainability offerings. Demand for sustainability data could drive the size of the related data and services market to more than USD 5 billion in the next five years. Sifting signal from noise will be critical for shaping better portfolios.

> Read perspective

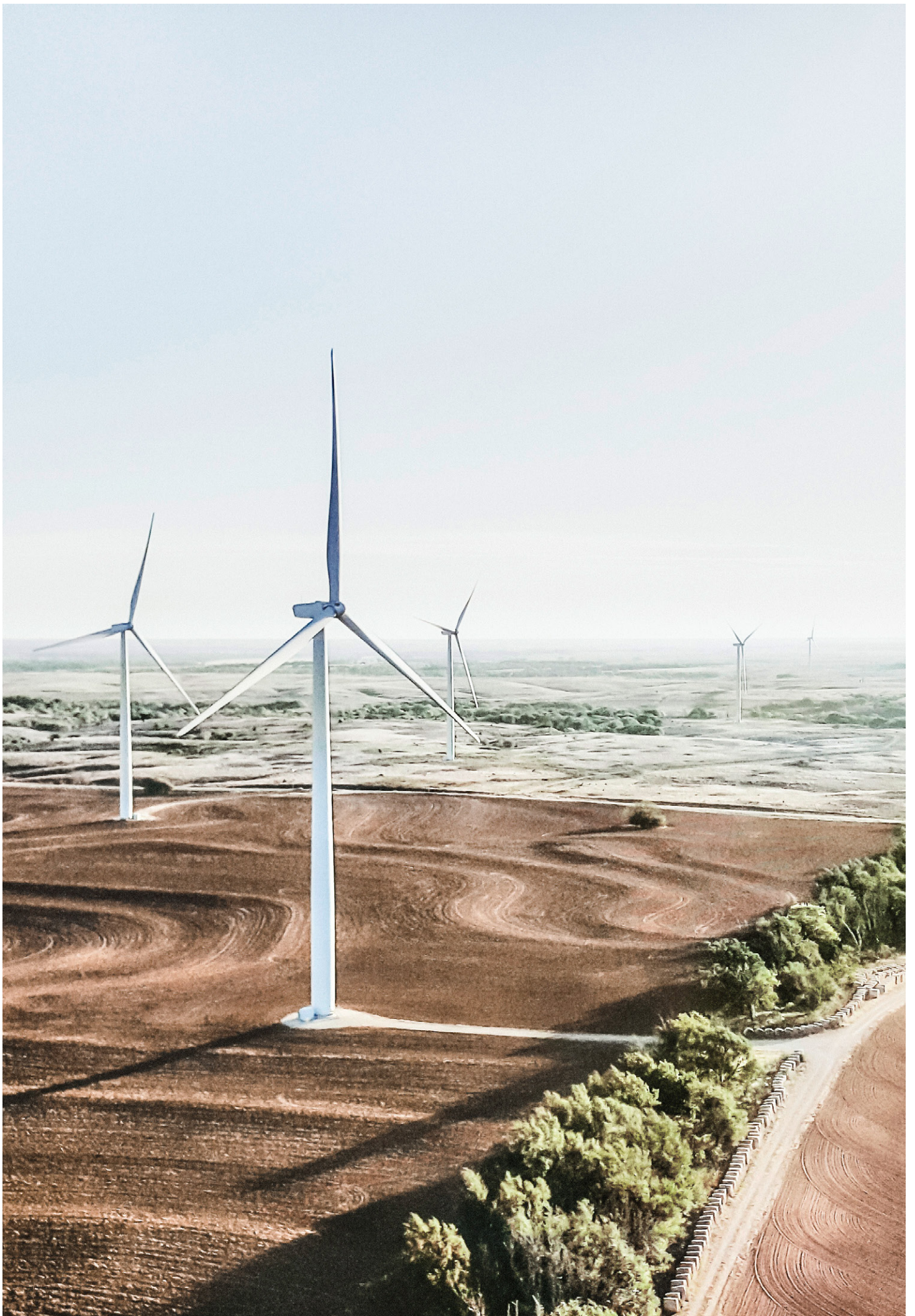


10 | Transparency revolution

The convergence of standards underestimated

We think the market underestimates how fast standards are converging. The arms race in competing standards has ended in a truce – and collaboration – called for by investors and regulators. Transposing these to accounting standards is the key focus now. Better quality, more material and more comparable sustainability data are around the corner, which will help inform investment decisions.

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We believe that by considering sustainability factors, investors can enhance the resilience of their portfolios without compromising risk-adjusted returns. That's why we at UBS are committed to offering our clients more choice and innovation. Key initiatives in 2020 have included

the expansion of the Climate Aware investment strategies across all asset classes, the adoption of the sustainable investing mandate as the preferred solution for private clients investing globally and the establishment of the Hub for Sustainable Finance as a firm-wide resource for clients.

2020 came with numerous surprises and 2021 also looks set to be challenging, given the interactions between the pandemic, an uneven economic recovery, cheap money and geopolitical tensions. We hope this short paper will help you navigate some of the risks and opportunities ahead.



Huw van Steenis

Chair
UBS Sustainable Finance
Committee



Suni Harford

President
UBS Asset
Management



Mark Haefele

Chief Investment Officer
UBS Global Wealth
Management



Dan Dowd

Head
UBS Global
Research

We would like to express particular thanks to Jose Saiz, Volker Schieck, and Christian Swindells for their contributions.

➤ To read more of our insights, subscribe at **UBS Hub for Sustainable Finance**

Setting the scene

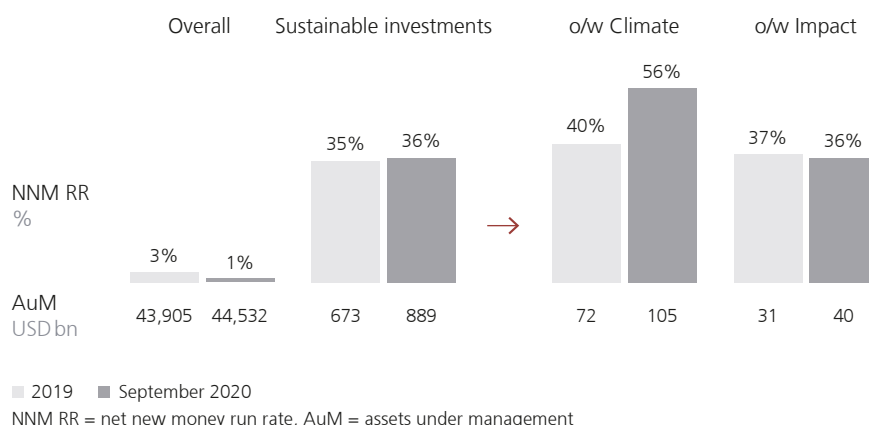
The rise and rise of sustainable investing

Michael Baldinger, Head Sustainable and Impact Investing, UBS Asset Management

Assets in sustainable mutual funds and exchange-traded funds (ETFs) hit an all-time high of USD 1.2 trillion at the end of the third quarter of 2020, with flows outstripping the overall market.¹ We expect a strong continuation of this trend in 2021 and beyond, as investors finally lay to rest the notion that sustainable investing compromises returns. Shifting societal values and greater regulatory pressure are further strengthening client demand, lending additional support to this transformation in the investment landscape.

In 2019, sustainable investing (SI) was the fastest growing fund category. By the end of the third quarter of 2020, while the overall market was reporting a net new money run rate of just 1%, down from 3% at the same point in 2019, the sustainable investing net inflow rate was running near 2019 levels, reaching 36%. Strikingly, within that number, flows into climate funds dominated, recording 56% inflows on an annualized basis.

Figure 1. Sustainable investment flows dominate in 2020²



¹ Morningstar (2020), Global Sustainable Fund Flows: Q3 2020 in Review

² Sources: ISS Market Intelligence Simfund, UBS; Global figures, excluding Money Market funds, as of 30 September 2020 in USD; Sustainable finance/Climate/Impact groups comprise of funds with sustainability-/climate-/impact-related words in fund name



This is a broad-based trend across both the active and passive space, as the growth in ETF flows over recent years highlights. In 2017, sustainably tagged ETFs accounted for just 1% of European ETF inflows; for the 11 months ended 30 November 2020 that figure had reached 41%.³

As the global pandemic forced investors to reassess their portfolios, it became clear that they were broadly adding to sustainable investing strategies, reflecting a recognition of the linkages between sustainability issues,

the economy and corporate financial performance. In short, acceptance of the fact that the increased transparency that sustainable investing brings – greater insights into material non-financial factors – matters as much to performance as traditional financial analysis.

Our own conversations with institutional investors underscore this. Regionally, 82% of European investors told us they already integrate environmental, social and governance (ESG)-related aspects in their

investment processes, while in Asia and the Americas that figure was 76% and 70%, respectively, with Asia showing the highest potential for future growth. Looking across asset classes, levels of conviction are similarly robust. In November 2020, 95% of equity and 89% of fixed-income investors told us they consider ESG factors as part of their investment process. A similar picture can also be seen among private-market and multi-asset market participants.

3 UBS, Etfbook December 2020

We believe four key reasons underpin these attitudes toward sustainable investing, all of which are structural, long lasting, and set to be significant drivers of flow in the years ahead.

A shift in societal values

- Public awareness of ESG-related risks and opportunities has placed sustainable investing at the top of the global agenda and led to the creation of major milestones, including the Paris Agreement and the UN Sustainable Development Goals (the SDGs).
- The COVID-19 pandemic has highlighted the materiality of ESG issues.

Changing perception of risk

- Institutional investors, in particular pension funds, are pivoting toward sustainable investing, driven by growing regulatory obligations and changing perceptions of their fiduciary duties. Up to 77% of institutional investors plan to stop investing in non-ESG products by 2022, according to a recent study by PWC.⁴

Sustainable investing performance

- Evidence strongly suggests that investing in sustainable investing-focused funds won't compromise returns, particularly in the active space: a 2020 study by Morningstar of more than 700 European sustainable funds showed that over one, three, five and ten years the majority of those funds outperformed non-ESG funds.⁵
- COVID-19 has further highlighted the resilience of sustainable investing-focused funds in distressed markets. According to MSCI, during the first six months of 2020 – a period of high market volatility – all major MSCI ESG ACWI indexes outperformed the MSCI ACWI.⁶

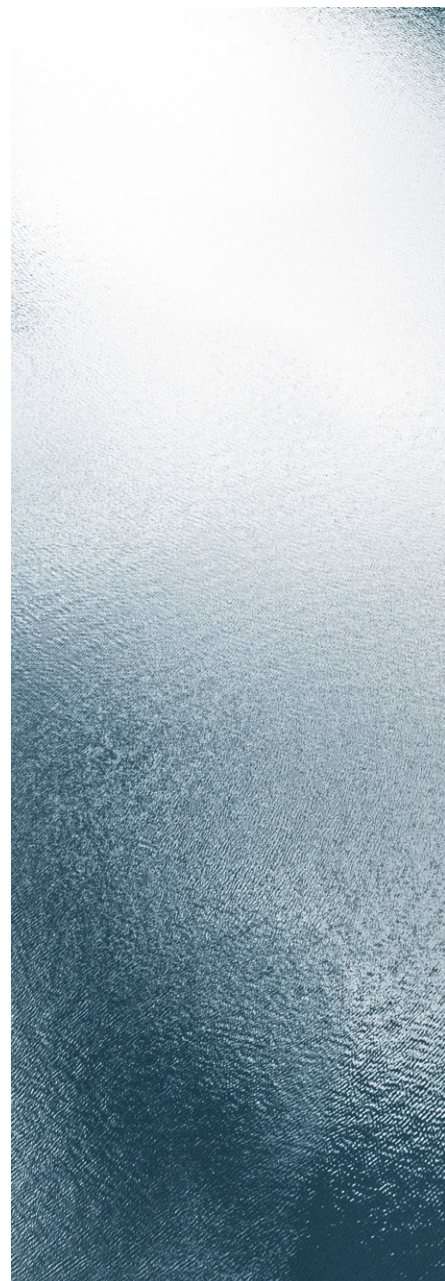
Regulation

- Growing regulatory pressure is increasingly driving institutional client demand, particularly in the EU.
- Changes to existing regulations, led by the EU Taxonomy and Sustainable Finance Disclosure Regulation, look set to make reporting on ESG outcomes a requirement for client disclosures, which, in turn, will fundamentally underpin the continued flow of assets into sustainable investing funds.

