RESPONSIBLE INVESTMENT QUARTERLY

Q4 2021

COLUMBIA THREADNEEDLE INVESTMENTS

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01 Foreword

Iain Richards
Head of Global Responsible Investment Policy

As 2021 fades into the rear-view mirror we can look back on a year of considerable change in responsible investment (RI). The public narrative around environmental, social and governance (ESG), sustainability and climate has never been stronger, while at the same time EU regulatory changes have started to take effect. It is ever more important, therefore, that generalisations such as "RI is causative in performance terms and is no longer open to question", are treated with caution.

We are in the midst of the fourth industrial revolution, a time of considerable change and development, and the intersection and nature of the trends reshaping the world need to be understood properly. We discuss some aspects of this later in the report as we touch on hydrogen, the automotive sectors and climate issues.

Behind the headline statements, the nuances of RI are being better documented and the association between different aspects of the field and investment are being subjected to more in-depth research. The supposed interchangeability of RI terms such as ESG and sustainability needs to be rethought.

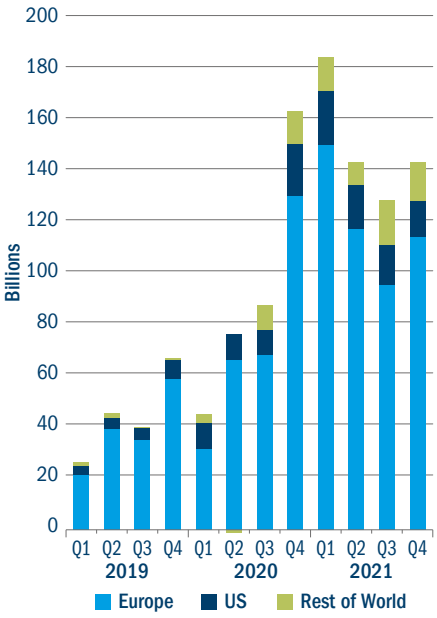
For example:

- a focus on ESG – the focus on managing the risks of material exposures of a business, given its industry – is associated with "quality" investing.
- Sustainability, if focused on organisations investing in and producing solutions such as new products, services and outputs, is associated with "growth" investing.

The latter is distinct from just cutting a portfolio's carbon emissions by avoiding more carbon-intensive parts of our economies. Sector allocations, depending on the style of strategy and whether they are active or passive, can also vary significantly. Although this introduction does not allow me to explore this in depth, the lessons of the past 12 months should amply emphasise the importance of exploring and understanding the substantive differences that can exist between alternative types of RI approaches. One size does not fit all.

Why is this important? Over 2021 the appetite for, and flows into, RI strategies has continued. Although the growth has moderated, they remain strongly positive (Figure 1).

Figure 1: Quarterly global sustainable fund flows ($)



Source: Morningstar Direct, Manager Research.
Data as of December 2021.

In Europe alone, assets in Article 8 and Article 9 funds – categories of RI product under the EU's sustainable finance reforms – reached €4.05 trillion at the end of December 2021, representing 42.4% of all funds sold in the EU (and 64% of EU fund inflows in the fourth quarter).[1]

Looking ahead, according to research from Bloomberg ESG, assets are forecast to hit $53 trillion by 2025 – a third of global assets under management.[2]

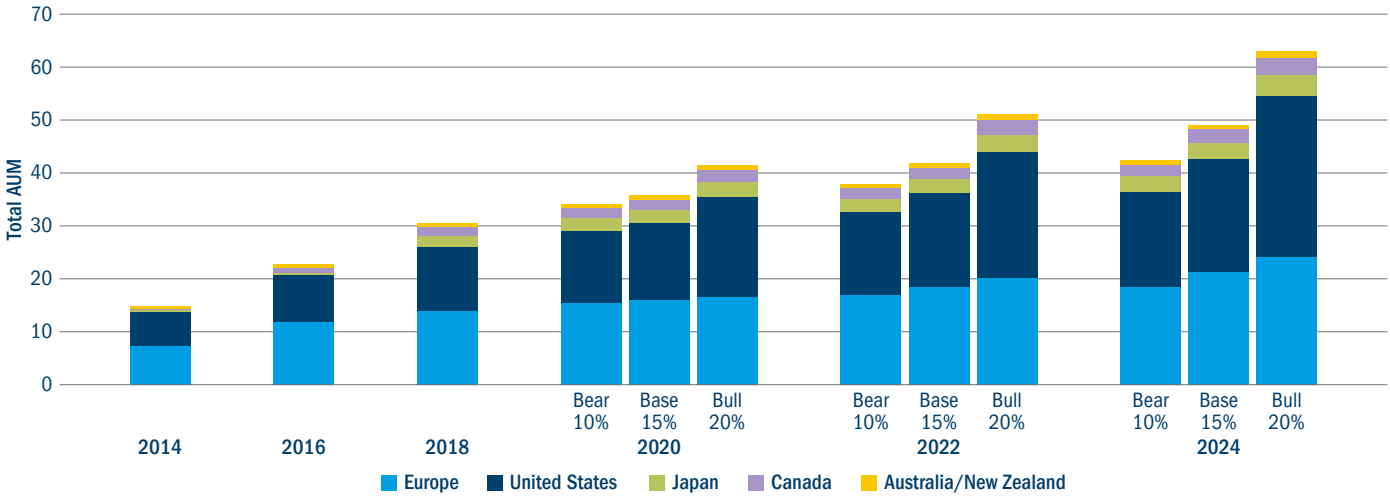
Looking more specifically at debt markets, assuming that the $2.2 trillion ESG debt market expands at just half the pace of the past five years, Bloomberg forecasts that market to hit $11 trillion in 2025.

Looking ahead, regulatory reforms will continue to be a major focus in the RI field, not least with the EU's sustainable finance reforms, as Figure 3 from the European Securities and Markets Authority (ESMA) highlights.

The process of seeking to integrate public policy agendas in the capital markets will continue. Climate change, inclusive growth and transparency will be key aspects of this. In addition, there is a particular focus among regulators on "greenwashing", even before the extensive reforms that are being introduced have fully taken effect.

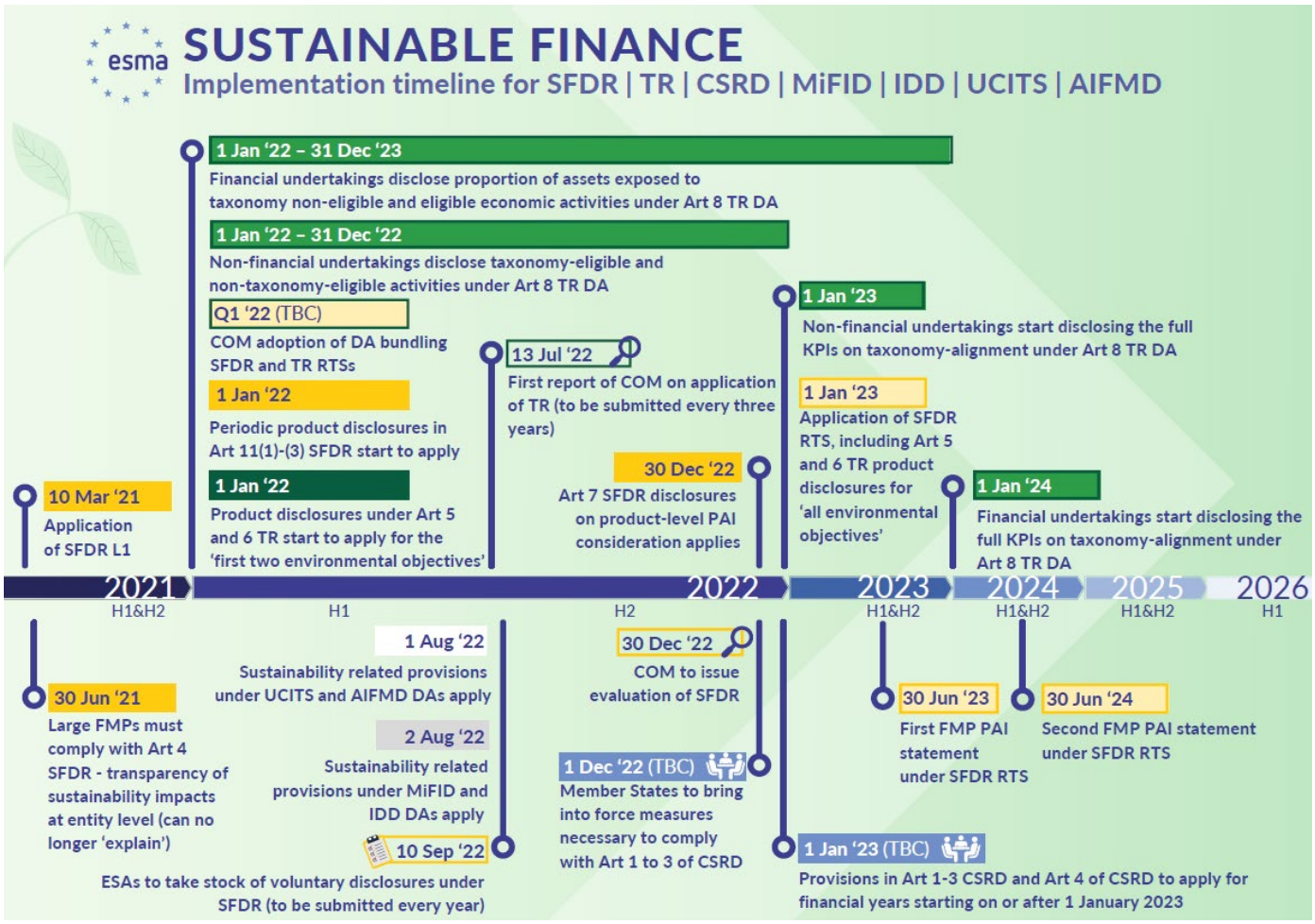
With the level of change being seen, it is ever more important to understand the nature, characteristics and objectives of RI strategies. At the same time, it is also important to understand that RI is just one facet

Figure 2: ESG Global Projected AUM by Country



Source: GSIA, Bloomberg Intelligence.

Figure 3: Sustainable finance implementation timeline



Source: European Securities and Markets Authority.

of the key issues investors need to be considering, as the 2022 Natixis survey of asset owners illustrated (Figure 4).

