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# Earth Day 2021: How investors can support a greener future

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April 2021

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**Earth Day is an annual global event supporting environmental protection that takes place on 22 April. To support this year's theme – Restore Our Earth – some of Columbia Threadneedle Investments' fund managers and analysts present their thoughts on important environmental issues from an investment perspective and look at ways to support a greener future**

## The Race to Zero



**Andrea Carzana**  
Portfolio Manager

Many investors confuse ESG funds with sustainable outcome strategies and fear they may have missed the boat on investing in sustainable outcomes. This is a mistake. ESG has been growing for years but it was only in 2020 that, for the first time, investors began to focus in earnest on sustainable outcome funds and the opportunities presented by the world's transition to carbon neutrality – or net zero – by 2050.

We're beginning to see a wave of investment into companies and technologies – particularly in the areas of power generation and transport - that will enable the world economy to transition to net zero within our lifetimes. Many of these businesses have sustainable themes closely aligned with the UN Sustainable Development Goals. We believe these companies have the potential to enjoy better growth and returns, with wider competitive moats over the long-term.

These commitments are vital – in 2021, we will begin to see funding put in place to drive the net-zero transition for many years to come.

It is already obvious that the world will need far more money to transform energy generation – which accounts for three-quarters of global emissions – than governments have announced so far. For example, to reach carbon neutrality by 2050, the share of electric cars in total sales must rise from 3% to more than 50% by the end of this decade, production of “green hydrogen” must increase from 450,000 tonnes a year to 40 million, and investments in clean electricity need to rise from \$380 billion a year to \$1.6 trillion.<sup>1</sup>

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<sup>1</sup> Columbia Threadneedle Investments, January 2021

The implications for investors are clear. Unprecedented sums must be channelled into the world's energy transition over the coming decades.

The sheer scale of the investments required means this is a multi-decade investment trend, representing an opportunity of unparalleled size. Many of the technologies needed to make the transition possible are yet to be commercialised. The companies developing them will require sustained support from government stimulus programs for years to come.

The drive to achieve net zero will affect all companies and all investors over the coming decades. Some companies, such as oil majors with huge legacy assets, will face enormous challenges. Others have been investing in greener technologies for years and are well positioned for the energy transition.

Ultimately, public and private investment will flow to those companies making concerted moves to reach carbon neutrality. They will become more sustainable, more resilient and, therefore, more valuable over the long term. As a result, they will enjoy a lower cost of capital than their peers.

The global net-zero transition is just beginning: it will shape the investment agenda for decades to come.

## The Plastic problem



**Olivia Watson**  
Senior Analyst



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Senior Analyst

Plastic use continues to grow rapidly, often exceeding the rate of global GDP growth over the past 50 years. Unfortunately, just 9%<sup>2</sup> of global plastic waste is estimated to be recycled, due to insufficient waste collection and processing infrastructure. The other 90% is incinerated, sent to landfill or escapes to waterways, oceans or land where it can become long-lasting pollution, entering ecosystems and even food chains.

Given the environmental concerns, consumers, non-governmental organisations (NGOs) and regulators have pushed back against the rising plastic use trend, promoting initiatives such as:

- Extended producer responsibility requirements – which shift the costs of managing packaging waste from taxpayers or consumers to packagers and consumer goods companies.
- Plastic taxes – which seek to rebalance the cost differential between recycled plastic and lower-cost virgin fossil-based materials.
- Recycled content requirements – mandating certain percentages of recycled plastic in packaging.

As consumer attention intensifies and these regulations ramp up, the costs of plastic packaging waste will gradually be internalised – via taxes, increases in costs and requirements for investment in new technologies and infrastructure to enable plastics to become more circular.

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<sup>2</sup> Production, use, and fate of all plastics ever made | Science Advances (sciencemag.org), 19 July 2017

We believe brands that proactively respond to shifting consumer preferences and secure access to recycled content, and those that develop new recyclable packaging and solutions, will be better positioned.

So what measures are proactive consumer brands adopting?

### **Packaging reuse**

Diverse companies from Kroger and Unilever to Burger King are experimenting with packaging reuse models – ranging from in-store refill centres to reusable packaging for home-delivered or store-bought products, to roving low-cost product refill services in urban areas. Such models currently represent a tiny proportion of sales, but the Ellen MacArthur Foundation estimates that converting 20% of plastic packaging to reuse models could represent a business opportunity in excess of \$10 billion.<sup>3</sup>

### **Product and packaging redesign**

Improving packaging or eliminating unnecessary packaging materials also provides opportunities to experiment with new products, improve consumer perceptions and reduce costs. Tesco recently highlighted the elimination of 3,480 tonnes (or a billion pieces) of unnecessary plastic packaging from its product range and those of its suppliers.<sup>4</sup> Brands such as Tide have released new products such as concentrated detergents<sup>5</sup> which reduce packaging as well as transport costs and emissions.

### **Substitution**

Substitution of plastics with other materials will benefit packagers offering innovative or recycled packaging, as well as those focused on other widely recycled materials such as paper and aluminium. Substitution of virgin and non-recyclable plastics with recycled and recyclable plastics will also play a key role, given the significantly lower greenhouse gas profile of recycled plastics as compared to virgin materials. Bioplastics are often touted as a solution, but not all bioplastics are more recyclable or biodegradable than fossil-based plastics, posing the same end-of-life challenges and potential reputational risks for companies making environmental claims.