4 <https://www.pwc.lu/en/sustainable-finance/esg-report-the-growth-opportunity-of-the-century.html>

5 <https://www.morningstar.in/posts/58587/esg-stocks-outperform-wider-market.aspx>

6 <https://www.msci.com/www/blog-posts/is-esg-investing-a-price-bubble/02231869256>





Many policymakers now accept that kickstarting economic recovery post-pandemic is best addressed by funding green projects, including infrastructure. As the world moves further into 2021, we're looking out for an accelerated regulatory push beyond Europe that will further boost flows of sustainably focused capital. Expect to see increased harmonization of sustainable investing standards and a greater focus on generating measurable outcomes aligned to the SDGs, as we describe in the section below on sustainable outcomes.

As new regulatory frameworks set new non-financial standards for financial market participants, capital markets look set for a transformation. Combine that with a fundamental shift in societal attitudes, and we may just have seen a quiet revolution.

Our perspectives

Top ten trends in sustainable investing





Investor engagement

More influential than regulation in 2021

Valeria Piani, Sustainable and Impact Investing, UBS Asset Management

Gillian Dexter, Sustainable and Impact Investing, UBS Asset Management

Bruno Bertocci, Sustainable Equities, UBS Asset Management

Huw van Steenis, Chair, Sustainable Finance Committee, UBS Group

We expect a crescendo of asset owners' voices calling for companies and investors to provide better sustainability data – alongside clear and measurable energy transition plans – to strengthen their investment decision-making and better assess risks, in line with their fiduciary responsibility. This, not regulators, will fast track disclosures and new commitments in 2021.

Sending a message

Many companies have made significant progress with voluntary reporting and setting energy-transition targets, but we still see stragglers and inconsistencies. Comparing one company's ambitions with those of another remains a challenge. Our own conversations with asset owners confirm that while better disclosure on factors such as climate footprint and diversity remain a priority, they want to go further and see actual strategy change, including quantifiable net zero targets and compensation tied to outcomes. This is driving an intriguing trend: asset owners are pressuring asset managers to engage with companies, particularly on setting clear and quantifiable plans for the move to net zero.

Changemakers

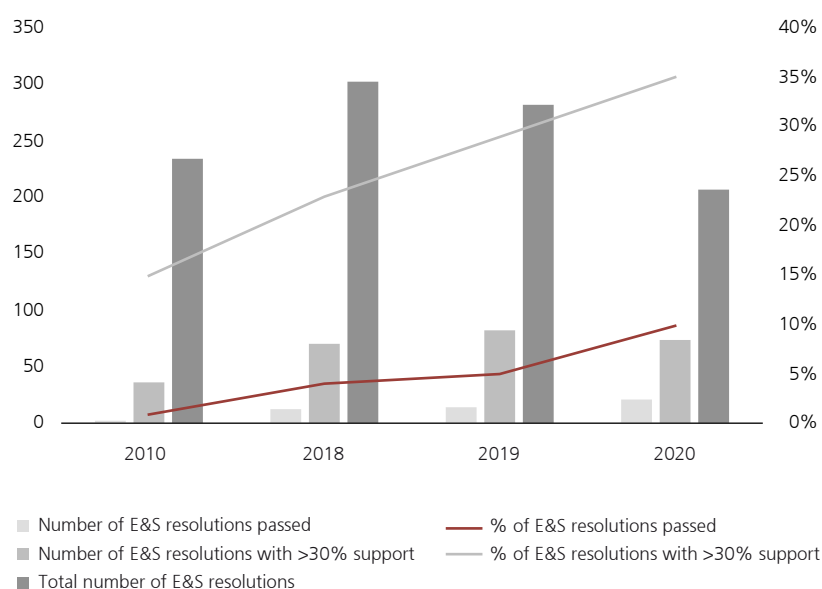
Late in 2020, the eight leading Canadian pension funds – with a total of USD 1.6 trillion in assets under management – called for the adoption of Task Force on Climate-related Financial Disclosures (TCFD) and Sustainability Accounting Standards Board (SASB) disclosure standards. These Canadian funds, like many state plans, have a legal mandate for fiduciary responsibility. Their argument is that if they don't have the right data to help better manage portfolios, they're not honoring that responsibility. Meanwhile, the California State Teachers' Retirement System (CalSTRS), which controls assets worth USD 254 billion, has said it will accelerate its green investment strategy, pointing to a lag

in US regulations and climate disclosure requirements under the previous US administration.

Actions such as these are underpinning an accelerated engagement response from investment managers. This isn't pressure from an activist minority: it's long-term shareholders acting in collaboration to tackle current sustainability challenges. And one way of doing this is presenting corporations with a very clear playbook of expectations upon which the allocation of capital will depend.

We see this through the work of Climate Action 100+ (CA100+), a coalition of 545 investors representing USD 52 trillion of assets under

Figure 2. Environmental and social (E&S) shareholder resolutions winning majority and 30% support globally⁸



management. It combines effective, collaborative engagement with a push for better disclosure. The recent launch of its net zero benchmark aims to provide greater levels of comparability amongst focus companies, as do its efforts to provide future standards for net zero ambitions for the oil and gas, and mining sectors.

At the corporate level, this translates into nearly half (43%) of CA100+ focus companies having an ambition for net zero by 2050, more than half (51%) defining a short-term (i.e., by 2025) emissions reduction target, and just under half (38%) having a medium-term target (2026 to 2035), showing that companies

are taking action.⁷ However, most of these targets do not explicitly cover the companies' most material Scope 3 emissions and 194 of the new oil and gas projects sanctioned in 2020 are considered misaligned with a below -2°C climate scenario.

In 2021, we expect CA100+ signatories to support further escalation strategies for companies not showing enough progress including, shareholder resolutions, public letters, annual general meeting statements and votes against management.

Beyond engagement, we see a growing willingness by investors to exercise their shareholder rights and use proxy

voting to drive their message home. In 2020, 35% of shareholder proposals related to environmental and social issues (E&S) received more than the critical level of 30% of supporting votes, up from 29% in 2019 and 23% in 2018. We expect even greater support in 2021, which companies will need to take into consideration.

In 2020, UBS Asset Management voted on 667 environmental-, social- and governance- (ESG)-related shareholder resolutions, supporting 72% of proposals focused on E&S issues.

Where next?

Following the announcement of net zero targets by Japan, Korea and China, we've seen a distinct shift in conversations, both with Asian asset owners and companies that are interested in the implications of greater disclosures and targets. The outcome of the US election looks also to be a catalyst.

The biggest risk we see is that regulators are sometimes too slow to engage and their reluctance to act slows the extra disclosures that the market demands. Alternatively, they risk being overly precise and setting strict codes and standards in legislation before those become useful.

In the meantime, we expect some leading investors to lean in: they will be critical in determining whether data is sufficiently robust to inform their investment decisions. That will set the pace of progress, not just in sustainability reporting, but in achieving real-world sustainability outcomes.

⁷ 2020 Climate Action 100+ Progress Report

⁸ Source: ISS Voting Analytics



Impact investing

The next wave of growth

Andrew Lee, Head Sustainable and Impact Investing, UBS Global Wealth Management

Investors are increasingly factoring in environmental, social and governance (ESG) considerations because they can be financially material and useful in analysis and decision-making. We expect the next wave of growth will be driven by investors actively seeking to identify and address sustainability challenges in areas ranging from climate to inequality to healthcare. In a recent survey, 62% of family offices indicated that impact investments will be a key focus.

As ESG integration mainstreams...

We expect investors to increasingly shift their attention (and portfolios) toward the real-world impact of their investments in 2021 and beyond. Growing interest in understanding the actual positive or negative sustainability outcomes – not just relative performance – resulting from different investment approaches will drive this evolution.

Overall sustainable investing assets under management have grown significantly in recent years, with a legacy focus on exclusionary or negative-screened solutions and ESG-integrated solutions the driver of recent growth. The former can

help investors achieve values or policy alignment, and the latter ensure that material sustainability factors are considered in investment analyses. Neither approach, however, directly leads to measurable positive impact on sustainability issues, apart from signaling effects. Intentional impact investing, which does target measurable impact, and sustainability-focused investments together represent a smaller, but rapidly growing portion of the sustainable investing universe.

...investor focus is evolving toward impact

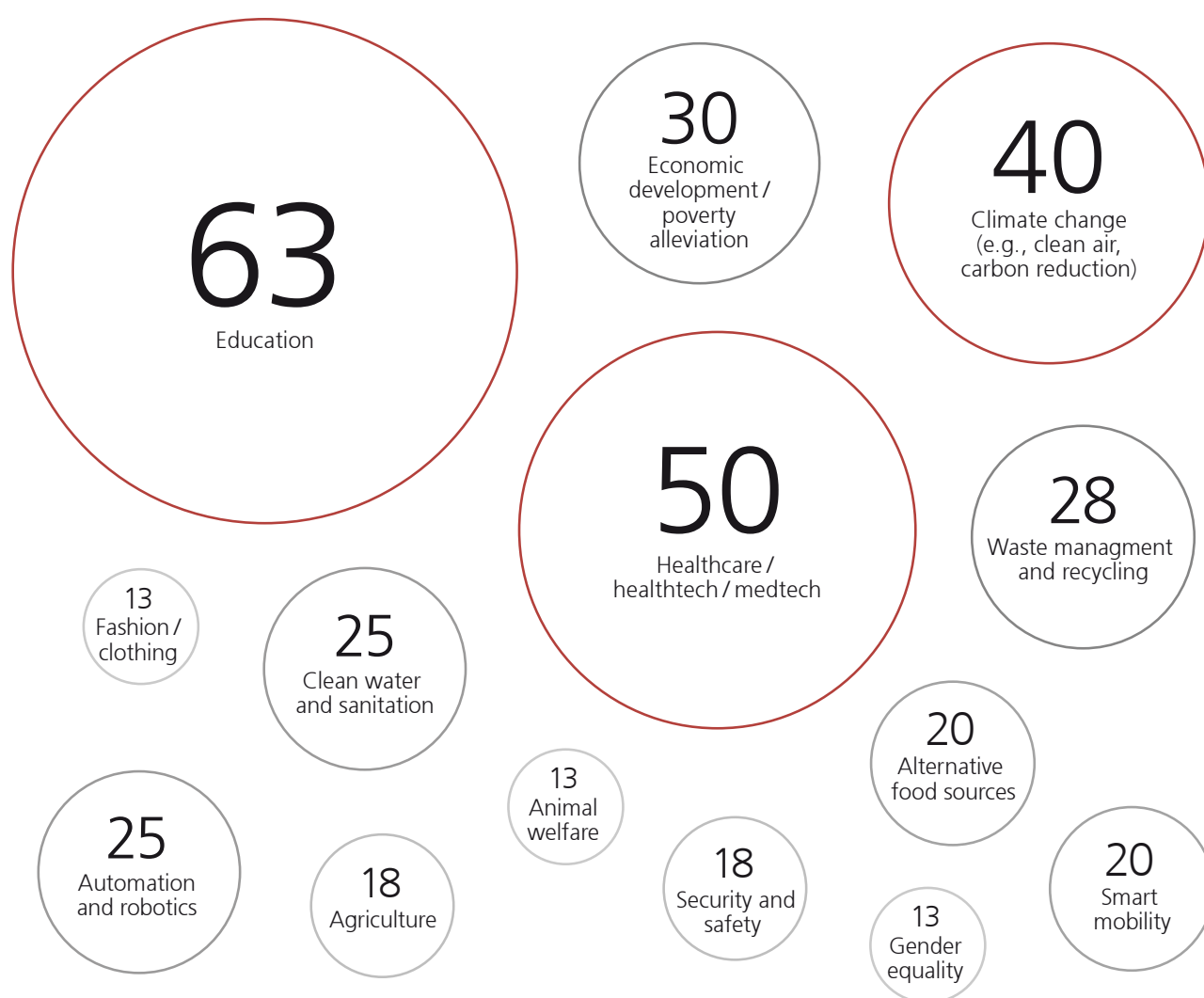
The world is changing rapidly, and so are investors' priorities. ESG integration will continue to enter the

mainstream as a result of investors recognizing that sustainability factors matter for fundamental analysis regardless of strategy or motivation, as we touch on in the discussion in our Perspective on Sustainable data.⁹ As ESG factors become core inputs into conventional investment processes, the focus for sustainable investment is shifting toward more focused and impactful solutions.