Figure 4: Top portfolio risks for 2022

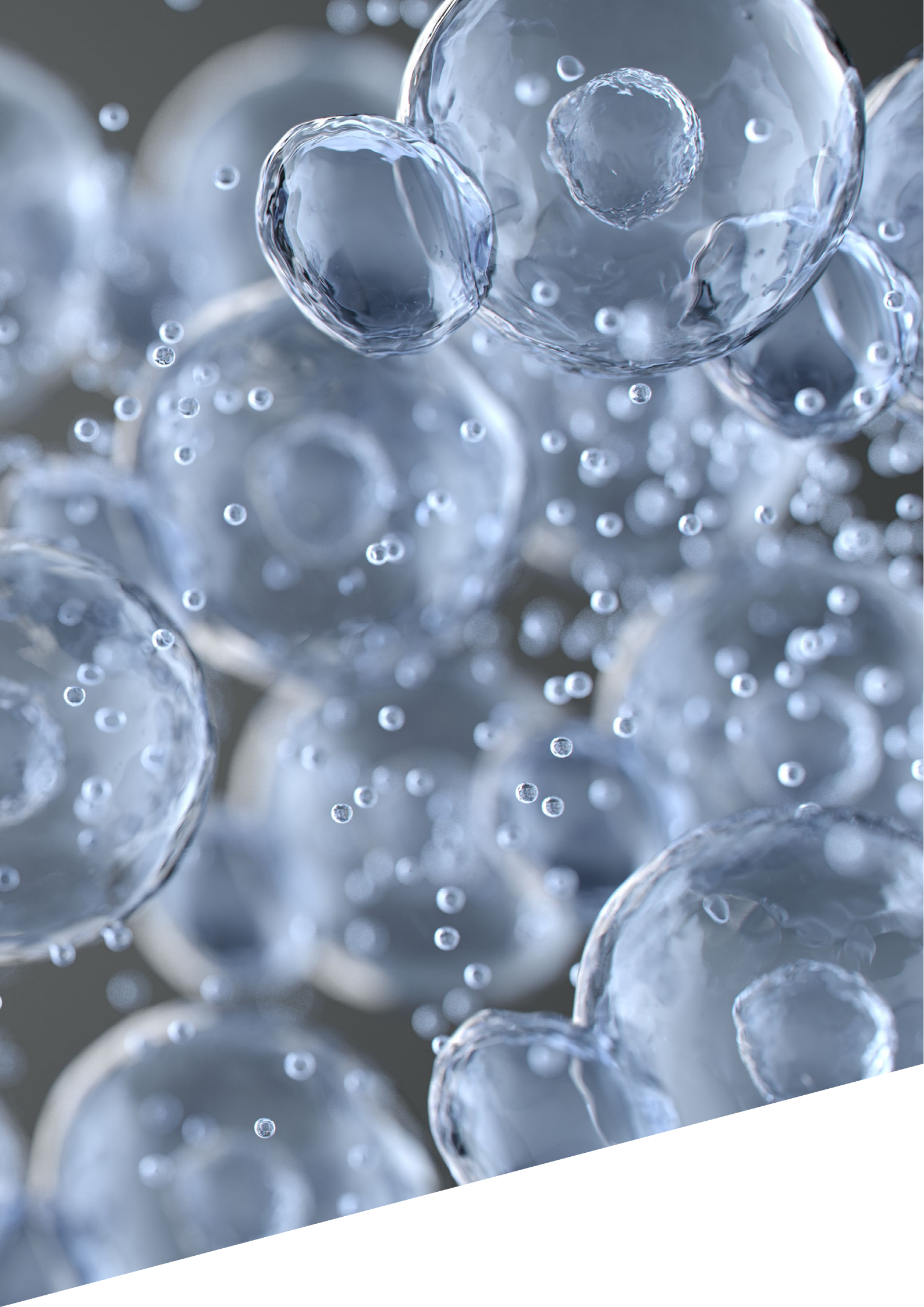
Source: Natixis 2022 Institutional Outlook.

2022 will be an interesting year. Already we see the tragic situation in Ukraine reopening old RI debates – in this case in relation to national security as an issue for sustainable societies – as well as adding momentum to the discussion around energy security and the role of gas and nuclear power through what needs to be properly understood as a transition. The tensions between ideals and practicalities for economies and society have never been more evident. As the saying goes: "May you live in interesting times".

Source:

1 Morningstar, SFDR Article 8 and Article 9 Funds: 2021 in Review, February 2022.

2 Bloomberg, ESG assets may hit $53 trillion by 2025 – a third of global AUM, 23 February 2021.



02 Portfolio manager's viewpoint

Heiko Schupp
Global Head of
Infrastructure

Ben Kelly
Senior Analyst,
Global Research

Callum Neal
Analyst,
Infrastructure Investments

There continues to be a remarkable focus on green hydrogen as a clean alternative to traditional fossil fuels, with the past year further accelerating its potential widespread adoption. So, what is driving all this hype, is hydrogen the sustainability disruptor, and why has there been such remarkable recent progress?

What and how?

Hydrogen is the most abundant molecule in the universe, found primarily locked in water and hydrocarbons. Its qualities have been known for a long time, and it has been used for more than 100 years as an industrial chemical. While the concept of hydrogen as a source of energy isn't novel, it has never been feasible on a large scale – until now.

Hydrogen is a colourless gas, but it is categorised by colour, each representing a different production pathway. Grey hydrogen is generated via the use of fossil fuels, so its production emits CO2. Blue hydrogen is grey hydrogen paired with carbon capture and storage that covers the majority of carbon emissions produced in its generation. Green hydrogen, meanwhile, is produced by the electrolysis of water, splitting it into hydrogen and oxygen, and as long as renewable energy is used it is a zero-emission energy source. Thus, if created at scale green hydrogen has the potential to become key in decarbonizing hard-to-abate sectors of the economy.

Catalysts for uptake

For hydrogen to become a viable solution, both greater demand and reduced costs are required. But we are now seeing movement on three key drivers. Firstly, climate change is accelerating. This feeds directly into

a second key driver – policy support for the need to do something about it (Figure 1). Since the Paris Agreement in 2015 governments have turned their attentions to climate change and committed themselves to achieving emissions reduction targets that could lead to carbon neutrality by 2050. The Covid-19 pandemic has only accelerated the urgency surrounding these policies. As policymakers look for ways of cutting emissions, hydrogen technology could be a feasible alternative.

Figure 1: Governments with national hydrogen strategies; announced targets; priorities for hydrogen and use; and committed funding

Country and public investment committed	Document, year	Deployment targets (2030)	Production	Uses
Australia AUD 1.3 bln (~USD 0.9 bln)	National Hydrogen Strategy, 2019	None specified	Coal with carbon capture, utilisation, and storage (CCUS) Electrolysis (renewable) Natural gas with CCUS	
Canada CAD 25 mln by 2026[1] (~USD 19 mln)	Hydrogen Strategy for Canada, 2020	Total use: 4 Mt H_2/y 6.2% TFEC	Biomass By-product H_2 Electrolysis Natural gas with CCUS Oil with CCUS	
Chile USD 50 mln for 2021	National Green Hydrogen Strategy, 2020	25 GW electrolysis[2]	Electrolysis (renewable)	
Czech Republic n.a.	Hydrogen Strategy, 2021	Low-carbon demand: 97 kt H_2/yr	Electrolysis	
European Union EUR 3.77 bln by 2030 (~USD 4.3 bln)	EU Hydrogen Strategy, 2020	40 GW electrolysis	Electrolysis (renewable) Transitional role of natural gas with CCUS	
France EUR 7.2 bln by 2030 (~USD 8.2 bln)	Hydrogen Deployment Plan, 2018 National Strategy for Decarbonised Hydrogen Development, 2020	6.5 GW electrolysis 20-40% industrial H_2 decarbonised[3] 20 000-50 000 FC LDVs[3] 800-2 000 FC HDVs[3] 400-1 000 HRSs[3]	Electrolysis	
Germany EUR 9 bln by 2030 (~USD 10.3 bln)	National Hydrogen Strategy, 2020	5 GW electrolysis	Electrolysis (renewable)	
Hungary n.a.	National Hydrogen Strategy, 2021	Production: 20 kt/yr of low-carbon H_2 16 kt/yr of carbon-free H_2 240 MW electrolysis Use: 34 kt/yr of low-carbon H_2 4 800 FCEVs 20 HRSs	Electrolysis Fossil fuels with CCUS	
Japan JPY 699.6 bln by 2030 (~USD 6.5 bln)	Strategic Roadmap for Hydrogen and Fuel Cells, 2019 Green Growth Strategy, 2020, 2021 (revised)	Total use: 3 Mt H_2/yr Supply: 420 kt low-carbon H_2 800 000 FCEVs 1 200 FC buses 10 000 FC forklifts 900 HRSs 3 Mt NH_3 fuel demand[4]	Electrolysis Fossil fuels with CCUS	

Country and public investment committed	Document, year	Deployment targets (2030)	Production	Uses
Korea KRW 2.6 tln in 2020 (~USD 2.2 bln)	Hydrogen Economy Roadmap, 2019	Total use: 1.94 Mt H_2/yr 2.9 million FC cars (plus 3.3 million exported)[5] 1 200 HRSs[5] 80 000 FC taxis[5] 40 000 FC buses[5] 30 000 FC trucks[5] 8 GW stationary FCs (plus 7 GW exported)[5] 2.1 GW of micro-cogeneration FCs[5]	By-product H_2 Electrolysis Natural gas with CCUS	
Netherlands EUR 70 mln/yr (~USD 80 mln/yr)	National Climate Agreement, 2019 Government Strategy on Hydrogen, 2020	3-4 GW electrolysis 300 000 FC cars 3 000 FC HDVs[6]	Electrolysis (renewables) Natural gas with CCUS	
Norway NOK 200 mln for 2021 (~USD 21 mln)	Government Hydrogen Strategy, 2020 Hydrogen Roadmap, 2021	n.a.[7]	Electrolysis (renewables) Natural gas with CCUS	
Portugal EUR 900 mln by 2030 (~USD 1.0 bln)	National Hydrogen Strategy, 2020	2-2.5 GW electrolysis 1.5-2% TFEC 1-5% TFEC in road transport 2-5% TFEC in industry 10-15 vol% H_2 in gas grid 3-5% TFEC in maritime transport 50-100 HRS	Electrolysis (renewables)	
Russia n.a.	Hydrogen roadmap 2020	Exports: 2 Mt H_2	Electrolysis Natural gas with CCUS	
Spain EUR 1.6 bln (~USD 1.8 bln)	National Hydrogen Roadmap, 2020	4 GW electrolysis 25% industrial H_2 decarbonised 5 000-7 500 FC LDVs-HDVs 150-200 FC buses 100-150 HRSs	Electrolysis (renewables)	
United Kingdom GBP 1 bln (~USD 1.3 bln)	UK Hydrogen Strategy, 2021	5 GW low-carbon production capacity	Natural gas with CCUS Electrolysis	

Buildings · Electricity · Exports · Industry · Industry (chemicals) · Industry (steel) · Mining · Refining · Shipping · Transport · Aviation

Source: IEA (October 2021).

Excitingly, the Hydrogen Council suggests hydrogen could reduce global emissions by 6 gigatons – or 17% of global 2020 emissions – by 2050.[1] Currently, around 66 countries have net-zero emissions targets, of which around 20 have unveiled hydrogen roadmaps. We expect more to follow. The third key driver is that green hydrogen prices have fallen dramatically in the past 10 years due to efficiency improvements.