This evolution will be driven by investors. Regulatory initiatives in the EU and elsewhere are certainly significant influences, but the key motivations are investor recognition of the structural and investment implications of not taking action, the potential

⁹ UBS Global Family Office Report 2020

Figure 3. Global family offices prioritize multiple impact themes¹⁰
Impact investing priorities, in %



¹⁰ Source: UBS Evidence Lab 2020

growth inherent in sustainable and impact opportunities, and increasing desire for transparency and accountability. Investors with diversified portfolios want to know how each of their investments aligns with their preferences, whether they capture long-term opportunities or exacerbate existing issues, and how they address the sustainability challenges facing society as framed by the United Nations' Sustainable Development Goals (the SDGs). Understanding how investments perform on these dimensions is just the starting point; consistent, comparable data assessing of investments' actual real-world impact will eventually enable investors to optimize portfolios for impact as a third dimension, in addition to risk and return.

Targeting positive change a clear driver for sustainable investing in 2021 and beyond

Private clients in particular clearly signal this interest in discussions and surveys we conduct, with, for example, 62% of family offices indicating that impact investments are a key part of their legacy. We also see this reflected in the recent rapid growth (from a low base) of assets invested in various sustainability-focused and impact-investing solutions, as well as

in the growing number of asset managers and asset owners who have signed up to the Operating Principles for Impact Management launched by the International Finance Corporation (IFC) in April 2019 (110 at the time of publication).

Also in line with this trend is the growing development of outcomes-focused investment strategies and instruments across asset classes. Many investment opportunities focused on intentional, measurable impact are best accessed via private market investments, such as growth equity or real assets, due to their long-term orientation and greater influence to target and drive measurable impact. The universe of these solutions continues to expand to meet investor demand and is increasingly complemented by opportunities for impact through publicly traded securities, given the ability to drive corporate-behavior change at scale.

Mechanisms for positive change in public markets include investments that open up new capital sources and drive change in different ways, ranging from active fund manager engagement that can influence company strategy and operations to bonds that fund development banks' work on job creation and economic development

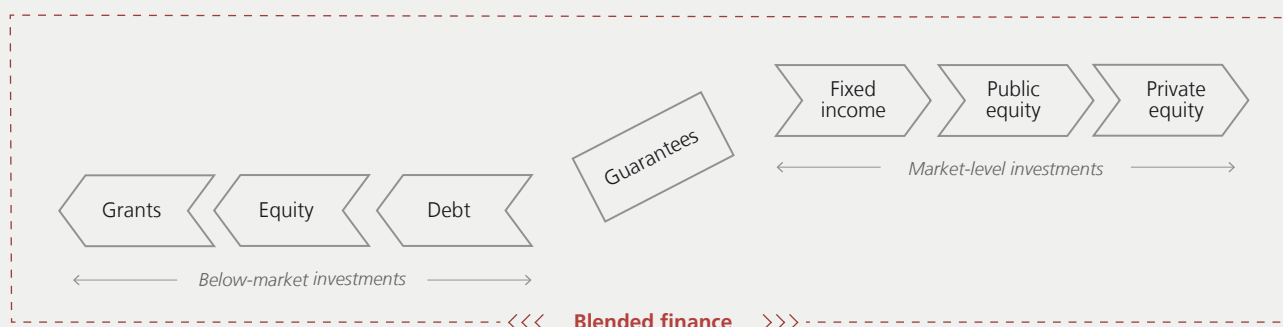
globally, and, more recently, the emergence of sustainability-linked bonds imposing penalties if issuers don't achieve specified ESG goals. The challenge with these liquid investments is consistent quantification and demonstration that they contribute to actual impact over the longer term. As investor and industry focus shifts toward outcomes, the universe of solutions targeting sustainability objectives or quantifiable impact will continue to expand along with impact data and measurement tools, enabling investors to increase the percentage of their diversified investment portfolios that can deliver actual change.

This clear focus on sustainability objectives and tangible impact is what will, in our view, define and differentiate sustainable investing in the coming years. Investor interest, regulatory initiatives and the development of products and measurement tools, as well as broader industry efforts, all point to these areas being in focus going forward. We expect to see increased targeted investment in the areas of climate, resource scarcity, diversity, food and agriculture, and healthcare, among others, as society rebuilds post-pandemic and investors seek return opportunities through solutions to these large-scale challenges.

Blended finance: getting everyone behind the cause

The unprecedented scale of the challenge of meeting the United Nation's Sustainable Development Goals (the SDGs) calls for broad engagement of capital and collaboration with the investor community. Blended-finance structures, which combine public or philanthropic funds with private sector funds, are one way to increase the pool of available funding and allow private investors with various return expectations to tap into social finance opportunities.

exclusive. In 2015, 12% of the capital provided by foundations and NGOs to blended-finance transactions was non-concessional capital, but by 2018 this share had risen to 38% (from USD 224 million to USD 711 million).¹² These transactions underscore the growing opportunities for aligning private incentives with the improving of life opportunities for the most vulnerable. Moreover, philanthropic capital can also foster social impact by collaborating with



Although private markets and commercial capital are increasingly finding ways to mobilize resources toward the SDGs (up to USD 2.5 trillion in annual financing is needed to achieve the SDGs, according to the United Nations), it's often more challenging for them to address the needs of the world's most vulnerable communities. This isn't surprising, despite the estimated global household wealth of USD 399 trillion.¹¹ In practice, private capital typically focuses on performance and its allocation is constrained by risk and return. However, a performance culture, business acumen and a philanthropic mission are far from mutually

public funders to offer risk cushions that incentivize private investors to tap into SDG-aligned opportunities.

Through blended-finance structures, public and philanthropic investors can provide funds on below-market concessional terms within a capital structure to lower the overall cost of capital or to provide an additional layer of protection to private investors.¹³ Social finance ensures that the greater pool of money available stays impact-aligned and is deployed in programs that focus on the delivery of social results.

¹¹ Credit Suisse (2020), The Great Wealth Report 2020

¹² Convergence (2019), The State of Blended Finance 2019

¹³ Convergence Finance (2020), Blended Finance Primer



Electric transport

Adoption sooner than expected

Céline Fornaro, Head of European Industrials Research, UBS Global Research

Patrick Hummel, Head of European and US Auto & Mobility Research, UBS Global Research

We believe the transportation sector can be almost fully decarbonized by 2040. Our forecast is that electric vehicles will account for 40% of global new car sales by 2030. While many industry players think that is too high, we think it could be too low. Rapidly decreasing technology costs, a benign global regulatory environment, government funds and the rising cost of carbon emissions will lead to a fully electric future, not only for cars and trucks.

Can the transport industry be decarbonized?

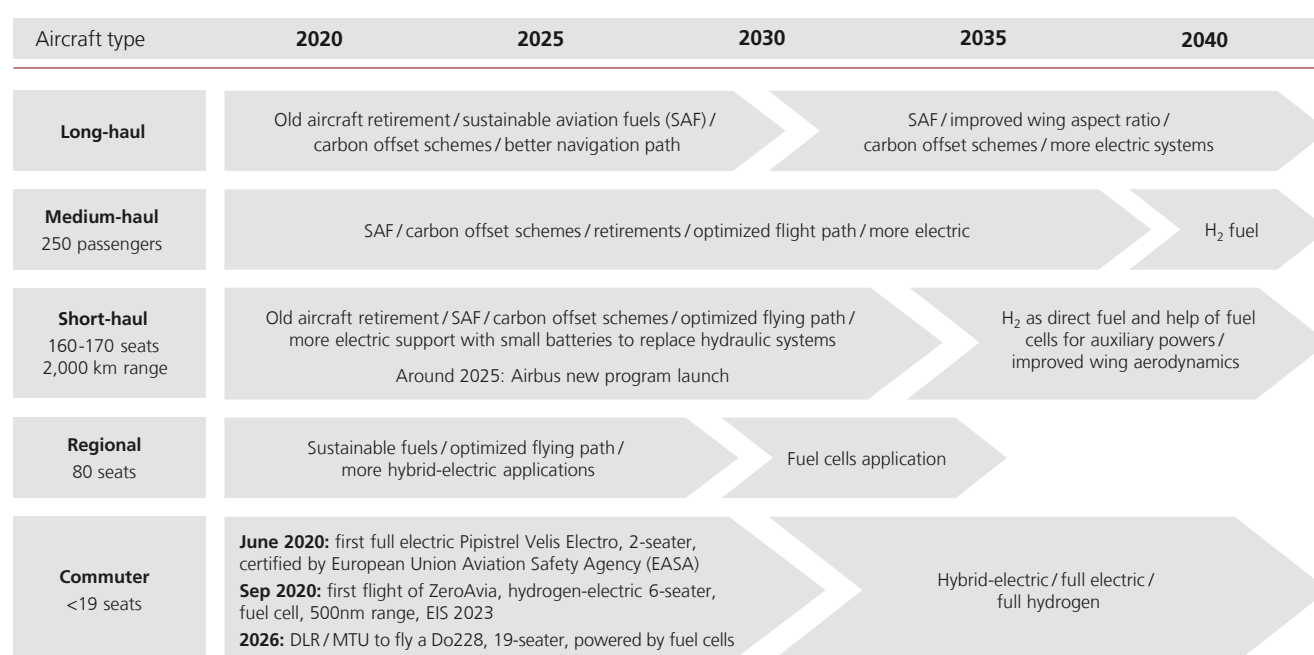
We believe the transportation sector can be almost entirely decarbonized by 2040. Why? New technologies have breakthroughs enabling them to start providing value at a reasonable cost, and saving energy has a feel-good factor attached to it. If there is a favorable overarching regulatory framework, it unravels quickly, which is exactly what is happening in the transportation sector. Electric powertrains, long considered too expensive, too short-range, too heavy, and too limited in lifespan, are reaching cost parity with combustion-engine technology – first in cars, and later in trucks (road transport accounts for some 12% of global emissions), trains (0.4%) and ships (1.7%). Innovation

in aviation (which accounts for some 2%–3% of carbon emissions) has always been aimed at lowering fuel costs (and thus carbon emissions) through weight reduction and engine performance. Hybrid/electric or hydrogen-powered airplanes have an appealing future: in our view, small hybrid-electric planes will be in service by 2023–25 and 70–80 seaters by around 2028. For the medium-haul market, a hydrogen-powered plane could be developed by 2035, achieving a zero carbon emission plane.

And at what pace?

Too often corporations think disruption follows a linear path. Many industry players and parts of the financial community like to think the

transition to an electric future will happen in a gradual, evolutionary way, allowing corporations to plan and adjust their resources. Many automotive companies, for example, think that our forecast that electric vehicles will have a 40% share of global new car sales by 2030 is too high. If anything, we think it could be too low. And the financial community is starting to realize what is happening. Pure-play electric car companies are valued much higher than any of the legacy car companies, despite producing only a small fraction of their volumes. Space travel with reusable rockets is another great example of how quickly disruption can happen and establish a new leader in end markets with high barriers to entry.

Figure 4. The UBS view on the aviation roadmap to green aviation¹⁴

Factors that could accelerate the trend

Three key drivers will accelerate transport's move toward a zero-emission future:

- Battery technology: battery costs have dropped by more than 50% over the past five years, and full manufacturing cost parity with combustion-engine cars should be reached by 2025, at the latest. The cost of ownership for trucks, at least for short-haul trucks, should be lower than that of diesel trucks by then. Battery life is being extended to up to one million kilometers, charge times should be reduced to 15 minutes and infrastructure is growing quickly.

More mature and powerful battery technology also has applications in the market for small airplanes (<20 seats), with more than 250 initiatives being explored currently. This could reinvigorate flights of <30–45 minutes making inter-city or intra-regional hops.