The renewable energy used in electrolysis accounts for about 70% of the cost of producing hydrogen and has fallen in price by approximately 70% in the past decade.[2] Additionally, the price of an electrolyser has declined by about 60% in that time.[3] It is reasonable to expect these price falls will continue, adding to the appeal of green hydrogen.

What has changed in the past 12 months?

While discussion around green hydrogen has seen steady growth, there have been disproportionate levels of debate over the past six and 12 months (Figure 2), far exceeding any other topic including 5G, Blockchain and AI.[4] So why the surge of interest?

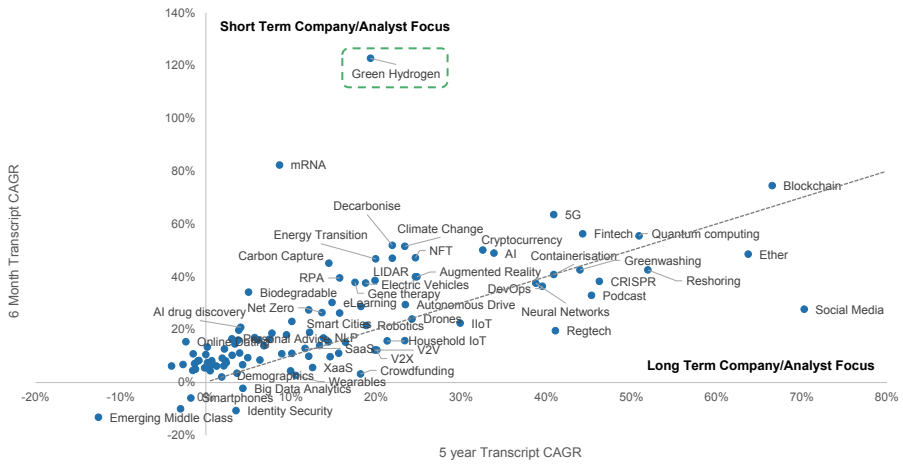
First and foremost, there is continuing momentum in a number of factors that have been key catalysts for increased uptake over the past decade. Regarding efficiency and costs, 2021 projections suggest reductions in the hydrogen cost curve, while manufacturing scale should support a rapid pick up in adoption from 2030 onwards in many different industries ranging from chemicals to trucking fuel cells.[5] A recently revised forecast by Bloomberg puts green hydrogen costs 13% lower than previously suggested by 2030.[6] With prices of carbon at high rates globally, and at recent all-time highs within the EU,[7] hydrogen's potential as a significant decarbonisation solution has never had as much commercial viability.

The emergence of multiple exciting hydrogen projects over the past 12 months have been influential in these reduced estimates of cost and efficiency improvements. Between December 2020 and August 2021 alone, the number of green hydrogen projects increased more than three-fold,[8] with 359 large-scale projects announced globally. Europe is leading the way with investments of $130 billion, but other regions are catching up. China is also emerging as a potential hydrogen giant with more than 50 projects in the pipeline following its announcement of net-zero emissions by 2060.[9]

A major cost development came to light in the Q3 2021 report of NEL, the world's largest electrolyser producer. It had been widely expected that the cost of green hydrogen would be less than $2/kg by 2030.[10] But costs are falling rapidly and NEL now has a green hydrogen cost target of $1.50/kg by 2025. This illustrates the pace of innovation within green hydrogen and continued decline in the cost of renewables globally.

Arguably the most influential element in the progress of green hydrogen production as a sustainability disruptor is government support. Simply put, governments across the world need a plan for life after fossil fuels, and their ability to create policies and regulations to support green hydrogen both financially and in terms of infrastructure could prove vital in

Figure 2: Company and analyst transcript mentions



Source: MS Sept 2021.

its viability. It is one thing producing green hydrogen at a cost of $1.50/kg, but for uptake to be aligned with net-zero targets it needs to be delivered to the end customer at a price that is competitive with fossil fuels. Infrastructure is needed to facilitate this process.

In the past year, the Chinese government has made $20 billion of public funding available for hydrogen projects. So far, 50% of its announced projects are linked to transport applications, a key sector in its energy transition plan.[11] Meanwhile, the US has renewed its net-zero commitment by re-entering the Paris Agreement following President Biden's inauguration.[12]

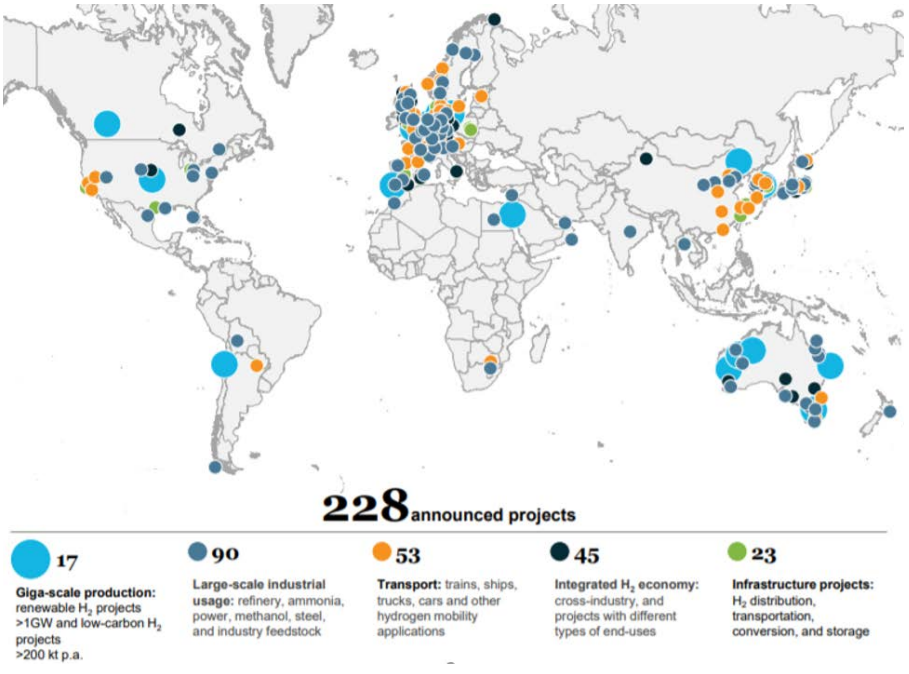
In August 2021, the UK government set its sights on developing a thriving green carbon sector to overcome the decarbonisation challenges facing its economy, in the form of the UK Hydrogen Strategy. Its ambition is to build 5GW of low carbon hydrogen production capacity by 2030. This could produce hydrogen equivalent to the amount of gas consumed by more than three million households in the UK each year.[13] The UK Hydrogen Strategy is all encompassing and takes a holistic approach to developing a thriving hydrogen sector. It sets out what needs to happen to enable the production, distribution, storage and use of hydrogen, and to secure economic opportunities across the UK.[14]

We are beginning to see an emergence of companies specialising in the production, distribution and usage of Hydrogen. Globally there are 228 ongoing hydrogen projects across the value chain (Figure 3), 17 of which are giga-scale production schemes.

Two notable recent acquisitions are of the Canadian electrolyser company Hydrogenics for $290 million[15] by power firm Cummins, and MAN Energy Solutions' majority share in German-based electrolyser manufacturer H-TEC Systems for an undisclosed fee.[16]

Interestingly, we are also seeing investment in riskier early-stage hydrogen start-ups focused on the non-electrolysis production of

Figure 3: Private equity, infrastructure and hydrogen



Source: Morgan Stanley – The Hydrogen Handbook. The Hydrogen Council.

Figure 4: Identifying infrastructure investments across the hydrogen value chain

- **Production**
  - Fossil fuels with carbon capture
  - Methane pyrolysis
  - Electrolysis
- **Transport and storage**
  - Piping systems
  - Storage
  - As a compressed gas or cryogenic liquid
  - Liquid organic hydrogen carriers
  - Metal hydrides
  - Other molecules (eg ammonia, methanol)
- **End-use**
  - Refineries and chemical production
  - Industrial processes requiring high temperatures
  - Transport
  - Heating
  - Electricity generation and storage

Source: Arup Hydrogen.

hydrogen. The funding of such project development and integration services could be indicative of a maturing sector.[17] The Hydrogen Council estimates total investment in the hydrogen value chain could exceed $300 billion by 2030 and, according to the Energy Transitions Commission, reach approximately $15 trillion by 2050.[18] This demonstrates both the requirement of, and opportunity for, private investment within the chain (Figure 4).

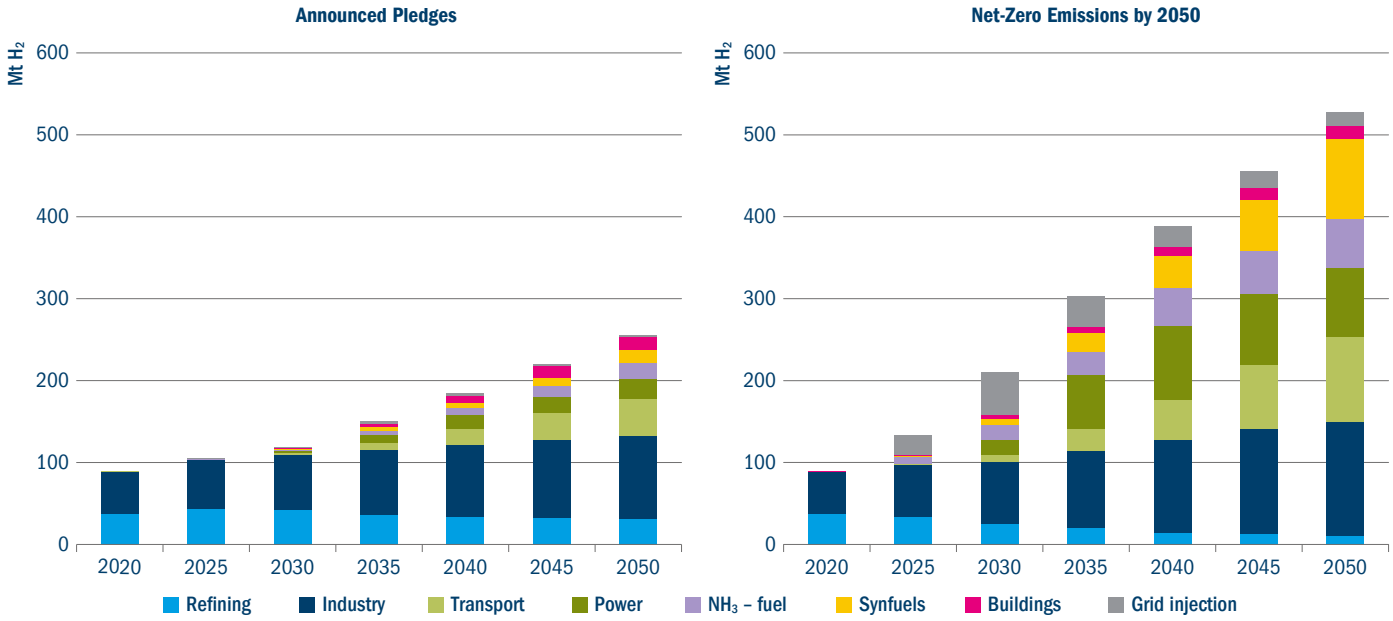
While there are multiple barriers for the uptake of hydrogen within the mainstream – from cost to efficiency – we believe there are two main ones. The first is current limited demand. While from a production perspective policy support is expanding, technology is improving and cost is going down, there is still a limited actual demand for the molecule. Net-zero pledges could however bolster demand (Figure 5). Further infrastructure development will be a critical determinant as to whether green hydrogen becomes the panacea of decarbonisation.

Second is the underappreciation of hydrogen within society. There has been a stigma surrounding its use as a fuel ever since the Hindenberg disaster in 1937. Consumers and investors must be made aware of the promise and safety of hydrogen before it enters the mainstream. We believe asset managers are becoming increasingly aware of its potential and are attempting to educate their investors. We hope the public can be educated in much the same way. We believe there is a huge opportunity for the infrastructure sector in all of this: without infrastructure projects, there will be no mainstream consumption of hydrogen.

Conclusion

The opportunity for green hydrogen to disrupt the sustainable energy industry cannot be denied – from increasing technological improvements to scalability and policy support, the past 12 months have witnessed huge advancements – and the pace at which it could do so must not be underestimated. On a walk down New York's Fifth Avenue in 1900 you would likely have seen 1,000 horses and one automobile. Just a decade or so later it's likely the opposite was the case. In 1900 the car was inefficient, unreliable and expensive versus the horse, but the long-term opportunity was salient. Perhaps a decade from now we will be questioning why there was ever a debate about hydrogen.

Figure 5: Hydrogen demand in the IEA's Announced Pledges and Net-Zero Emissions scenarios



Source: IEA: 2021 Hydrogen Review.

Lack of demand is currently the main barrier for the mainstream consumption of hydrogen. While policy support is growing exponentially, it is not close to the level needed to achieve net-zero energy system emissions by 2050. A mixture of such support, through incentivisation mechanisms for the utilisation of hydrogen and development of infrastructure, will be vital. Signs of growing investment in the latter are positive. However, to retain this momentum policy will need to focus not just on reducing costs but on creating supporting infrastructure to ensure demand. Policy support is strong, as illustrated in Figure 1, but there is scope for more, especially as countries outline their net-zero goals. The recent rise in energy prices may fast-track policies in the next 12 months. Post-COP26 we should have better insights around policy support, and we may be able to identify prominent, fruitful infrastructure opportunities.

Source:

1 Morgan Stanley Research: The Hydrogen Handbook.
2 Kepler Cheuvreux, All About Hydrogen, September 2020/Goldman Sachs, Carbonomics, The rise of clean hydrogen, July 2020.
3 BNEF, Hydrogen Economy Outlook, March 2020.
4 Morgan Stanley Research: The Hydrogen Handbook.
5 Morgan Stanley Research: The Hydrogen Handbook.
6 Fuel Cell Works – https://fuelcellsworks.com/news/green-hydrogen-is-on-track-to-be-cheaper-than-natural-gas-by-2050-bnef/
7 SP Global – https://www.spglobal.com/platts/en/market-insights/latest-news/energy-transition/082721-eu-carbon-prices-power-up-to-new-all-time-high
8 Statista – https://www.statista.com/statistics/1011849/largest-planned-green-hydrogen-projects-worldwide/
9 Hydrogen Insight Updates July 2021 – https://hydrogencouncil.com/en/hydrogen-insights-updates-july2021/
10 Green hydrogen will be cost-competitive with grey H2 by 2030 — without a carbon price' – Recharge News.
11 Hydrogen Council – Updates July.
12 https://www.state.gov/the-united-states-officially-rejoins-the-paris-agreement/
13 UK Hydrogen Strategy – https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1011283/UK-Hydrogen-Strategy_web.pdf
14 UK Hydrogen Strategy – https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1011283/UK-Hydrogen-Strategy_web.pdf
15 Cummins closes on its acquisition of Hydrogenics https://www.cummins.com/news/releases/2019/09/09/cummins-closes-its-acquisition-hydrogenics
16 MAN Energy Solutions is replacing GP JOULE as the main owner of H-TEC SYSTEMS – https://www.man-es.com/company/press-releases/press-details/2021/06/16/man-energy-solutions-is-replacinggp-joule-as-the-main-owner-of-h-tec-systems
17 Global Hydrogen Review 2021.
18 Catalysing hydrogen investment – ARUP.

03 Country Head Focus – Germany

Florian Uleer
Country Head Germany
and Interim Country Head Italy

The Greens' sizeable representation in Germany's first "traffic light" coalition government should boost the country's ambitions to become a global hub for sustainable finance. After a slow start, the country is the world's second largest issuer of green bonds, although it lags in sustainable investment funds.

The last year has been a momentous one for Germany. After 16 years as Chancellor, Angela Merkel stepped aside to make way for Olaf Scholz, leader of the left-wing SPD, marking a new era in German politics and with it a renewed focus on combatting climate change.

Forming a coalition in November 2021 with the Greens and the business friendly FDP – the first such national coalition – Scholz has promised to be a "pioneer on climate protection". The early environmental ambitions of the new coalition, which include transitioning the country to 80% renewable energy by 2030 and "ideally" phasing out coal by the same date, appear to back up this promise.

However, achieving these goals will be challenging, according to Robert Habeck, Germany's newly appointed Minister for Economic Affairs and Climate Action.[1] And this despite the fact Germany is already ahead of many countries when it comes to combatting climate change.

A leader in cutting greenhouse gases

Germany was one of the first countries to start reducing greenhouse gases, cutting CO2 emissions by 23% between 1990 and 2009. It set itself tougher goals in 2019 and, most recently, in May 2021 ahead of the COP26 conference promised it would be carbon neutral by 2045, five years ahead of EU targets.[2]

In fact, Germany is one of only a modest number of countries to have enshrined the goal of climate neutrality by or before 2050 in national law. The country passed its first national climate law in 2019, amending it in 2021 and setting out annual reduction targets for individual sectors right up until 2030.[3]

It has also introduced a Supply Chain law, taking effect from the beginning of 2023, which will require companies with more than 3,000 employees in Germany to ensure their global supply chains for products and services follow defined human rights and environmental standards.[4]

Catching up in sustainable finance

On many levels, therefore, Germany deserves its reputation as a global leader in green policies. But, in the areas of green finance and responsible investment it has been playing catch up. Despite being the EU's benchmark issuer of debt, Germany was beaten to the sovereign green bond market by a number of countries including France, Netherlands, Belgium and Ireland.

It wasn't until September 2020, almost four years after Poland, that the German federal government launched its inaugural sovereign green bond, an issue worth €6.5 billion. Issuance that year totalled €11.5 billion, before rising to €12.5 billion in 2021, with similar

amounts planned for 2022.[5] Most of these early proceeds have been earmarked for projects designed to make passenger and freight transport more environmentally friendly.[6]

What Germany lacked in speed, however, it has made up for in innovation, introducing a twin bond concept to investors. To date Germany's green bonds have all been twinned with otherwise identical conventional bonds, allowing investors to switch from green bonds to conventional bonds at any time with the pricing and liquidity of German bunds, among the world's most liquid bonds, providing a valuable backstop.

Today, Germany is one of the world's largest issuers of green bonds, with financial institutions particularly active. In 2020, Germany ranked second globally for green bond issuance with 102 deals worth $28.5 billion compared to the US in the number one spot with 495 deals worth $37.6 billion.[7]

Future ambitions

Germany has ambitions to be a global hub for green finance as it seeks to attract more money to sustainable investments. The government is looking to introduce a "traffic light" system designed to make it easier to identify green investment opportunities,[8] while the newly created Sustainable Finance Advisory Board – with representatives from industry, finance and science – proposed in 2021 31 key measures to better steer public and private money towards green projects. The German government has said it will "carefully examine" the proposals.[9]

The country got a further vote of confidence for its sustainable finance goals at the end of 2021 when Frankfurt beat other major international centres to host the chair of the International Sustainability Standards Board, a new body tasked with creating a single set of global standards defining environmental, social and governance (ESG) risks for investors.[10]

This is a timely boost: when it comes to ESG investments, Germany lags many other countries with only around 10% of total investments held in sustainable funds, compared to around a third in the US, although latest figures indicate around a third of new business flows into open-ended funds in Germany are through sustainable funds.[11]

Juggling competing interests

Germany's sustainable fund market should, however, benefit from impending EU Taxonomy rules requiring asset managers, insurers and pension funds to disclose environmental and social risks in their investments. Despite controversial stumbling blocks proposing that nuclear power and natural gas be included under the new green label, the taxonomy rules – which will also be extended to green bonds – should accelerate investor flows towards sustainable economic activity while helping stamp out "greenwashing", whereby funds and companies seek to overstate their green credentials.

The German Federal Financial Supervisory Authority (BaFin) is also taking action on this, with guidelines proposing stricter ESG labelling rules and minimum investment ratios for approved funds in sustainable assets of 75%.[12]

It still has a long way to go, but Germany appears to be on the right track to transform itself into a major hub for sustainable finance, a shift that should be accelerated by its new coalition government. But even with this renewed political impetus it will not be smooth running. Notably, while a large number of countries have committed to emission-free vehicles by 2040, Germany – with its sizeable car industry – has not.[13] Like other countries attempting to transition to a green economy, Germany must juggle myriad competing interests from politics, finance and industry.

Source:
1 Reuters, Germany must cut energy use by 20-25% to hit 2030 goals, 11 January 2022.
2 Clean Energy Wire, Germany's greenhouse gas emissions and energy transition targets, 21 December 2021.
3 Clean Energy Wire, Germany's greenhouse gas emissions and energy transition targets, 21 December 2021.
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5 https://www.deutsche-finanzagentur.de/en/institutional-investors/federal-securities/green-federal-securities/
6 Finanzagentur, Green Bond Allocation report 2020.
7 Climate Bonds Initiative, 2021 Green Forecast, August 2021.
8 German Federal Government, German sustainable finance strategy, May 2021.
9 Sustainable Finance Committee, German federal government should accelerate the transformation by establishing a sustainable finance system, 24 February 2021.
10 Bloomberg, Frankfurt Notches a Win as Cities Fight for Green-Finance Crown, 3 November 2021.
11 BVI, German fund industry breaks EUR 4 trillion mark, 17 August 2021.
12 BaFin, BaFin starts consultation on its Guidelines on sustainable investment funds, 2 August 2021.
13 Deutsche Welle, Germany fails to sign up to 2040 combustion engine phaseout, 10 November 2021.