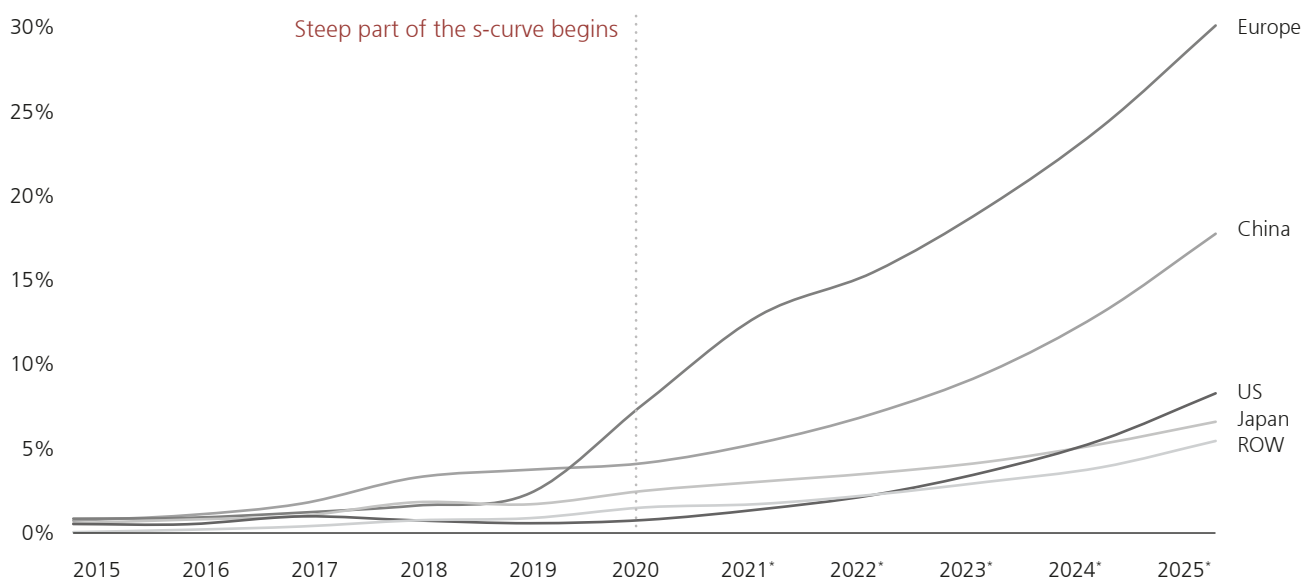
- Fuel-cell technology: with a stronger-than-ever push for a hydrogen economy (e.g., the EU 2050 Green Deal) to decarbonize industries such as chemicals and steel, hydrogen infrastructure will also become available for the transportation sector. Hydrogen-powered fuel-cell trucks could become the most cost-efficient solution for long-haul transportation. The technology could also

replace diesel-powered locomotives and could even be used in ships (e.g., ferries).

- Regulatory framework: the EU and its Member States are, through the Green Deal, leading with regulations that reward low-carbon technologies and increasingly penalize the ownership and use of combustion-engine vehicles. The UK even plans to ban the sale of combustion-engine vehicles in 2030, and aims for aviation net zero emissions by 2050. China has laid out a roadmap to carbon neutrality by 2060. California has pioneered the adoption of the electric car and penalizes heavily the use of non-green carbon fuels. The certification of Europe's first two-seater electric plane came in 2020.

¹⁴ Source: UBS Global Research 2020

Figure 5. Electric vehicle sales penetration by region (% of total passenger car sales)¹⁵



* 2021-2025 estimated

What to watch

We will track the sale of electric cars and trucks closely, and monitor battery and fuel-cell cost curves with every new product. We will follow the investments in EV-charging, sustainable fuels and hydrogen infrastructure, which are crucial for the technology shift to happen. We regularly assess traveler appetite for disruptive transport means, as well as more carbon-friendly ones, such as high-speed trains. We also monitor

patent filings in electric and hydrogen technologies across the aviation spectrum. The years 2021 and 2022 should see more hybrid/electric platforms being certified, as well as the first passengers flights (planes with <19 seats).

Lifting the potential road blocks

So, what are the reasons left for the transportation sector not achieving decarbonization by 2040? The sceptics frequently refer to: (1) the

limitations of battery technology, which has proven to be progressing much faster than anticipated; and (2) the difficulties relating to producing environmentally-friendly hydrogen and building the infrastructure around it. We would point out that Europe and China have been able to develop extensive high-speed train networks, and we should not underestimate the ability to develop infrastructure for hydrogen, given the strong government support.

¹⁵ Source: UBS Global Research 2020



Net zero

From aspiration to firm targets

Sam Arie, Head of European Utilities Research, UBS Global Research

As more and more nations and companies set net zero emission goals for the middle of the century, we think it will be critical to slow down and eventually stop new investment in the fossil economy, to target carbon reduction sooner than 2050 wherever possible, and to channel more investment toward essential adaption measures. We expect significant acceleration in the pace of capital reallocation, encouraging a rapid rotation of investments out of the fossil sector and into clean energy projects.

As more and more nations set zero emission goals for the middle of the century, we ask if it may already be too late to hit those targets, and what, therefore, we should do differently today.

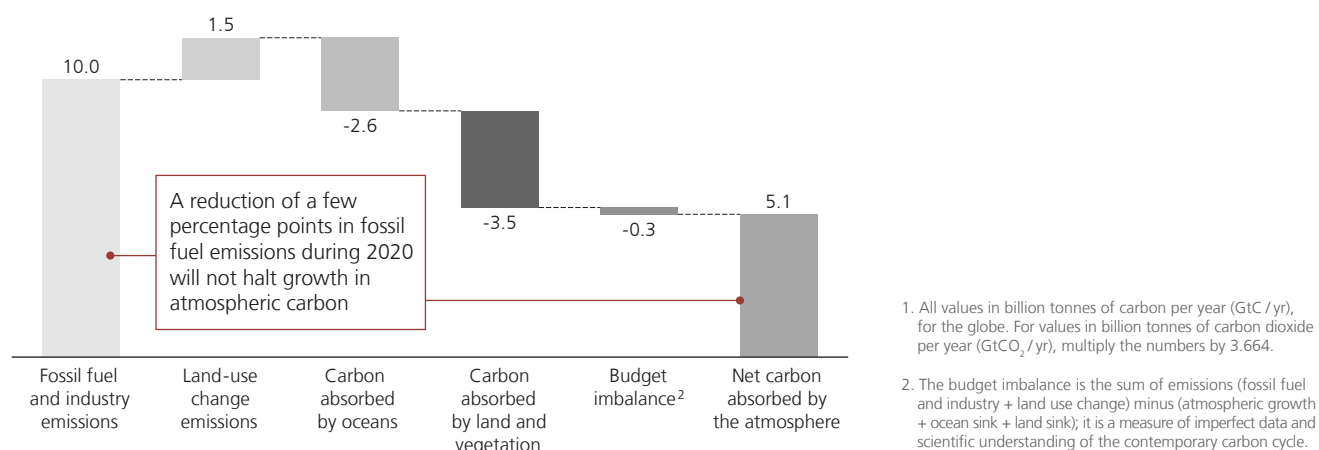
In short: we are not on track for Net Zero 2050, and we have left it so late that avoiding 1.5°C of warming is now a global, social objective that teeters dangerously on the brink of what is possible. However, the imperative for action remains urgent and three priorities, in our view, stand out:

1. turn off the tap – by slowing and eventually stopping new investment in the fossil economy;
2. maximize the plan – by targeting net zero as fast as possible, rather than by 2050;
3. adapt to reality – by channeling more investment toward essential adaption measures.

With concerted action on these objectives, we may yet succeed in delivering global energy transition this century, and we may somehow mitigate the worst effects on

society of continued climate change. For example, we expect rising pressure on fossil finance to bring a strong new leg to the climate theme. We believe global banks may start reacting to this soon. Some may announce a significant reduction in fossil fuel finance while others, perhaps, may exit completely. As a result, we see more capital flowing to the clean energy sector, reducing weighted average capital costs (WACC) and increasing investment there – the two ingredients needed for further expansion.

Figure 6. Annual carbon emissions and potential sinks (in gigatons of carbon)¹⁶



How to deal with the problem

In the past 50 years, the world has changed dramatically. The global population has roughly doubled, and so have real incomes – in combination, a historic achievement. But that success has come at a cost, with annual energy demand roughly tripling, carbon emissions rising by a similar amount and average temperatures having already increased by around 1°C. In recent years, fossil fuels have continued to provide some 85% of our global energy needs and new investment in the fossil economy has averaged around USD 1 trillion a year. At this rate, as illustrated on the next page, we will fall far short of net

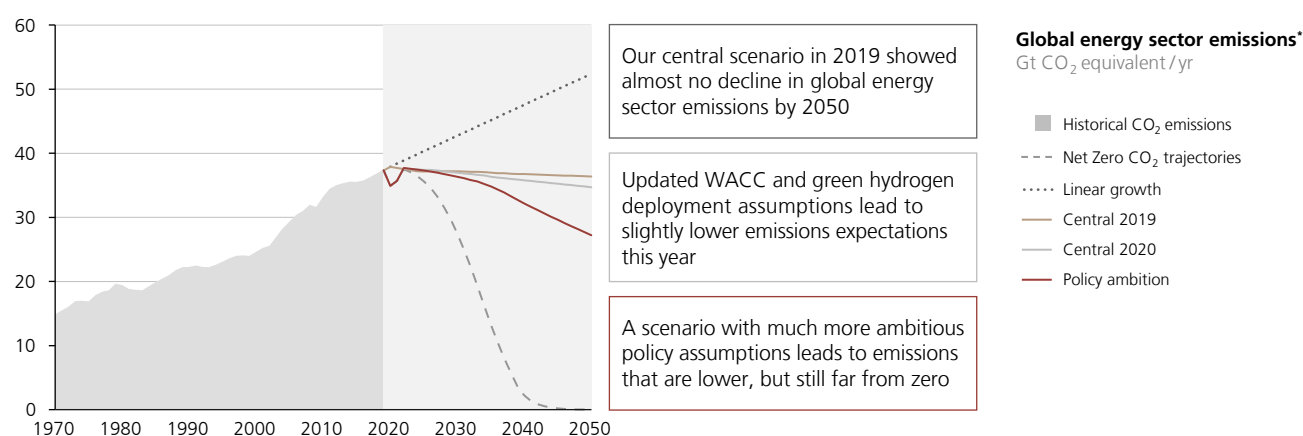
zero emissions by 2050. So, the first priority is to accelerate the process of global capital reallocation, encouraging rapid rotation of investments out of the fossil sector and into clean energy projects. We have already seen record-breaking progress in this area, with the cost of wind and solar now cheaper than conventional power in many parts of the world. But we must go further and faster, and we will still need technology breakthroughs in transport, industry and buildings, as well as in clean power generation itself.

Second, we must watch for the seductive power of the 2050 targets. Since many companies, industries and

nations will likely struggle to achieve net zero in this timeframe, those that can achieve net zero faster must do so. The framing question should be “How fast can we get there?”, rather than “Can we get there by 2050?”. In other words, companies, industries and nations that target a comfortable glide path to Net Zero 2050 should challenge themselves to go faster, knowing that much of the world economy is likely to fall far behind them.

Finally, we must look at how we can adapt to life on a fundamentally less hospitable planet, if we do ultimately fail to keep temperature increases below 1.5°C. Little is really known

¹⁶ Source: Friedlingstein et al. 2019, Global Carbon Budget 2019, Earth System Science Data, Vol 11 (4), Dec 2019; see also The State of the Global Energy Transition (2020), commissioned for UBS from Aurora Energy Research

Figure 7. Forecast global CO₂ emissions by scenario¹⁷

* Includes emissions from both combustion and non-combustion use of fossil fuels. Also accounts for emission savings from carbon capture and storage (CCS) in the energy sector, although not from broader carbon capture activities such as afforestation.

today about what these adaptation measures should be, but they could include everything from small-scale local solutions (air conditioning, building refurbishment) to national infrastructure imperatives (network resilience, supply chain management, disaster risk management). Today, we spend only around 5% of global climate finance in these areas – and the mismatch vs. the coming risks is increasingly clear.

Is there an alternative technological solution that can bail us out?

Some may hope that technology will save us, and, indeed, there are

interesting possibilities. In time, we may learn to capture clean energy from nuclear fusion, for example, or we may develop geo-engineering solutions, such as refreezing the poles, or sending mirrors into space to reflect solar radiation away from the planet. But these technologies are not in our hands today, and few would expect them to arrive – and be rolled out globally – within the coming, critical decade.