TERMINAL
HAMBURG

04 The sustainable outlook for 2022 and beyond: four environmental themes

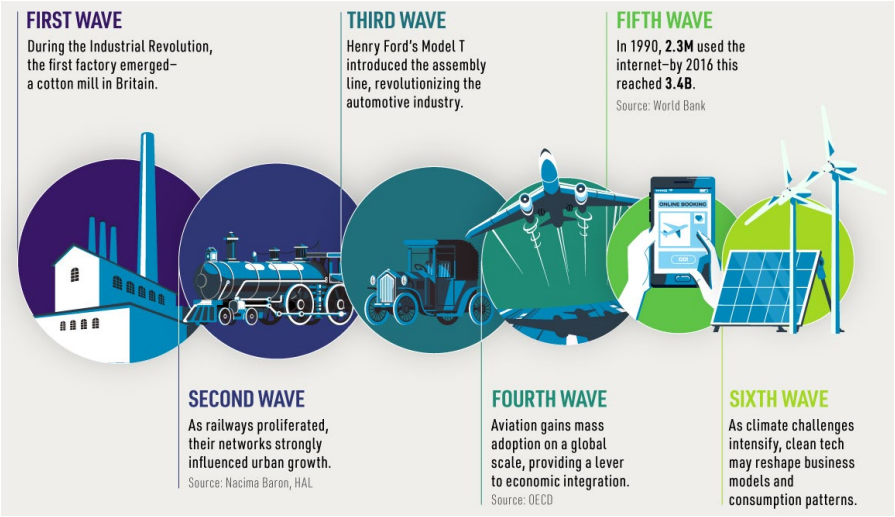
Pauline Grange
Portfolio manager,
Responsible Investment

Jess Williams
Portfolio analyst,
Responsible Investment

The economist Joseph Schumpeter developed the theory of innovation cycles or waves, using the term "creative destruction" to refer to the process of new technologies surpassing old. Clean technologies, along with digitalisation/AI and robotics, are increasingly being recognised as a key part of the sixth industrial wave (Figure 1).

We believe we are only at the start of this wave with clean or green technologies increasingly being a focus of capital investment, both at the public and private level, over several decades.

Figure 1: Innovation waves and key breakthroughs



Source: https://www.visualcapitalist.com/the-history-of-innovation-cycles/

The energy transition: a bumpy road but accelerating towards net-zero

The transition away from fossil fuels was never going to be easy and in 2021 we hit the first bump on the road of this journey. Rocketing energy bills have affected most countries as the price of oil, coal and gas has soared over the past year. There have been several factors behind this crisis, but at its core it is a demand versus supply mismatch.

Demand for fossil fuels recovered swiftly as Covid-19 lockdowns were relaxed. Simultaneously, rising renewable energy within the total global energy mix has contributed towards greater variability in energy generation – the sun doesn't always shine and the wind doesn't always blow, with the UK for example seeing some of the lowest levels of wind in 70 years in 2021. This, combined with droughts in Latin America affecting hydropower output in the region, which accounts for 45% of its total electricity generation, led to increased demand for fossil fuels.

But investment into oil and gas has been low in recent years with weak commodity prices and environmental, social and governance (ESG) related concerns limiting capital inflows into the industry. More recently, supply chain challenges have impacted production. Supply simply couldn't keep up with demand and so prices squeezed higher.

We believe this energy crisis, along with rising global geopolitical tensions, will if anything accelerate investment into renewable energy and the technologies needed to make renewable sources more reliable, such as battery storage and green hydrogen. However, more careful planning and balancing of the energy grid will be required as renewables start to exceed 30% of global electricity generation.

In addition, economies need to do a better job of winding down demand for fossil fuels. We still consume far too many, with global oil demand forecasted to not peak for another five to 15 years. You can't start closing the taps when you're still thirsty.

But energy-related transmissions in transportation, across industries and in heating account for 78% of global emissions.[1] If we have any hope of achieving net-zero targets it is vital we transition to clean energy. Put another way, currently only 17% of our total energy supplies come from clean energy – this must rise to 78% by 2050 if we are to achieve our net-zero aims.[2]

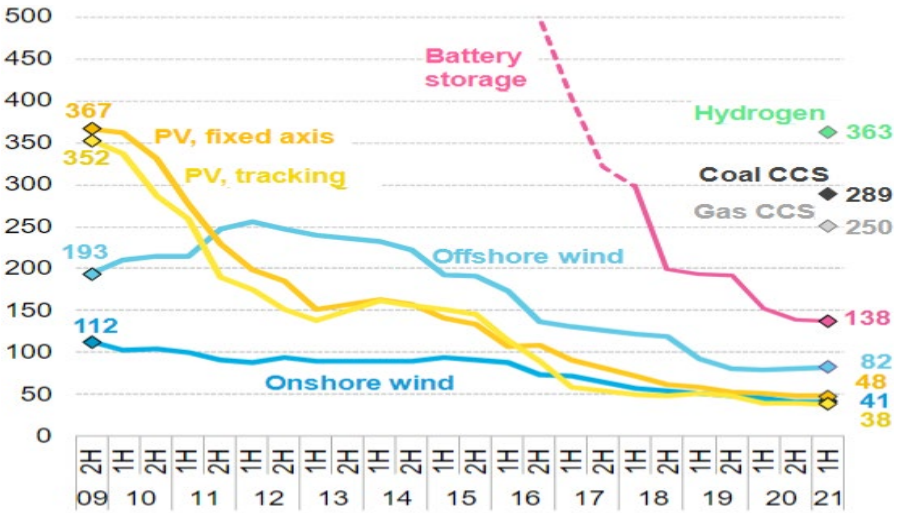
Increasingly, the transition to clean energy also makes economic sense. Renewables are now the cheapest form of new electricity generation across about 90% of the world by energy supply with the recent surge in fossil fuel prices further improving their relative cost competitiveness (Figure 2).

Once you factor in the economic costs of unabated climate change, forecast at more than 3% of GDP being lost every single year by 2030,[3] the clean energy transition becomes even more attractive.

And although the large capital investment required is inflationary in the near term, over the long term transitioning to renewables means governments and companies will no longer be exposed to the volatility of commodity pricing. With 80% of people living in countries that are net importers of fossil fuels, this has huge social benefits as renewables provide a cheap source of energy.

Attractive economics, the electrification of economies and increasing government policy and consumer support are a powerful cocktail to

Figure 2: Levelised cost of energy (LCOE) for selected low-carbon power technologies ($/MWH)



Source: Systems Change Lab; Climate Watch 2021, IRENA 2021b, Systems Change Lab June 2021.

accelerate investment into renewable energy. In fact, the IEA (International Energy Agency) forecast that by 2026 global renewable electricity capacity will rise more than 60% from 2020 levels to more than 4,800GW, with renewables set to account for almost 95% of the increase in global power capacity through to 2026 – this is equivalent to the total current global power capacity of fossil fuels and nuclear combined.[4]

Transitions are not easy, but it doesn't mean they don't happen. We have undergone previous energy transitions – in the 1800s the shift away from whale oil was equally inflationary as supply was cut faster than demand fell, but it didn't stop the transition to a superior energy technology, which at that time was petroleum. We believe the same to be true for green energy.

Protecting biodiversity, protecting economies

Every day, even before we leave our homes, we will have benefitted from biodiversity. Healthy ecosystems help provide the clean air we breathe, the clean water we shower with, the coffee beans we drink, and even contribute to ensuring our flood-free commute to work.

The importance of biodiversity is subtle but wide-ranging. We receive benefits via soil health, pollination, natural resources, carbon storage and much more. Yet human activities have reduced wildlife populations on average by 68% compared to 46 years ago.[5]

Increasingly, there is a realisation that biodiversity loss is a big problem. Certainly, from an investing standpoint its economic importance cannot be understated: around $44 trillion of economic value generation – more than 50% of global GDP – depends on nature and its services.[6] As we destroy biodiversity, we destroy the possibility of us coexisting sustainably with nature.

Investments that align to UN SDG 12, Sustainable Resource Management, look to address some of these issues. Take John Deere, which is a global leader in farming equipment. The company is at the forefront of innovation around precision agriculture, which is vital to making farming more sustainable. Given its market dominance it can have an outsized impact. Its spraying technology, for example, allows for individual nozzles to be turned on and off to eliminate over application, and avoid waterways. Also, as these chemicals are very carbon intensive to produce, Deere estimates the precision technology can reduce plant herbicide and pesticide usage by 77%, vastly reducing the carbon footprint.

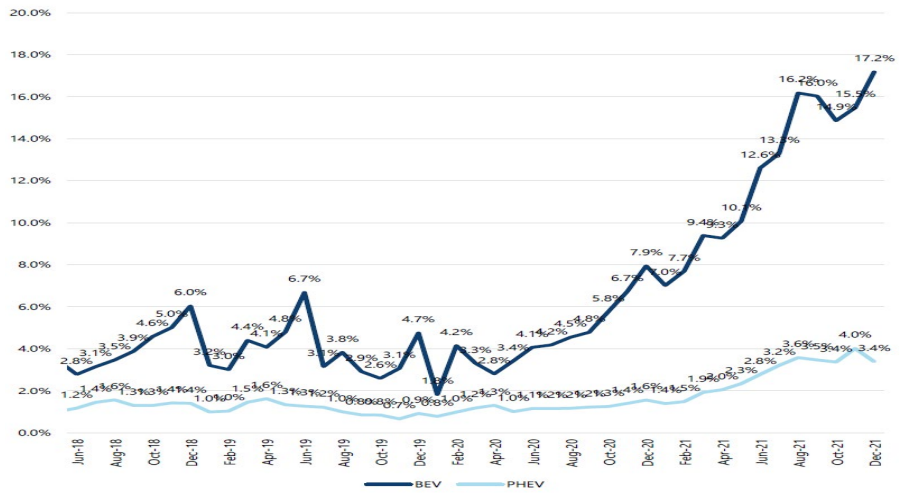
Regulation is also driving the need for targeted application with upcoming EU and UN regulation – such as the former's "farm to fork" strategy – seeking aggressive pesticide reductions. Precision agriculture technology doesn't just enable farming customers to be more sustainable in order to comply with new regulations; it also makes economic sense by facilitating more efficient use of inputs and improved yields, particularly important in a world of rising inflation.

The second part of the UN Biodiversity Conference (COP15) will start in April in Kunming, China, where we expect more focus from global leaders on this topic, not least because we are much earlier in the journey to understanding and quantifying the problem, unlike with carbon.

Green mobility

Throughout history, humans have underestimated the pace of technological disruption. It's tough to envisage a future so different from the one you live today. For example, as a teenager one wouldn't believe that future teenagers would spend a daily average of 7 hours and 22 minutes

Figure 3: BEV and PHEV penetration as % of new car sales



Source: Jefferies, CAAM Report, January 2022. BEV= battery electric vehicles. PHEV = plug-in hybrid electric vehicle.

on their phones.[7] Like the communications industry, the auto industry is ripe for disruption – and at a pace we expect will surprise investors. In fact, we have already seen demand for battery electric vehicles (BEVs) inflect higher in China in 2021 (Figure 3). The trigger for this inflection has been economic rather than environmental, with Chinese consumers citing lower operating costs as the number one reason for purchasing a BEV.

China has benefitted from strong domestic battery supply chains – for example, it is currently responsible for 80% of the world's BEV battery raw material refining[8] – and semiconductor chip production, as well as supportive government policies which have allowed the industry to scale faster than other regions. This has enabled domestic brands like Xpeng to launch a wide range of cheaper electric models. The lower upfront cost combined with low operating costs has made the total cost of ownership of a BEV increasingly attractive for premium mass market consumers.

Interestingly, the number two reason cited for adoption is the overall better driving experience, with many EVs having vastly superior autonomous, safety and digital features. This is particularly important to the younger, digitally savvy consumer – as phones have become smarter, why shouldn't our cars?

The US has been a clear laggard to-date, with BEVs as a percentage of new car sales remaining stubbornly in the low single digits. But we believe this is set to change with much stronger policy support under the Biden administration in the form of tax credits and subsidies. Part of the president's infrastructure bill includes large investment aimed at rolling out national charging networks and investing in green energy infrastructure. At the same time, the American consumer loves large cars, which are now coming to market in the form of electric SUVs and pickup trucks.

To achieve net-zero targets we need to add an average of 35 million passenger EVs to the global fleet each year between now and 2030.[9] To put this in context, we only added an estimated 4.7 million electric cars in 2021. Some of the world's biggest car markets have already announced the phasing outs of internal combustion engine sales between 2030 and 2040 to support their net-zero targets.[10]

As the range of EVs coming to market increases and the industry scales, there is no reason other regions won't follow China's inflection path. In fact, the cost of EVs is forecast to approach cost parity with combustion engines before 2024, with China expected to be the first to achieve this.

But there are challenges to replacing our global fleet of cars. Firstly, the current manufacturing capacity of batteries is hugely inadequate to meet this surge in demand – 14TWh of battery manufacturing capacity – or 88 times 2020 capacity – is required to reach 100% EVs by 2050.[11]

Secondly, EVs have much more mineral and material content – almost six times more than a combustion engine. We simply don't have enough materials in reserves, let alone in production, to meet demand. A combination of battery recycling, more efficient material extraction, green supply chains and lower material content in new generation batteries is vital if we are to solve this.

Finally, a paucity of reliable charging points, particularly in rural locations, means that investment in high powered charging networks, as well as renewables in the energy grid, needs to be accelerated if we have any hope of powering this electric fleet of vehicles.

But these challenges are not insurmountable. And so, as the EV market grows, we believe those

companies producing the components necessary to produce and power EVs will enjoy a sustainable runway for future growth.

Future proofing for climate change

Sadly, the climate crisis is now a reality in many parts of the world. We are seeing both increasing severity and frequency of flooding and drought. The volume of extreme weather recorded in 2021 was exceptional by any standard, from the record-breaking heatwaves across the world to the wildfires that raged from Siberia to California. In addition, supply chain disruptions have not just been related to Covid but to weather as well, with severe flooding across Europe, the US and China causing severe disruption to logistics and manufacturing operations (Figure 4).

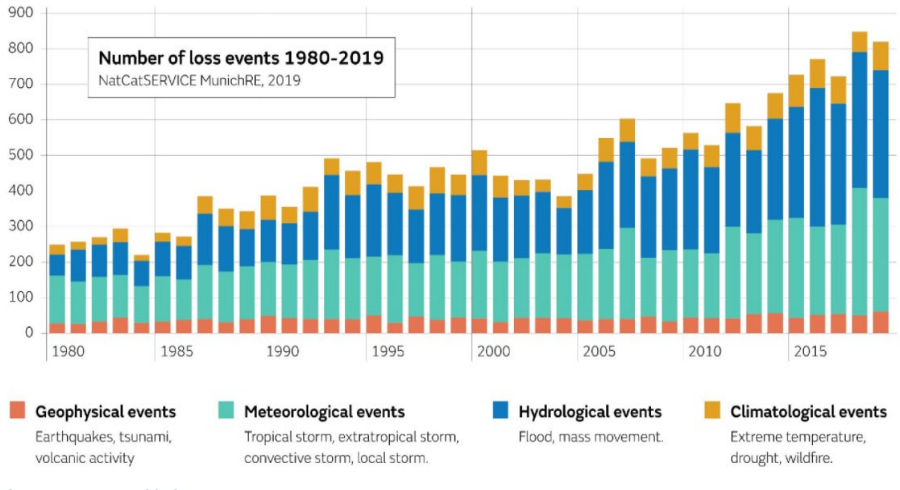
We are already at around 1.1C warming and swiftly approaching 1.5C.[12] Governments are waking up to the fact that cities and populations need to be protected from the inevitable economic and social impacts of climate change. This requires upgrades to infrastructure to better insulate cities from the climate emergency, as well as an acceleration in "green capital investment" to avert worst-case climate change scenarios.

As countries face the prospect of increased flooding, we will need to flood-proof our cities and vital infrastructure. In fact, a recent report published by First Street Foundation shows that nearly a quarter of US critical infrastructure – utilities, airports, ports and more – are at risk from flooding due to climate change.

At the other end of the climate spectrum, the increasing severity of droughts will place increasing pressure on our water systems which, combined with population growth, will mean that increasing parts of the world will face absolute water scarcity. This will require large investments in water infrastructure not only to upgrade our ageing water networks, which globally lose about a third of the world's water, but also investments in smarter water solutions that help promote the recycling of wastewater.

As heatwaves become more frequent, meanwhile, we will need to invest in bigger cooling systems for both our buildings and food transportation. This will be particularly vital in densely populated cities which are worst affected by rising temperature as concrete traps and radiates heat, pushing temperatures even higher.

Figure 4: Weather events causing economic loss are now more frequent



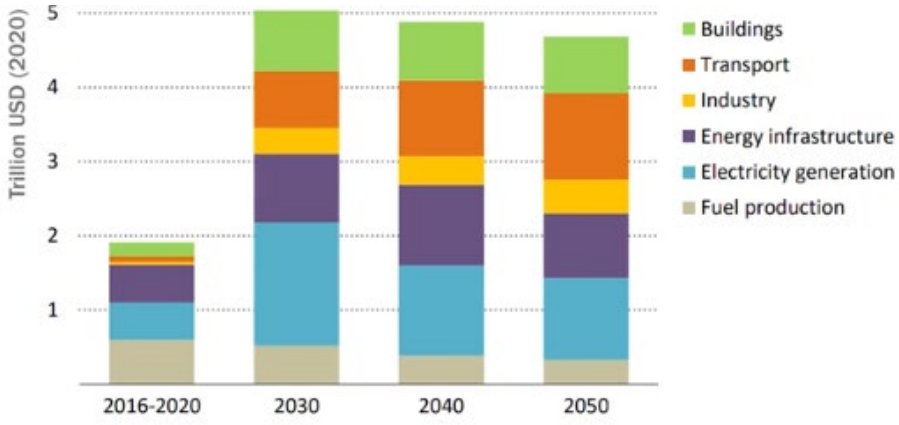
Source: MunichRE, 2019.

Without this the lives of society's most vulnerable – the elderly and young – will be at risk. However, heating, ventilation and air conditioning systems also contribute to greenhouse emissions, so we need more sustainable solutions to help keep populations cool.

Countries like the US are proposing large infrastructure spending plans which have a focus on "green" investment. To electrify our economies we need to rewire how they work, which will require large-scale investment across not just the power sector – in both renewable energy and the electric grid – but also in green mobility, industry and buildings (Figure 5).

We believe this huge investment in infrastructure and buildings could create a multi-year capital investment super-cycle, the scale of which is being underestimated by many investors. As such we are invested in those companies that are on the right side of this green capital investment we expect to come to market.

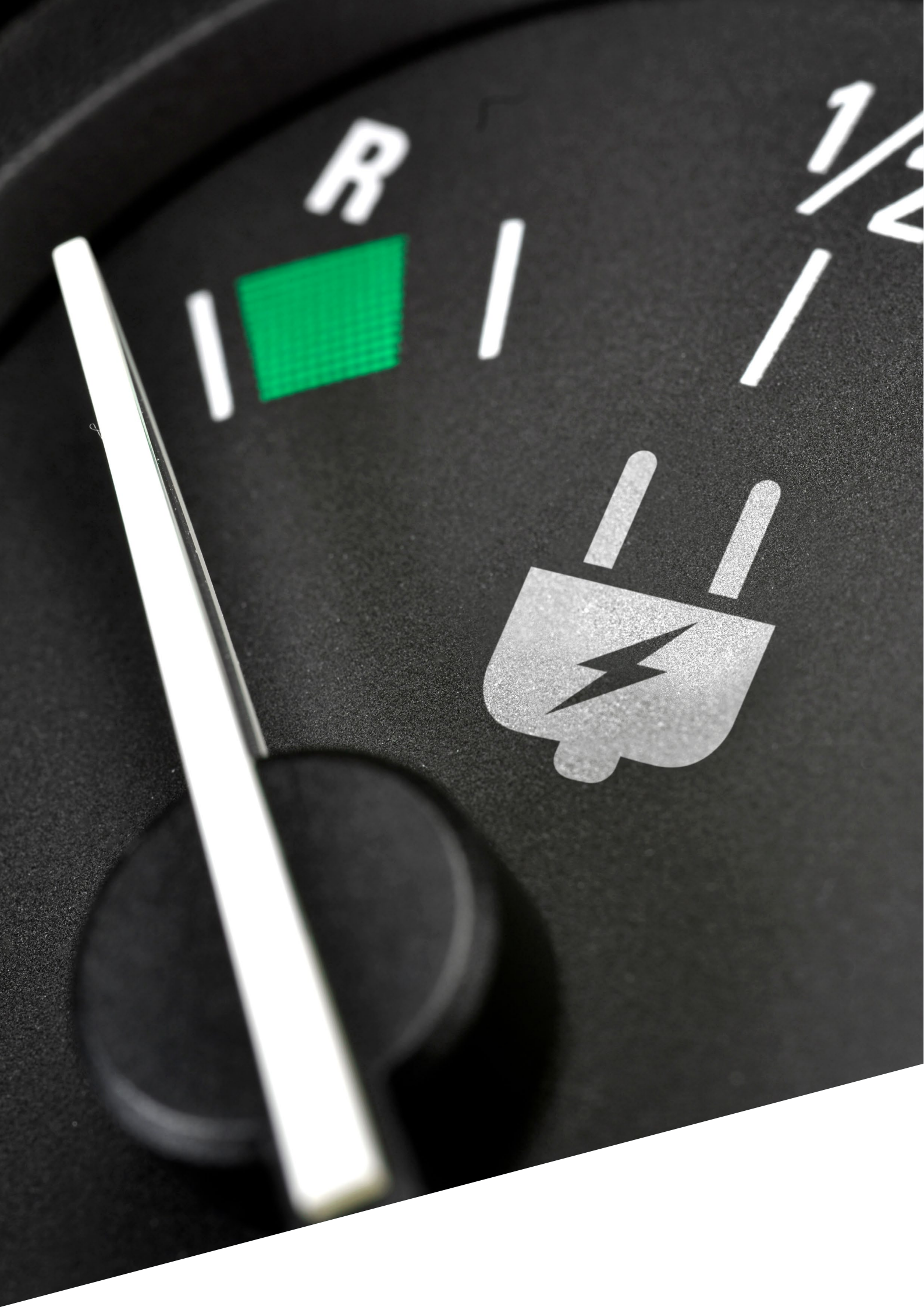
Figure 5: Average annual energy investment 2016-20, and in the net-zero by 2050 scenario



Source: IEA 2021 world energy outlook report.