Time to take decisive actions

We live in important times. Decisions and actions we take in the next ten years – or do not take – could have

consequences for centuries. On the positive side, a new political consensus is emerging with new and aspirational carbon targets being set across the globe, and renewable power is maturing into a serious industrial force. However, on the negative side, time is scarce; we do not yet have scalable technologies to decarbonize our largest industrial sectors; and, so far, we lack plans, processes and regulatory constructs to turn aspirational targets into reality. All this presents an unprecedented challenge in terms of planning and coordination, which we must collaborate across borders to address.

¹⁷ Sources: Carbon Dioxide Information Analysis Centre (CDIAC), Intergovernmental Panel on Climate Change (IPCC), United Nations Framework Convention on Climate Change (UNFCCC); chart reflects modelling by Aurora Energy Research commissioned for UBS Global Research, 2020

Equity long/short strategies

As alluded to earlier in this paper, over the next few decades historic levels of capital expenditures (CapEx) will be required to transform the energy supply mix from fossil fuels to renewable power to support the goals set in the Paris Agreement. This monumental challenge will require many trillions of dollars of investment and call on many traditional and new supply chains that will also need substantial investments to keep up with renewable energy growth.

Global capital markets will play an instrumental role in determining the direction and pace of the energy transition. We believe this process already has begun, with many solution providers and facilitators commanding higher valuations and lower costs of capital. In contrast, structurally disadvantaged industries are facing a shrinking investor base and more limited access to capital markets. Capital flows, often influenced by policy directives, will serve as a self-reinforcing mechanism that will drive the pace of the transition. The market will reward the providers of new technologies that advance decarbonization and those who execute on well-positioned business models.

At the same time, disrupted industries are attempting to evolve in order to better align with the new energy economy. While many companies have made commendable commitments to invest in lower-carbon technologies, the path to decarbonization for some will be challenging and capital intensive. We believe investors will continue to penalize those companies with limited ability to adapt their

business models or monetize potential stranded assets, such as long-lived fossil fuel reserves.

We are in the early stages of the energy transition. Even under an accelerated decarbonization scenario, this shift will play out over a multi-decade time period. Policy, technology and capital costs will converge to reveal both winners and losers over the course of the transition. We believe these dynamics will drive a rich opportunity set for long/short investors capable of evaluating business models, as technologies evolve and winners and losers emerge.

We believe that environmentally focused long/short equity strategies can take advantage of this rich opportunity set by investing across sectors, including those that are impacted by or contribute to this generational transition. A sector focus could include energy, utilities, renewables, industrials, materials and capital goods. Some of these are formerly sleepy sectors that now have dynamic growth profiles, while others have been historically cyclical but now have multi-decade secular tailwinds. Our teams focus on important themes, such as mobility, electrification and decarbonization and take a pick-and-shovel approach to uncovering companies that they think will thrive and those who may be challenged in adapting. Using diversification and a targeted volatility to manage risk, portfolios can benefit from both the longer-term themes as well as the shorter- to medium-term disruptions that are inevitably brought on by capital flows, changing consumer preferences and a dynamic regulatory framework.



Big Oil

The opportunity for reinvention

Jon Rigby, Head of US and European Oil Integrated Research, UBS Global Research
Amy Wong, Head of Global Oil Services Research, UBS Global Research

Rather than viewing the energy transition as an existential risk to the oil majors, and seeing the majors as the problem, we should perhaps regard it as a potential opportunity for them to remake themselves and become part of the solution. The energy transition could require USD 1.1 trillion in investment per year – inconceivable without the skill sets of the existing players – initially as hybrids and then increasingly as a fully-fledged integrated energy industry.

The question is no longer “whether” but “when”

It is worth noting that many of today’s major oil firms have been around for much of the industry’s history: ExxonMobil and Chevron originated as Standard Oil, founded in 1870, and Royal Dutch Shell was founded in 1907 by two firms that had been competing with Standard since 1890. Can an industry so inextricably tied to a single product evolve into an important player in the process of replacing that product? It is rare to see an industry participate in its own disruption, but that is the question we are asking. Or should a company stick to what it is good at until it is no longer needed and leave the future up to specialists in the new field? The

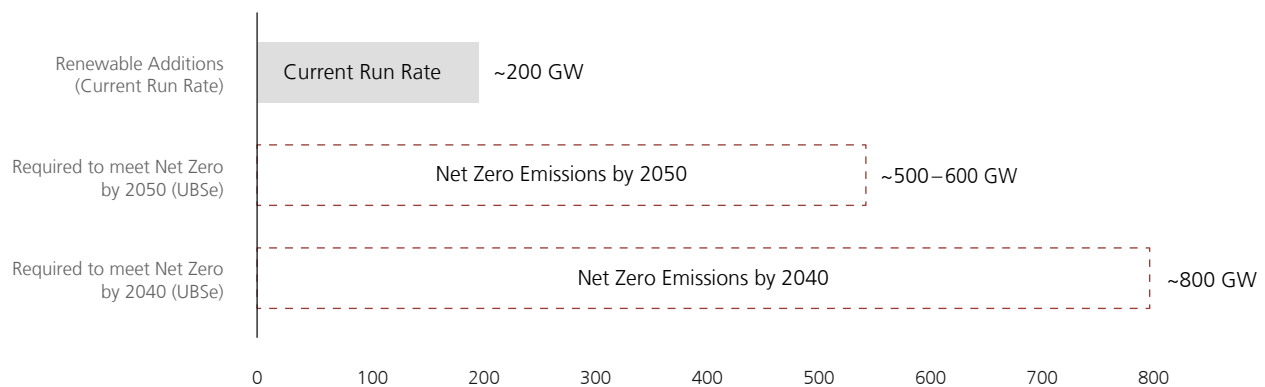
oil majors and their supply chains are saying that investors are better off allowing them to progressively redeploy the capital generated from oil & gas activities into renewable and new energy solutions.

Experience will matter for the change that is coming

At first glance, it is not so obvious where the oil majors have a particular competitive advantage in delivering the energy transition. But that would write off all too quickly an industry that has adapted to changes since Edwin Drake’s well in Pennsylvania 160 years ago; it would underappreciate the level of technical and financial complexity involved in building and managing energy systems

in the manner that the oil industry currently builds those systems. The International Energy Agency estimates that under a Paris-consistent scenario the world needs to add 7,700 giga-watts of wind and solar generating capacity over the next 20 years, effectively increasing it to seven or eight times today’s figure. That requires some USD 1.1 trillion per year of investment (some 50% more than current levels and in addition to the approximately USD 800 billion per year needed to sustain adequate oil and gas supplies even in a Paris-compliant scenario) – an enormous task requiring deep financial resources and stewardship featuring operational skills, exactly what Big Oil firms possess.

Figure 8. Renewable energy generation¹⁸



How will the upstream and downstream industries adapt to the new world?

Within the estimate of investment needed to reconstruct the world's energy system, a significant portion of the new renewable capacity will be wind, and an increasing portion of that will be floating (in water depths of more than 60m), as the available shallow continental shelf is used up. Although only a component part of the engineering skill-set of the oil industry, the engineering, construction, installation and management of facilities distant from the shoreline is a core competency for such operations, as is understanding the complexities of meteorological

and marine conditions, critical for efficient, safe and reliable running.

Solar power is less obviously an industry where there is a read-across from the upstream oil industry, but that is where we then need to begin to think about the practicalities of the transition. The new world will have a more distributed energy base with complex flows of power to and from customers needing to be managed and matched logistically. Customers' energy needs, whether for heat, light or transportation, and wherever or whenever required, will need to be met. The oil majors, with their downstream experience and success in managing customers (be they B2B or B2C), and

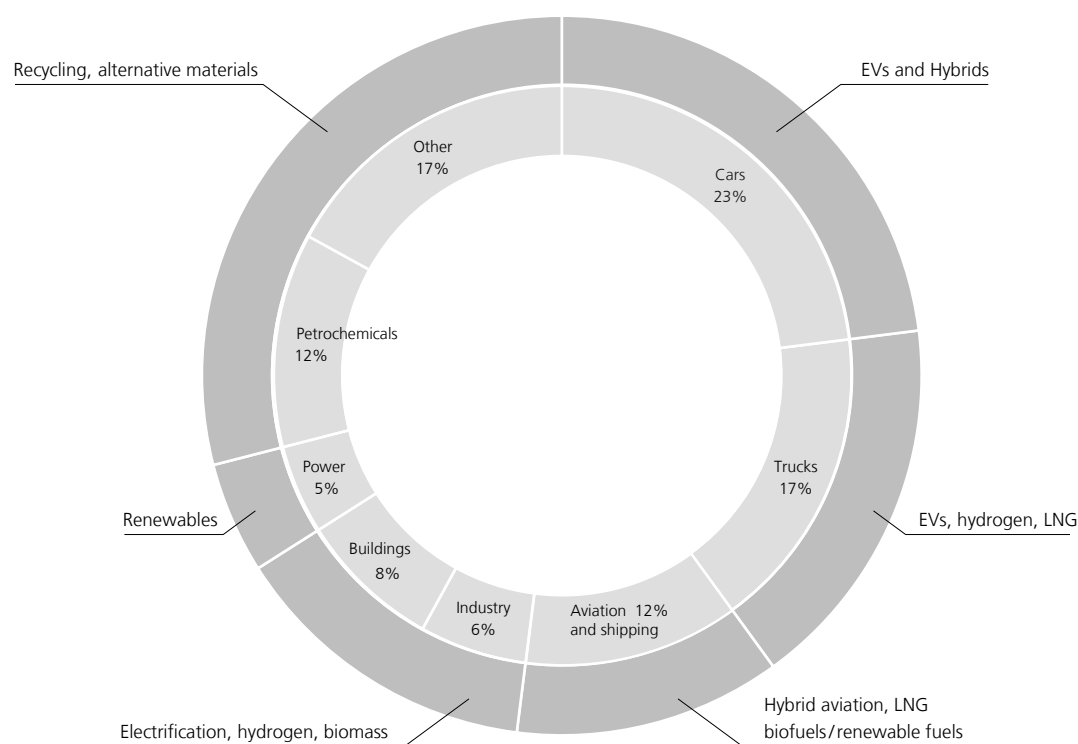
their existing know-how in oil, gas and power trading, seem to be ideally set up for this challenge. Moreover, the existing oil (transportation) and gas (power and heating) will remain in use through the transition, and graduating from the old to the new is probably best handled by these incumbents.

Is this the beginning of the end of the traditional oil & gas business model?

Oil and gas use is not going away completely. There are pockets of demand that will be difficult to abate. There could easily be up to gross 10 gigatonnes of CO₂ still being emitted in 2050, even in the IEA's Sustainable Development Scenario. To address

¹⁸ Source: UBS Global Research 2020

Figure 9. Longer-term demand trends – oil consumption by type and potential threats to use¹⁹



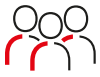
this, green hydrogen for combustion, and carbon capture, utilization and storage (CCUS) for offsetting emissions, will be critical to achieving the Paris goals. Large-scale industrial projects involving significant capital costs, the blending of engineering,

manufacturing and distribution, chemistry and, in the case of CCUS, sub-surface geological disciplines are all highly familiar to Big Oil firms.

To sum up, rather than viewing the energy transition as an existential

risk to the oil majors, and they as the problem, we should perhaps regard it as a potential opportunity for them to remake themselves as initially a hybrid and then increasingly a fully-fledged integrated energy industry, and to thus become part of the solution.

¹⁹ Source: UBS Global Research 2020



Diversity

The destructive potential of prejudice

Paul Donovan, Chief Economist, UBS Global Wealth Management

Diversity and inclusion could become critical issues in determining economic success or failure in the decade ahead. If we want to use technology to its best advantage, we need to hire the right person in the right job at the right time. 2021 could see advances in starting to close the data gap to measure diversity.

The world has begun a period of significant structural change, labelled by economists “the fourth industrial revolution”. Where we work, how we work, how we consume and what we consume are all going to change. This change will be brought about by new methods of communication, robotics, automation and artificial intelligence. As with every previous industrial revolution, the temptation is to focus on technology. There is novelty and perhaps an element of sensationalism around that. But technology is not especially important in itself: it is how we use technology that is economically and socially revolutionary.