Source:

1 BNEF, New Energy Outlook, April 2020.
2 BNEF, New Energy Outlook, April 2020.
3 Bloomberg, The $36 Trillion Bill for Neglecting Climate and Free Trade, 13 November 2020.
4 IEA, Renewable electricity growth is accelerating faster than ever worldwide, supporting the emergence of the new global energy economy, 1 December 2021.
5 WWF Living Planet Report, 2020.
6 World Economic Forum, 2020.
7 Barclays, China EVs report, February 2022.
8 Barclays, China EVs report, February 2022.
9 BNEF, NEO 2021 report.
10 BNEF, NEO 2021 report.
11 BofA Global Research, IEA, 2021.
12 FT.com, Global warming of up to 2.7C by century's end forecast as COP26 pledges fall short, 9 November 2021.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05 Europe's carmakers catch up on electric vehicles

Ben Kelly
Senior Analyst, Global Research

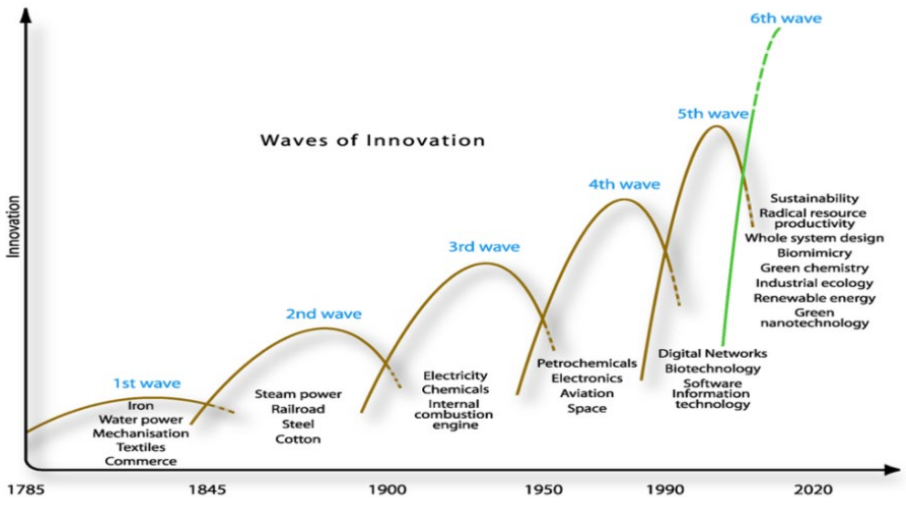
Ann Steele
Portfolio Manager

Dan Ison
Portfolio Manager

Humans consistently underappreciate just how quickly technological change happens. Despite our ability to consume technology arriving at an ever quicker rate through the decades, we constantly fail to appreciate this and as such disruptive technology can be overlooked and underestimated.

History is littered with examples (Figure 1) and with the benefit of hindsight it is easy to mock poor forecasting. However, we are living through a period in which the social and environmental risks to the global economy have arguably never been higher, which is likely to herald technological progression at an

Figure 1: 'Waves' of technological change through history



Source: The Natural Edge Project, October 2021.

unprecedented level. The concern is that if we fail to anticipate the rapid rates of adoption in some of these technologies, there may be meaningful financial and environmental consequences. However, change also provides significant investment opportunity.

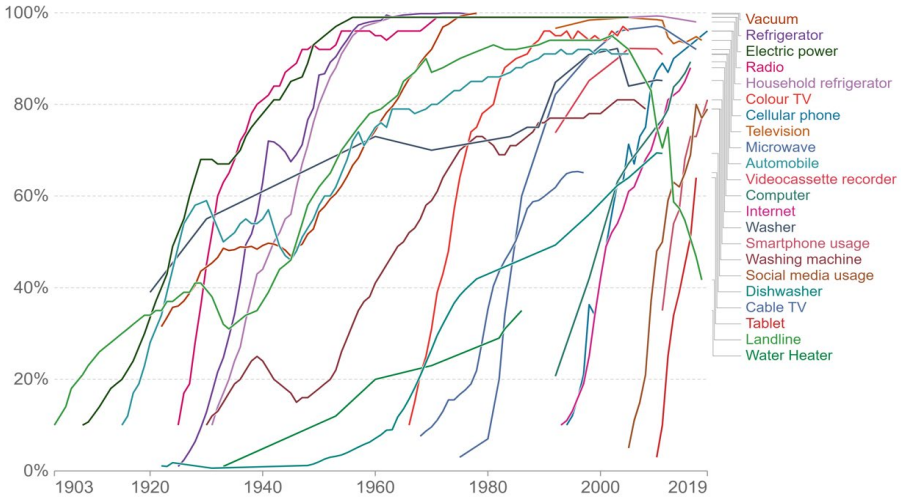
One such area of opportunity is in the automobiles sector, specifically with regard to electric vehicles (EVs). When the UK government revealed its long-awaited "Net Zero Strategy" in October, ahead of the COP26 conference in Glasgow in early November, EVs formed a central part of it. The government pledged to require carmakers to sell an unspecified proportion of EVs from 2024, as well as promising an investment of £620 million towards the build-out of a charging infrastructure and £350 million to boost the supply chain.[1]

Led by policymakers, carmakers are selling EVs in large numbers. It is no exaggeration to say the industry is at an inflection point – possibly as great as the change from horse and cart to the internal combustion engine more than 100 years ago.

To give an idea of the speed of change, in Europe EVs are forecast to comprise 12% of the continent's 18.6 million car sales in 2022, up from just 3% of the 21.2 million vehicles sold in 2019. This figure should rise further: by 2025 it is estimated EVs will make up 25% of the forecast 20.8 million sales, and by 2030 it is estimated they will account for more than a third (35%).[2] Globally the picture is similar, although North America lags Europe and China. Already, the variety of EVs available has increased enormously over the past few years, with the main manufacturers making huge investments yet avoiding compromising their profit margins as they do so.

When it comes to selecting the carmakers that will win the race to dominate tomorrow's EV market, there is a striking difference between those with credible medium- and long-term strategies for developing environmental technologies, such as Daimler and Volkswagen, and those without. Both these companies, for example, have recently had their environmental, social and governance (ESG) ratings upgraded by MSCI.

Figure 2: Technological consumption in autos and elsewhere is spreading faster than ever



Source: BofA Global Research/Comin & Hobijn Dediu/Our Word in Data, October 2021. Chart shows the pace of penetration of technologies to the mainstream over time.

The incumbent carmakers are catching up fast with Tesla, the sector's primary disruptor, as they quickly launch models at a time when margins are at record levels.[3] While Tesla sold far more passenger EVs globally in 2019 than any other carmaker – 368,000 versus 226,000 from Chinese firm BYD and 183,000 from Renault-Nissan – it is losing market share and sales in key European markets. For example, while Europe's EV battery market grew 106% in 2020, Tesla's sales were down 11%.[4]

That said, Tesla's Model 3 was Europe's best selling EV in the first four months of 2021. However, as a company it had far lower market share than incumbent carmakers with broader ranges. Volkswagen led the European market in the same time period in terms of market share, claiming 21.6% across its VW, Audi, Seat and Porsche brands, while Tesla ranked seventh with 5.3%.[5]

The mainstream carmakers' next generation of EVs, set for launch from 2024-2025, will be better designed than those of today and have better battery range. At that point they will become more formidable competitors.

As they develop new products, carmakers are also re-gearing their manufacturing processes to make them more sustainable. Daimler, which is set to be renamed Mercedes-Benz Group in early-2022, is ahead of the competition with a net-zero manufacturing target of 2039[6] – a little ahead of most companies. Indeed, the majority of companies building new manufacturing plants are powering them with renewable energy.

There are, however, possible bottlenecks that might impede this projected expansion. One such issue relating to ESG issues is the sourcing of cobalt from the Congo for battery components. Europe's leading carmakers state that they only use ethically sourced materials for their batteries, but this may lead to a tightening of supplies for these strategic metals. Elsewhere, a lack of investment in charging infrastructure is another persistent challenge.

Overall, however, we are seeing a strong catch-up trade between the European carmakers and Tesla. None of them are pure EV plays, but Tesla's premium stock market valuation more than reflects this fact. Tesla delivered 499,550 cars in 2020, which translates into a market capitalisation of €962,000 per car. Volkswagen, by contrast, delivered 9.3 million cars, translating to a market capitalisation of €14,100 per car.

As the European carmakers with clear strategies increase the proportion of EV sales, the gap in valuation between them and Tesla must shrink.

Certainly, with the pace of technological change ever-accelerating – and sky-rocketing awareness of climate change impacting decisions at all levels of the global economy (ranging from governments through to corporates and individuals) – this sector remains of critical importance to us as investors.

Source:

1 Net Zero Strategy: Build Back Greener – October 2021.
2 Ready for a post COVID 19 electrified world – Automotive Sector – Societe Generale, October 2021.
3 Ready for a post COVID 19 electrified world – Automotive Sector – Societe Generale, October 2021.
4 Ready for a post COVID 19 electrified world – Automotive Sector – Societe Generale, October 2021.
5 Ready for a post COVID 19 electrified world – Automotive Sector – Societe Generale, October 2021.
6 Ready for a post COVID 19 electrified world – Automotive Sector – Societe Generale, October 2021.

STEWARDSHIP IN ACTION

Our stewardship activities are integral to our investment process, helping us to detect inflection points and long-term trends, and influence companies' standards around ESG risk management and sustainable outcomes. A key focus is to enhance our investment research so that we can make informed capital allocation decisions as active investors.

The ultimate goal of our stewardship approach is to enhance our understanding of risks and opportunities, strengthening our ability to deliver sustainable long-term value for clients. In approaching these responsibilities we are mindful of market trends; company, local market and industry-specific issues; and relevant best-practice standards – but we will ultimately be guided by what is in the best long-term economic interests of our clients.