This focus on the use of technology means that diversity and inclusion become critical issues in determining economic success or failure in

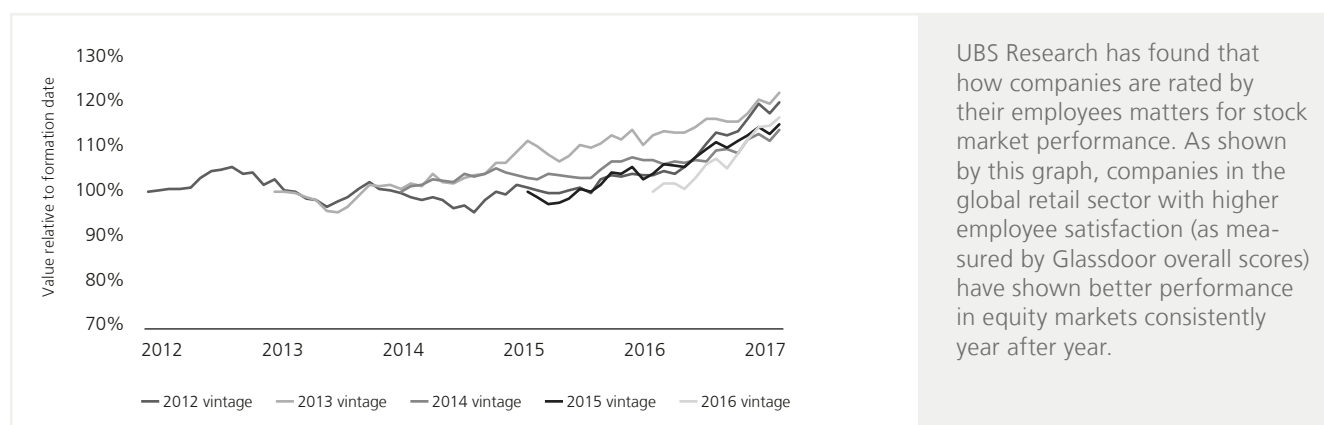
the decade ahead. If we want to use technology to its best advantage, we need to hire the right person in the right job at the right time. Prejudice – irrational discrimination – stops this from occurring. The best person will be rejected for an irrational reason. Prejudice can also demoralize existing staff and prevent them from doing their best work. Why try your best if the system is against you?

In addition, diversity in decision-making will become more important. Revolutionary change throws up new challenges; a monoculture in decision-making is unlikely to consider all of the potential opportunities that these changes will create. More seriously, a monoculture is unlikely to consider all of the potential risks that these changes

will create. This is true in any period of change, but the more radical the changes, the greater the opportunities and risks, and the more important it is to have diversity of opinion in the decision-making process.

Diversity and inclusion are the obvious ways to achieve economic success in the fourth industrial revolution. However, structural change also risks undermining diversity and inclusion by encouraging prejudice. The years ahead are likely to see increased inequality. Relative income and, perhaps more importantly, relative social status will change, and some people will experience falling income and status. These losses take place in an ever more complex world, and the cause of any loss is hard to understand. Anything that appears to offer

Figure 10. Returns to portfolios of retailing stocks with higher Glassdoor overall scores²⁰



a simple explanation will be an attractive alternative to trying to grasp the complexity of the real world.

The blend of relative loss and complexity encourages scapegoat economics: blaming losses on the supposed malicious actions of a minority in society. Scapegoat economics supports the fiction that your losses are not your fault, and that there is a simple solution that can restore your lost income and status. This leads, inexorably, to prejudice politics. There is a political appeal in falsely suggesting that excluding

a minority from the economy will return social and economic status to the way it was.

This battle between the obvious benefits of diversity and inclusion and the political appeal of prejudice will determine more than economic success. Minimizing prejudice is at the heart of the sustainability crisis too. If we want to maintain global living standards, we have to learn how to do more with less. We need to be able to produce better economic outcomes with fewer environmental resources. The fourth industrial revolution can help

achieve that. Many of the changes ahead are about increased efficiency, be it working from home reducing the wasted resources of office space, or localization reducing inventory waste and transport costs. But prejudice directly stops the benefits of the fourth industrial revolution from being realized. The battle for a more sustainable future rests on our ability to contain prejudice.

Bottom line: investor demands may improve the data available on gender diversity in 2021, but more is needed in other areas.

²⁰ Sources: UBS Quantitative Database, UBS Evidence Lab, Glassdoor, 2018. For each year, UBS Global Research ranks companies with Glassdoor overall scores by that score and measures associated equity market returns. The chart shows equity market returns of the top half of stocks in the retail industry (equally weighted) by annual cohort and relative to the returns of all the stocks in that industry.



Plant-based meats

Coming, ready or not

Andrew Stott, Head of European Chemicals Research, UBS Global Research

Our base case forecasts the global plant-based meat market reaching USD 51 billion in size by 2025, implying a threefold increase in penetration from 2019 levels. The pace at which consumers respond will have major ramifications for investment portfolios on a global basis.

The biggest revolution in food in more than 20 years is upon us...

In 1997, genetically modified food was introduced to the US agricultural market and farmers in the Americas have never looked back, with corn yields improving by 50% over the past 20 years. Now, we have the advent of not just one but two major developments in the food industry:

1. a generational shift in consumer diets, as increasingly meat alternatives build traction across a background of environmental concerns; and
2. gene-editing technology in seeds, which will not only improve farm economics through yield enhancement, but also alter food products themselves ("output traits").

...with key implications for many industries

Grain yields could jump by 10%–40% in certain crops. Consumers could eat significantly less animal protein in the coming decade and well beyond.

These trends will have dramatic impacts on our use of land and will contribute to addressing two of the major environmental challenges we have today: greenhouse gas (GHG) emissions from livestock, and the loss of arable land across the planet.

These developments will have major ramifications for chemicals, machinery, healthcare, food production and food retail companies.

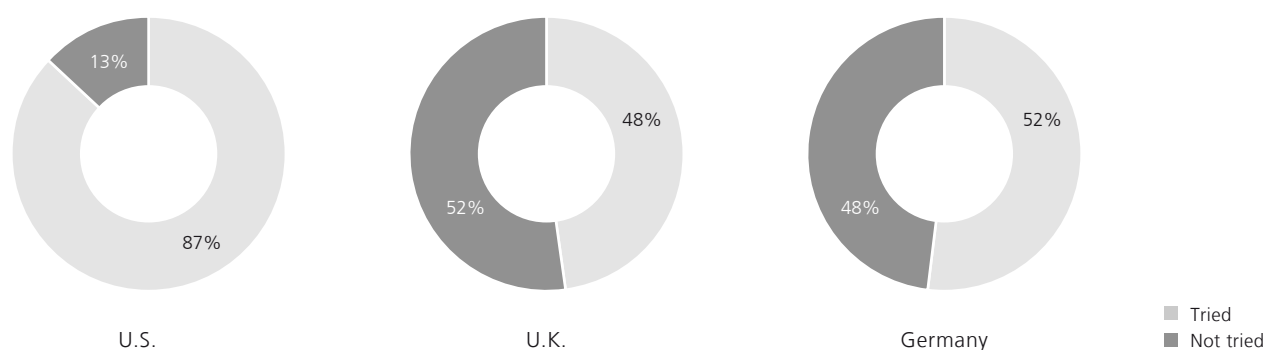
Consumers and governments will clearly dictate the pace of this from the perspective of meat consumption and the acceptance of biotechnology in food – until now a controversial aspect of policy in parts of Europe and Asia.

The consumer speaks loudly

UBS Evidence Lab surveyed 3,000 consumers and 50 restaurant franchisees, reviewed more than 20 million social media interactions, and interviewed protein scientists and supply chain experts. All-in, we forecast the global plant-based meat market to reach USD 51 billion by 2025, implying a threefold increase in penetration from 2019 levels.

There appear to be four compelling "principle-based reasons" for purchasing plant-based meats:

Figure 11. Percent of respondents who had tried vs. not tried plant-based meats²¹



1. **Environmental:** At the 2019 UBS ESG and Sustainability Symposium, panelists estimated that food production is responsible for 25% of the world's CO₂ emissions. The Johns Hopkins Center for a Livable Future estimates that red meat (beef, pork, and lamb) and dairy production account for some 48% of the greenhouse gas emissions associated with the US food supply chain. In a "cradle-to-distribution" life-cycle study of the Beyond Burger vs. a ¼ lb US beef burger, the University of Michigan found that the Beyond Burger causes 90% less greenhouse gases to be emitted than the beef burger.

2. **Resource scarcity:** In 2017, according to data from the Food and Agriculture Organization of the United Nations, 25% of the world's land was used for animal husbandry.

3. **Animal welfare:** some 72 billion animals globally are slaughtered annually for food, according to data from the Food and Agriculture Organization of the United Nations.

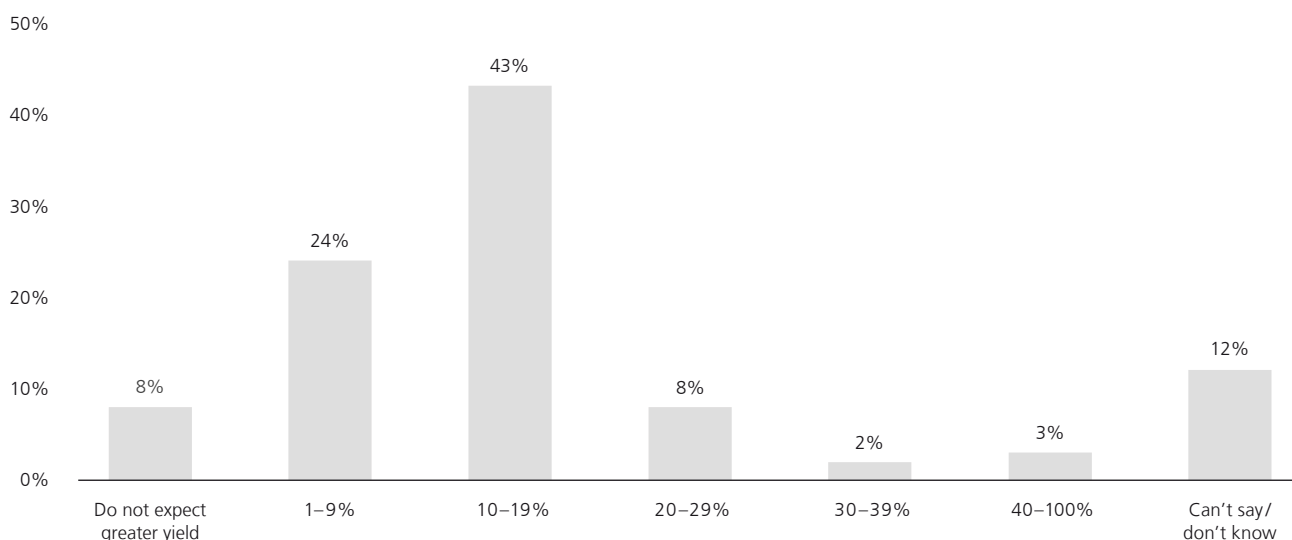
4. **Health:** According to the American Heart Association, consuming a primarily plant-based diet reduces one's risk of heart failure by 42%. We note that plant-based meat products often have lower cholesterol than their animal-based meat counterparts.

The addressable market for plant-based protein could be very significant, with our base case at USD 51 billion (only 2.5% penetration by 2025) and our upside case at USD 72 billion (3.5% penetration):

Gene editing can bring substantial improvements in land efficiency – see Figure 1 below from a survey of US farmers carried out by UBS Evidence Lab in 2019. In addition, "output traits," which can alter the nutritional value and overall appeal of food groups, could help address nutritional deficiencies and improve the affordability of food.

²¹ Source: UBS Evidence Lab; 2019 survey among 3100 consumers

Figure 12. How much yield improvement is expected from gene-edited seeds?²²



Disregarding these trends comes with a cost

The environmental impact of consumers being largely inactive with regard to plant-based protein and resistant to adoption of gene-edited food would be far-reaching. Potential impacts on food prices (limited yield improvement against a backdrop of ongoing climate challenges) and GHG emissions could be especially costly.

The good news, though, is that signposts along the way should be highly visible with a clear ability to track the revenue progress of companies involved in plant-based meat and gene-edited seed technologies. Ongoing survey work and social media tracking by UBS Evidence Lab will also act as measures of progress on both fronts.