The research and analysis emerging from this, and the ongoing engagement with companies, is disseminated globally throughout the firm as part of our culture of research intensity and helps us identify potential issues at an early stage.

In prioritising our engagement work, we focus our efforts on the more financially material or contentious issues and themes, and the issuers in which we have large holdings. There are many companies with which we have ongoing engagements, as well as a number that we speak to on a more ad hoc basis, as concerns or issues arise.

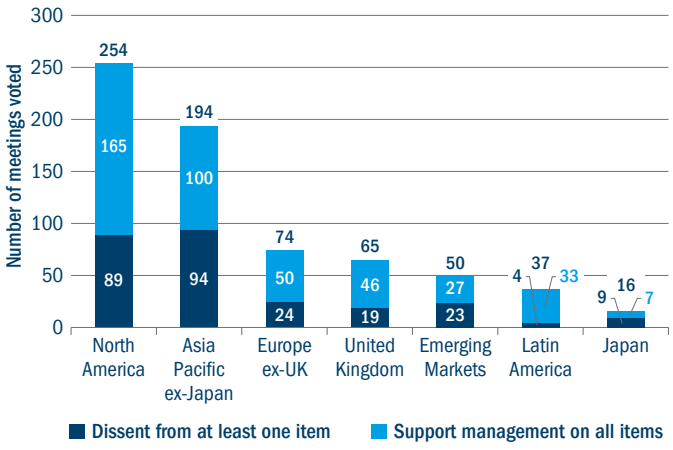
We vote actively at company meetings. We view this as one of the most effective ways to signal approval (or otherwise) of a company's governance, management, board and strategy, or standards of operating practice. While analysing meeting agendas and making voting decisions, we use a range of research sources and consider various ESG issues, including companies' risk management practices and evidence of any controversies.

Our final voting decisions take account of research issued by proxy advisory organisations such as ISS, IVIS and Glass Lewis, as well as MSCI ESG Research. Although we subscribe to proxy advisors' research, votes are determined under our own custom voting policy. Within this, material or controversial proposals receive enhanced due diligence and are voted on by the investment team, with support from the RI team. Votes are cast identically across all mandates for which we have voting authority. All our voting decisions are available for inspection on our website seven days after each company meeting in EMEA/APAC, and are updated annually in September in the US.

06 Voting Q4

Between October and December 2021 we voted at 690 meetings across 54 global markets. This compares to 680 meetings voted across 41 global markets in the previous quarter. Of the 690 meetings, 369 were annual general meetings, 298 special, 12 combined annual/special, seven court, two proxy contests and two written consent meetings. We cast at least one dissenting vote in 262 meetings (38%).

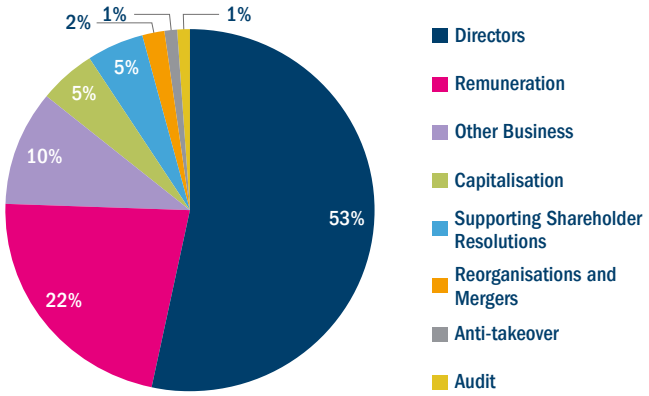
Figure 1: Meetings voted by region



Source: Columbia Threadneedle Investments, ISS ProxyExchange, 31 December 2021.

We voted in 54 separate markets in the fourth quarter. Most meetings were voted in the United States (258), followed by Australia (75) and United Kingdom (54). The majority of the voting items we did not support throughout the quarter continue to be related to directors, followed by remuneration and other business-related proposals.

Figure 2: Proportion of dissenting votes per category



Source: Columbia Threadneedle Investments, ISS ProxyExchange, 31 December 2021.

07 Engagement highlights

Between October and December 2021 we conducted ESG-focused engagements with 35 issuers,[1] some on multiple occasions. Meetings with a sustainability focus concern the impact of a company's products and services, while meetings with an ESG focus concern how well companies manage their internal non-financial risks.

Sustainability-focused

BAE Systems PLC
Centrica PLC
Ceres Power Holdings PLC
Epiroc AB-A
IMI PLC
Marshalls PLC
Re:newcell AB
Sika AG
SSE PLC
Ted Baker PLC

ESG discussions

Carnival Corp
Chevron Corp
Dow INC
Jardine Matheson Holdings LTD
Korn Ferry
Marathon Petroleum Corp
Naver Corp
Tesco PLC
Uber Technologies INC
Vale SA
Valero Energy Corp
Waste Connections INC

Social

Pearson PLC
Smith & Nephew PLC

Governance Focus

EasyJet PLC
Equals Group PLC
GlaxoSmithKline PLC
JD Sports Fashion PLC
Palo Alto Networks Inc
Rotork PLC
Sage Group PLC
SSP Group PLC
St James's Place PLC
Standard Chartered PLC
JD Wetherspoon PLC

Case studies

Although not all stewardship activities are successful in driving change, engagement helps us learn more about – and in some cases influence – issuer practices. The following case studies describe select company engagements over the past quarter:

1 The mention of specific stocks should not be taken as a recommendation to deal.

Company	Chevron Corporation
Location and sector	USA, Energy
Topics	*ESG*
Why did we engage?	The company's carbon-focused business model, significant scale and emissions footprint, together with its prudent management approach, made it a focus for our proactive engagement. Following our 2021 AGM support of shareholder net-zero proposals, scope 3 emissions and climate lobbying, plus recent climate activism within the industry and the company's September launch of its climate resilience plan, we wanted to learn how it is managing these complexities and positioning the business for a low-carbon future.
How did we engage?	The RI team led a joint engagement with our equity and corporate credit analyst in a video call with Chevron's lead independent director, the chair of the audit committee, and members of management.
What did we learn?	The company has embarked on a sound strategy to maintain its disciplined capex approach to a traditional oil and gas business, but one which will generate excess returns to be ploughed into low-carbon businesses where it has a structural or competency advantage. It has been more reluctant to commit to near- or long-term intensity targets, and thus proxy and activist pressure will continue. Disclosures around climate lobbying also need to improve. The board will need to add more industry and/or climate expertise in the next few years to round out critical oversight.
What was the outcome?	The board committed to review and consider a competitors' climate lobbying disclosure to mimic, as per our recommendation. We will continue engaging with the board and management to press the need to enhance climate disclosures and targets in line with other oil majors, as well as to encourage addition of industry and climate expertise to the board.

Company	Dow, Inc.
Location and sector	USA, Industrials
Topics	*ESG*
Why did we engage?	We engaged due to Dow's significant carbon footprint in a hard-to-abate industry, its significant packaging business, and the size of our holdings across equities and credit. We wanted to deepen our research insights and encourage change in speed and approach to decarbonising and product development/innovation.
How did we engage?	The RI team, in collaboration with the equity and IG credit analysts, organized a video call with investor relations and legal counsel. This was followed by a recent investor day at which ESG was the topic and new decarbonisation ambitions were announced.
What did we learn?	The company's vision and ambition are closely linked to fundamental financial outcomes, and management is thinking carefully about how it can meet the twin objectives of delivering on investor commitments/expectations while reducing externalities. It became clear that the company's first planned early wins, with two extensive facility retrofits to reduce emissions while enhancing its products, will be difficult to replicate quickly across nearly 100 facilities. Significant CapEx will be needed, and new technologies need to be incentivised to drive expected results and meet the company's 2050 decarbonisation target.
What was the outcome?	We will meet with the company again and discuss decarbonisation and packaging in more detail, with an aim to dig more deeply into how the company will achieve its ambitions.

Company	Nestle
Location and sector	Switzerland, Food and drink
Topics	*Human rights*
Why did we engage?	MSCI flagged a potential controversy concerning child labour in Nestle's supply chain.
How did we engage?	The Responsible Investment team – along with equity and IG credit team members – led a call with the head of Nestle's Cocoa Plan, where the abuses were alleged.
What did we learn?	Nestle is seeking to address the issue with initiatives ranging from facilitating access to education to offering bridging classes and vocational training. The company sources 46% of its cocoa sustainably through the Cocoa Plan, and has an ambitious 100% target for 2025.
What was the outcome?	A prime example of where human rights controversy exists, but clear mitigating actions are evident, justifying ownership.

Company	Sika AG
Location and sector	Switzerland, Industrials
Topics	*Corporate governance and ESG*
Why did we engage?	We engaged to consult with the chairman regarding succession and new executive hires, board diversity, progress against stated ESG goals and strategic restructuring encompassing both innovation and climate technologies, as well as further growth through mergers and acquisitions.
How did we engage?	The engagement was via a video call arranged with the help of investor relations. We aim to conduct consultations like this, with the chair or lead independent directors, at least on an annual basis.
What did we learn?	We gained reassurances around succession management, which has been very smooth, and ongoing hiring to improve board diversity. Appointments and restructurings were particularly supportive of the company's goals of improving operating safety, promoting innovation and developing further low-carbon technologies which will facilitate its net-zero transition, as well as that of the broader industry. With respect to M&A, evidence was provided which showed the board's awareness and oversight of critical deals.
What was the outcome?	The call provided reassurance in terms of governance and financial discipline, succession, climate strategy and other material ESG risk factors. It further strengthened the team's conviction in the company, management and board.

Company	Smith & Nephew plc
Location and sector	UK, Healthcare
Topics	*ESG and risk management*
Why did we engage?	Product Safety is a material environmental, social and governance (ESG) risk for companies operating in the health care equipment industry. An increase in product recalls indicated potential mismanagement; our aim was to clarify whether this was the case, and what corrective actions had been taken.
How did we engage?	The UK equity and fundamental research teams met the company's compliance committee chair and company secretary. This followed an meeting earlier in the year with the company's chairman which focused on corporate governance and strategy, and regular meetings with the CEO and CFO.
What did we learn?	2020 saw a material uptick in recalls. The committee led an investigation of the root cause – a disproportionate number related to mislabelling issues, and a disproportionate number from one particular site. A site improvement plan was put in place, with the "shop floor quality" identified as the cause rather than product design or R&D. In practice, this means human/technical error, where an out-of-alignment printer meant labels were illegible and products had to be recalled. Several employees focused on quality assurance were moved to this area, training increased, and management given a set of improvement actions.
What was the outcome?	We are confident that the board oversight of Product Safety is strong, and the appropriate corrective action taken. We remain an investor.

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COLUMBIATHREADNEEDLE.COM

EMEA.Stewardship@columbiathreadneedle.com
US.Stewardship@columbiathreadneedle.com
RI.Thematic@columbiathreadneedle.com

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