To sum up, food technology and consumption patterns will be key determinants in measuring the global collective response to major economic and environmental challenges. The pace at which consumers respond will have major ramifications for investment portfolios on a global basis.

²² Sources: UBS Evidence Lab: US Farmer Survey 2019

Cold storage: investor interest heating up

Over the last 20 years, the dry industrial warehouse sector has evolved from a niche investment focus, initially ignored by large institutional investors, to one of the fastest growing and strongest performing real estate sectors. The growth in e-commerce (e.g., Amazon), and the more recent investor interest in last-mile logistics has further accelerated institutional investment in dry-warehouses.

While the “Amazon effect” has created an avalanche of capital into dry-warehouses, institutional capital is just starting to evaluate higher-return opportunities in the more complicated, capital-intensive and under-invested cold-storage sector. The demand for new cold-storage space is evolving due to:

- fundamental changes occurring in the global food sector, including population growth and shifts in consumer behavior and habits;
- evolving direct-to-consumer food delivery methods (i.e., the food e-commerce sector);
- increasing demands to reduce waste, enhance food sustainability and improve energy efficiency;
- an undersupplied market that may require another 10,000,000 m² of new cold storage supply (necessitating approximately USD 20 billion of capital).

The demand drivers for cold storage are increasing due to the growth of organic, plant-based and perishable foods, which generally have short shelf lives. In addition, obsolete (an average of 42 years old) and inefficient existing facilities and the fast-moving transformation of food e-commerce are significantly impacting demand for cold storage. COVID-19 has accelerated many of these trends. It is estimated that new cold storage development would not only help reduce food spoilage (consequently reducing water waste and negative CO₂ impact) but also have an indirect environmental benefit through more efficient energy use and reduced ozone impact.

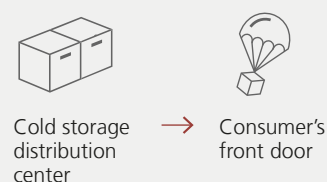
The current cold-storage model is going to have to adapt to a changing operating environment by transforming its real-estate footprint to account for improved efficiency ranging from improved technology and better inventory controls to changing consumer tastes and sustainable requirements demanded by millennials and generation Z.

Understanding the fundamentals of real-estate investing and the unique economic factors affecting the food vertical (“from farm to table”) are critical when evaluating where and how to participate in this broad investment theme. Finally, investors may be attracted to developing new cold-storage space because it can address a number of the 17 UN Sustainable Development Goals.

The current operating-intensive model



The future more efficient model



Background facts:

- 30%–40% of overall food supply in the US is wasted.
- Each year the US imports USD 16.5 billion of fruit and vegetables from Latin America and USD 19.5 billion of seafood from Asia.
- Old storage facilities are typically neither energy efficient nor environmentally friendly.

Potential UN Sustainable Impact:

- Improvements in cold storage throughout the distribution chain can significantly reduce food waste.
- Improvements in cold storage make it more economically viable for emerging countries to export to more developed countries.
- New cold storage infrastructure can achieve an Ozone Depletion Potential (ODP) of zero and a Global Warming Potential (GWP) of zero with the use of new refrigerants.

Sustainable Development Goals in our focus:





Climate stress testing

The transformation of capital allocation

Huw van Steenis, Chair, Sustainable Finance Committee, UBS Group

2021 will likely be the year when investors and financiers mainstream climate-transition analysis in their loan books and portfolios. Eighteen central banks will run climate transition stress tests in 2021. Over time, the tests could be highly catalytic in repricing the cost of capital between high- and low-carbon companies. Investors will want to get ahead of this trend.

Climate-transition analysis and stress testing of loan books and investor portfolios is about to go mainstream. Two years ago the Bank of England announced it would be the first central bank to run exploratory climate transition stress tests based on recommendations by the Taskforce for Climate-Related Financial Disclosures (the TCFD) across the entire financial system, catalyzed by the Future of Finance report. In 2021, 18 central banks – including those of Japan, Australia and Singapore, as well as the ECB – will be stress testing their financial systems for climate transition.

To create a solid foundation for this process, the Central Banks and Supervisors Network for Greening the Financial System (the NGFS) worked

with climate scientists and investors to devise three probable climate-policy scenarios, which were published in June 2020. The idea is to determine whether firms are “transition ready” for a lower-carbon economy.

The insights these tools and tests produce are likely to be used by boards and investors to change practices in asset allocation and risk management. Tests designed by Australian policymakers will, in fact, explicitly also cover pension funds, not just banks and insurers.

Oil price collapse in early 2020 resetting the paradigm

Even before the pandemic, climate transition was rising up the pecking order, but the pandemic has pushed

it far higher. 2020 saw the biggest shock to the oil and gas market in 70 years. By the end of December 2020, traditional oil and gas shares in the S&P 500 were down 38% year on year. In the same period global clean-energy stocks rose by 140%, which was more than the growth in the tech sector.

The sharp fall in energy prices raised the specter of worthless “stranded assets” and project cancellations. For some, these had been theoretical constructs decades away. However, as lenders and bond investors saw the potentially catastrophic loss in value, financiers are now beginning to reappraise their portfolios. The pandemic is also bringing home the potential of exogenous ecological shocks to have major impacts on asset prices. This means all investors are having to reset their paradigms for investing and lending to energy firms – and, as they reset, including in their paradigms new expectations about energy transition.

Measuring and assessing long-term trends and the interactions between climate science, public policy, economics, and financial markets is a complex undertaking. In a world of interconnected global supply chains

and intersecting legal, regulatory, and operating environments, it is not easy for market participants to make sense of the potential impact of climate change and the strategic responses to it.

Information basis for stress tests still not good enough – despite lots of progress having been made

Until now, investors, lenders and insurers have lacked a clear view of how companies may fare as the environment changes, regulations evolve, new technologies emerge and customer behavior shifts. Without high-quality, comparable data, financial markets struggle to price climate-related risks and opportunities effectively.

We have seen great strides in disclosures. What’s more, ratings agencies and index companies are adding on climate tools as business as usual. Many have bought boutiques in the last 12 months. This will also help to embed climate transition tools.

Most central banks have said the first exercises are exploratory and won’t impact “banks” capital buffers. But should they prove effective, it is plausible they will feed into prudential

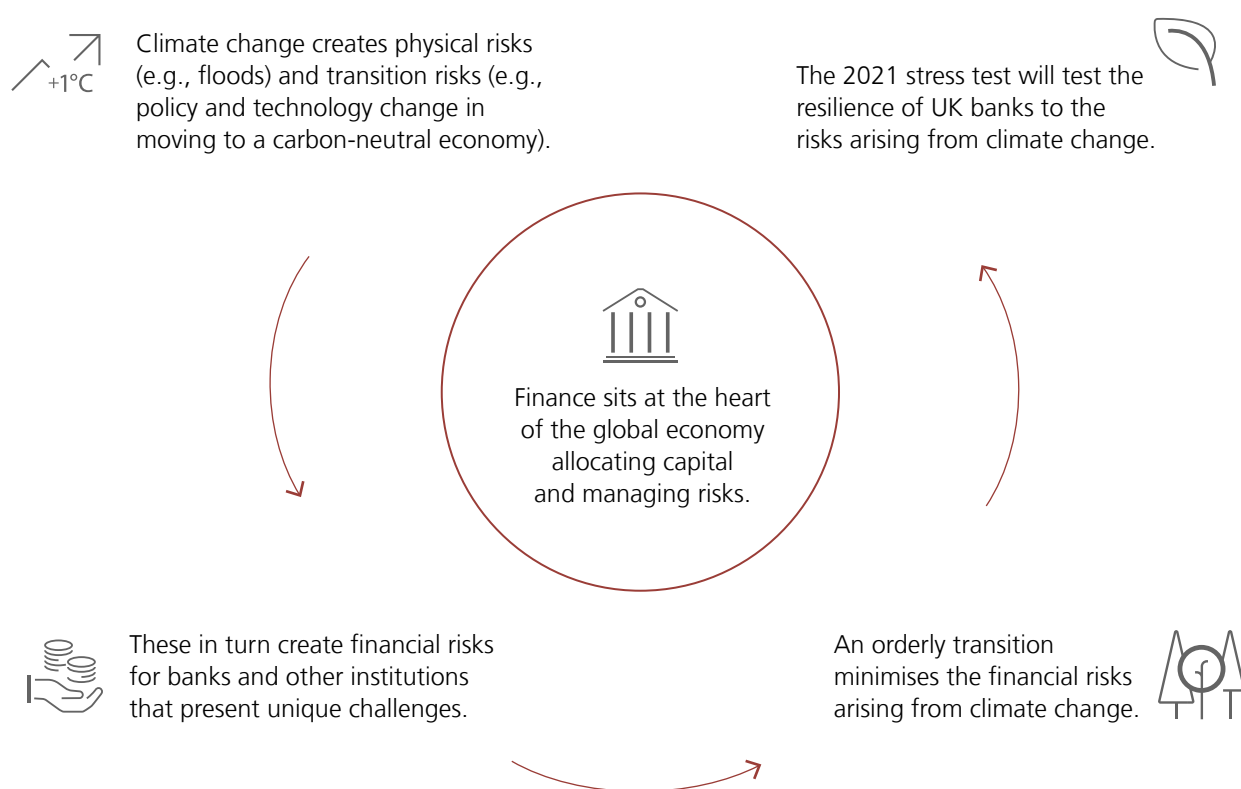
requirements for banks and insurers – probably within five years. This could have a material impact on the cost of capital of lending to highly polluting firms.

There are, of course, plenty of caveats. The models are still in their early phases. A priority for policymakers and investors will be to separate signals from noise. Central bankers may take baby steps with the first stress tests as they learn on the job. Another risk is if different policymakers create a cacophony of differing standards, data taxonomies and scenarios – let alone different environmental policies – that will be tough for investors to interpret. There is plenty of data still to gather.

A surprise for 2021? The Fed has applied to join the Network for Greening the Financial System. The base case is that they will watch how the 18 tests will go, but one cannot rule out the Fed considering something along these lines in 2022 or 2023.

The bottom line is this: investors and financial institutions want and need to get smarter in managing climate-related risks and opportunities.

Figure 13. Climate risk moving to the center of attention for central banks and supervisory authorities²³



²³ Source: The Bank of England 2019



Sustainable data

Insights from new lenses

Alex Kramm, Head of US Exchanges and Business Services Research, UBS Global Research

Paul Winter, Head of Quantitative Research, UBS Global Research

Amanda Jorgensen, Quantitative Research, UBS Global Research

Arsh Tandon, US Exchanges and Business Services Research, UBS Global Research

The major index providers and market-data firms are racing to build or buy sustainability offerings. Demand for sustainability data could drive the size of the related data and services market to more than USD 5 billion in the next five years. Sifting signal from noise will be critical for shaping better portfolios

Investment mandates that consider environmental, social and governance (ESG) factors have grown rapidly in recent years, with a further acceleration occurring amid the COVID-19 pandemic. Our work shows that some ESG factors have a significant impact on performance, with carbon considerations particularly present in our analyses. We also expect that investors will increase ESG considerations in their processes, particularly as regulations advance and reporting standards improve, which, in turn, could make performance attribution to ESG easier to assess. Ultimately, greater demand for ESG will spur a large industry of innovative data

and services providers, one that we believe could be as large as USD 5 billion in annual revenues five years from now.

What are the key factors that will affect further ESG adoption?

We believe greater demand for ESG investing will require further adoption of ESG data and analytics, including ESG ratings and scores from information services providers. That said, there are various key factors that could, in our view, accelerate or inhibit this growth. As part of UBS Evidence Lab's Market Thinking Game, which asked institutional investors to gauge the consensus

outlook for spending on ESG data over the next five years, respondents were also asked to rank the key issues regarding the outlook from most to least important.

Perhaps unsurprisingly and as also shown in figure 16 in our Perspective 10, "Performance of ESG investing" was the highest ranked issue on a weighted basis and had the largest number of participants select it as the most important issue. "Lack of reporting standards" and "Further ESG regulations" followed in importance, in weighted terms, and we believe these two factors will play an important role in the

Figure 14. Significant ESG sub-scores²⁴

Environment		Social		Governance	
2009–2019	2009–2020	2009–2019	2009–2020	2009–2019	2009–2020
United States					
EMS certificate	Carbon intensity	Supply chain monitoring	Supply chain monitoring	Public policy incidents	Public policy incidents
Carbon Intensity	Operational incidents	Supply chain incidents	Activities in sensitive countries		
Environmental fines					
Europe					
EMS certificate	EMS certificate	Supply chain monitoring	Employee incidents	Public policy incidents	Public policy incidents
Carbon Intensity	Carbon intensity	Supply chain incidents	Customer incidents		
Environmental fines	Environmental supply chain incidents		Activities in sensitive countries		
	Renewable energy use				
	Operational incidents				

adoption of ESG investing moving forward. To that end, we are closely monitoring the development of ESG regulations across the globe (particularly in the US after the elections there), which could enhance corporate and investor reporting standards, and ultimately serve as catalysts for an even greater acceleration in ESG investing.

Do ESG considerations enhance investing performance?

We analyzed whether component sub-scores within ESG ratings drive returns, utilizing ratings from Sustainalytics. Through our regression analyses for US and European equities, we found that several environmental, social, and governance sub-scores showed a statistically significant

relationship to returns. That said, a better sub-score across these components did not always positively affect performance, which indicates that the overall effect of ESG ratings on performance remains mixed. Furthermore, we note that carbon scores were consistently present in our analysis, which indicates that these scores are very important.

24 Source: UBS Global Research 2019. Note: Significant at a 5% significance level. Universe is MSCI USA and MSCI Europe

Please note that a limitation to our analysis is the fact that ESG ratings and scores themselves vary across various providers, given differing methodologies.

Figure 15. ESG rating correlations across six ratings providers²⁵

Rating Provider Pairs		Rating Type			
		ESG	E	S	G
KLD	SA	0.53	0.59	0.31	0.02
KLD	VI	0.49	0.55	0.33	0.01
KLD	RS	0.44	0.54	0.21	-0.01
KLD	A4	0.42	0.54	0.22	-0.05
KLD	MSCI	0.53	0.37	0.41	0.16
SA	VI	0.71	0.68	0.58	0.54
SA	RS	0.67	0.66	0.55	0.51
SA	A4	0.67	0.64	0.55	0.49
SA	MSCI	0.46	0.37	0.27	0.16
VI	RS	0.70	0.73	0.68	0.76
VI	A4	0.69	0.66	0.66	0.76
VI	MSCI	0.42	0.35	0.28	0.14
RS	A4	0.62	0.70	0.65	0.79
RS	MSCI	0.38	0.29	0.26	0.11
A4	MSCI	0.38	0.23	0.27	0.07
Average:		0.54	0.53	0.42	0.30

ESG remains in an innovation phase

Overall, although the contribution of ESG factors to performance remains subject to debate, we believe the development of ESG data and analytics remains in an innovation phase, and the quality of the data offerings

continues to improve. In our view, innovation should be assisted by greater regulation and better reporting standards; as this takes place, we believe the relationship between ESG factors and performance may be easier to assess, which could be

supportive of investor adoption. As mentioned above, demand for ESG and continued innovation could drive the size of the related data and services market to more than USD 5 billion in the next five years.

²⁵ Source: UBS Global Research 2019, MIT. Note: SA, RS, VI, and A4 are short for Sustainalytics, RobecoSAM, Vigeo Eiris, and Asset 4, respectively

Customizing sustainable investing content

Enabling clients to reflect individual sustainability preferences in their portfolios can help ensure client capital is invested longer term in ways that align with or contribute to the UN Sustainable Development Goals (the UN SDG). A recent survey we conducted found that private clients often have divergent views of what matters most to them, what they deem to be a sustainable business activity and how they want individual preferences to be reflected in their portfolios. While customization in sustainable investing has historically focused on excluding specific exposures from portfolios, it's clear that the future is about positive personalization – and will move further toward targeted impact as appropriate data is made available.

Intermediaries and advisors play a significant role in helping to mobilize more private capital toward sustainable investment. Tailoring portfolios to better align underlying investments to individual preferences will help mobilize capital from private investors for whom a one-size-fits-all approach has less appeal. Assessing how specific companies

or investments align with an investor's individual preferences on key sustainable investing topics (such as climate change; pollution and waste; water; people, products and services; and governance) and recommending changes to improve the fit provide several benefits: it increases the portfolio's relevance for the investor, enhances the overall fit of the solution and increases the stickiness of capital.

We already apply such an approach when assessing companies' sustainability profiles and have also adapted this approach for fund investments, where we both assess the depth of ESG integration in a fund's investment philosophy, strategy and processes and evaluate the sustainability characteristics of its underlying positions. The more closely we can reflect a client's unique view of the world in a highly personalized portfolio that reflects their sustainability preferences while meeting financial objectives with market comparable performance, the more private capital will flow into sustainable investment and toward achieving the UN SDGs.



Transparency revolution

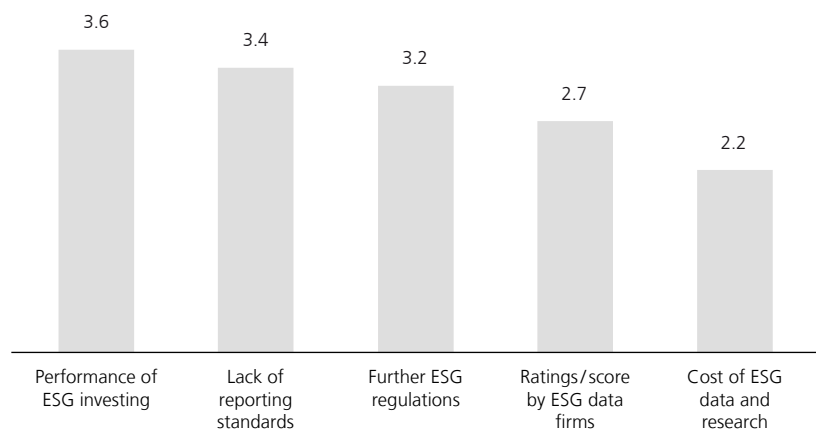
The convergence of standards underestimated

Andrew Lee, Head Sustainable and Impact Investing, UBS Global Wealth Management

We think the market underestimates how fast standards are converging. The arms race in competing standards has ended in a truce – and collaboration – called for by investors and regulators. Transposing these to accounting standards is the key focus now. Better quality, more material and more comparable sustainability data is around the corner, which will help inform investment decisions.

Investors – both institutional and individual – increasingly recognize the materiality of sustainability factors for financial performance. This dynamic, together with growing investor desire to understand and improve the long-term outcomes resulting from investments, continues to drive sustainable investing into the mainstream. We see this clearly reflected in client activity and survey responses, and is further reaffirmed by investment-focused industry publications such as the CFA Institute's recent paper "Future of Sustainability in Investment Management: From Ideas to Reality". But good decision-making requires corporate sustainability data that is relevant, high-quality and comparable.

Figure 16. Institutional investor views on what the market sees as key issues affecting overall ESG data/service adoption²⁶



²⁶ Source: UBS Evidence Lab (May 2020); 57 respondents; weighted average rank of issues, where investors were asked to assign a rank from one to five

We aren't there yet, but we can see the emergence of a global standard for sustainability data that will complete the picture and help mobilize more capital to be invested sustainably.

Change is underway

Until recently, sustainability standard-setting organizations competed with each other instead of cooperating. But recently the key organizations in the world of sustainability standards have gotten together to form a common approach. We believe this will prove revolutionary in the years ahead.

What is happening now that will change the dynamic? First, standards are coalescing around the efforts of the Sustainable Accounting Standards Board (the SASB) to define materiality and accounting rules for sustainability data. Hundreds of public companies are already using these standards to communicate financially material sustainability information to investors. Furthermore, the standard-setting world, including the SASB, the Global Reporting Initiative, the Carbon Disclosure Project, the International Integrated Reporting Council (the IIRC) and the Climate Disclosure Standards Board, aligned around a common framework last September. Meanwhile, the SASB is merging with the IIRC, combining the two most influential of these organizations into one.

Second, the International Financial Reporting Standards Foundation (the IFRS Foundation) has begun to standardize accounting rules for sustainability data outside the US. The process of global standardization has just kicked off, but we see a historical parallel: in 2003 the US-based Financial Accounting Standards Board and the International Accounting Standards Board agreed to harmonize financial reporting in a historic agreement that aligned global accounting.

We see a path toward a straightforward set of reporting rules that can be adopted around the world, making sustainable investing everyday investing.

What does this mean for investors?

Agreement on global reporting standards will likely lead to endorsement by the world's security regulators, making reporting mandatory, similar to material financial data. Regulators in the EU have already laid down the outline of a reporting framework, as well as an approach to climate-related disclosure following the recommendations of the Task Force on Climate-related Financial Disclosure (the TCFD). The US has lagged with regard to this effort, but there will probably be a catch-up period under a new administration.

In the not too distant future, we see a world where more reliable and comparable sustainability data is reported alongside important climate-related and financial data. Investors, big and small, will be able to make better decisions that improve risk and return, and improve their ability to align investments with society's needs and also better customize to individual preferences. This is a good outcome for the stakeholders that public companies are accountable to.

Potential to mobilize more capital

Progress on these collaborative efforts can, in our view, simplify and elevate sustainability disclosure standards to a level comparable to financial reporting. Investor concerns around the materiality of sustainability issues would ease, and the hope is that additional investment will come from those who have remained on the sidelines so far. The growth of alternative data that augments, corroborates or challenges standardized data could further accelerate mobilization of capital. Greater sustainable investment could benefit a range of social and environmental areas; for example, it could provide the significant capital needed by carbon-emitting companies to transition their business models to much more sustainable levels and contribute to addressing climate risk.

Corollary

A note on change, the importance of a “real” response
and finding opportunity in a crisis

Julie Hudson, Head of Global ESG Research, UBS Global Research





The early arrival of vaccines will test an important hypothesis: that real world after-effects of the COVID-19 pandemic on jobs, livelihoods and ways of life could challenge the resource-intensive consumer-led market paradigm that has been in place for longer than many of us have been watching markets. At the same time, climate change (and connected challenges, such as the decline in biodiversity) suggest a way forward, if consumer-driven resource-intensive markets stagnate or decline. For post-COVID-19 recovery, a policy-driven economic boost is expected. For climate change mitigation and adaptation, a large amount of investment is needed in R&D, innovation, low-carbon infrastructure, and new technologies (including AI and big data as a latent opportunity for ecosystem repair.)

The main storyline here is that real effects (job losses and food insecurity arising from the COVID-19 pandemic or warming-driven crop failures and storm surges) arising from a physical shock require a real response. This is the main reason why we think sectors and markets will begin a shift toward investment-led (hopefully green) growth through 2021, with less emphasis on resource-intensive consumer-led growth due to the combined effect of post-COVID-19 recovery plans, and net zero efforts. We note that climate change is (only) dominant in this story because it has become a galvanizing force for change in the bigger picture. Put together, COVID-19 and climate change throw light on the importance of resilience across the board in E, S and G.

However, the possibility that one (more sustainable) regime could replace the other (business as usual) cannot be left to chance. Post-COVID-19, consumer sectors relying on Vaclav Smil's "river economy" (procure, use, dispose of)²⁷ could simply carry on in the same way. Technology platforms happening to perpetuate old paradigms (resource-intensive consumption) are likely to continue doing so unless something changes. Not only that, well-intentioned technology solutions might also inadvertently perpetuate the unsustainable status quo.

As a good example of sustainable investment, climate change investment is defined as purposeful investment, aiming to deliver quality of life enhancing goods and services (and indeed high quality jobs) while also reducing greenhouse gas emissions to net zero. For some this is an impossible dream. The sheer number of recent net zero announcements nevertheless suggests that the general idea of recognizing externalized costs may be starting to take hold. For such a shift to happen on a sufficient scale, a redefinition of the meaning and measurement of "growth" may be required, running across economics, accounting and finance. In short, initiatives such as the TCFD must be the beginning of something much bigger. This change will require courageous, path-breaking innovation at the core of economies and financial markets. In my opinion, this, indeed, is the true meaning of ESG integration.

27 Vaclav Smil, *Making the Modern World* (Wiley, 2014), p. 178

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