### **Increasing recyclability and use of recycled materials**

Finally, and perhaps most critically, the focus of much attention lies in making plastic more circular via increased packaging recyclability and use of recycled plastics.

Much of the effort is directed toward meeting voluntary or regulatory targets, which are often focused on 100% recyclability and 25% recycled content by 2025. Progress against these goals is varied, but generally slow.

The gap between current practice and 2025 goals highlights the need to secure cost-effective recycled content supply. The market for recycled content is growing rapidly, with capacity coming on stream despite the pandemic. However, there may still be a shortfall prior to 2025 when availability of food grade recycled plastic may be squeezed.

### **What next?**

As investors, we continue to engage with management teams of consumer goods and packaging companies to better understand their relative positioning and progress towards shaping their products and packaging to meet changing regulatory and customer demands. We view representation within initiatives such as the Alliance to End Plastic Waste, the Sustainable

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<sup>3</sup> Ellen MacArthur Foundation, *The New Plastics Economy: catalysing action*, 2017

<sup>4</sup> Tesco removes one billion pieces of plastic – Tesco PLC, 30 December 2020

<sup>5</sup> Compaction | Sustainability – Tide, accessed 5 February 2021

Packaging Coalition, and the Ellen MacArthur Global Commitment as a positive signal of companies' commitment to working towards long-term solutions. We also continue to push for improved disclosure of ESG and plastic-related targets and metrics to better understand companies' risk exposure and progress on key issues.

### Can the recovery of air travel be 'green'?



**Pauline Grange**  
Portfolio Manager



**Jess Williams**  
Analyst

In 2020, relative to 2019, total global CO2 emissions for all sectors fell by 10.5 billion metric tons or 4.4%<sup>6</sup> due to the pandemic.

This emissions drop should be a serious wakeup call – but, even if this level of shut down continued every year, it still would not be enough to hit the 1.5 degree C° target limit in the rise in global average temperature, as set by the 2015 Paris Agreement. According to the UN, meeting this target would require an annual decline in greenhouse gas emissions of 7.6%.<sup>7</sup>

In light of this urgent requirement for decarbonisation and as vaccine programs roll out globally and we eye a return to air travel following a 60% decline in passenger numbers last year, the question is how can this be “greener”?

Economic stimulus will play a key role in the post-pandemic de-carbonisation of the travel industry. We have already seen this happen in some places, with the EU Green Deal and bailout constraints for airlines with funds conditional on the cancellation of short-haul flights where rail is a viable alternative.

But unlike road transportation, shipping and aviation are two particularly difficult areas of transportation to de-carbonise. Both industries account for around 3% of global emissions which puts them on a par with Germany, the world's sixth largest emitter.

Unlike road transportation where electric vehicles offer a cost-effective solution, zero-carbon technologies for aviation and marine transportation remain uncompetitive versus cheaper fossil fuel options.

In addition, both industries are international and regulating international industries is complex. The Paris Agreement doesn't cover shipping or aviation, and these industries don't pay fuel tax on international journeys. This makes it even more difficult for new low-carbon technologies to compete.

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<sup>6</sup> Carbon Monitor analysis, January 2021

<sup>7</sup> Cut Global Emissions by 7.6 Percent Every Year for Next Decade to Meet 1.5°C Paris Target - UN Report, 26 November 2019

Some aircraft manufacturers have re-designed airplane engines and airframes to improve fuel efficiency, however, these incremental improvements aren't enough. We need new, sustainable energy solutions to de-carbonise air travel.

Sustainable aviation fuels (SAFs) are an immediate solution to help lower carbon emissions. SAFs are produced from sustainable feedstocks such as used cooking oil and other non-palm waste oils from animals, plants or foods scraps that would otherwise have gone to landfill. SAFs are very similar in chemistry to traditional fossil jet fuel and thus there is no need to change existing airplane engines to use them.

Using SAFs would result in a significant reduction in carbon emissions compared to traditional jet fuel and could act as an essential near-term "bridge" to technologies such as electric and green hydrogen based air travel.

The challenge here is the huge cost premium of SAFs versus fossil fuels, but prices are expected to fall as the industry scales. However, this requires investment and time.

Technologies such as electrification and green hydrogen will be key to long-term de-carbonisation. Battery power may be viable for shortrange flights with a limited number of passengers, but batteries are heavy and don't contain enough energy to compensate for that weight.

In the near-term new satellites will soon allow transatlantic flights to be tracked more accurately while remaining a safe distance apart. This could allow aircraft to be more flexible in their flight paths in order to more accurately follow favourable tailwinds and avoid headwinds.

By doing so, the aviation sector could be presented with a cheaper and more immediate way of cutting emissions than through advances in technology. The cut in emissions could be as large as 18% in a best-case scenario.

Green hydrogen, in the form of ammonia, is viewed as one of the most viable long-term solutions to green air travel – it is created from renewable energy and provides the higher energy density (relative to batteries) needed for flying while not emitting CO<sub>2</sub> in-flight. However, the energy density is not quite as high as kerosene, so long-haul journeys could still prove tricky. But there is a more significant problem: most of the hydrogen produced today is derived from methane, a fossil fuel which releases significant quantities of carbon dioxide when it is produced, while green hydrogen is currently prohibitively expensive to produce. But it is expected that as green hydrogen production scales, costs will fall rapidly. Government subsidies and regulation will also help accelerate the adoption of these green technologies, helping to make them viable and cost effective by the end of the decade.

Market-based carbon offsetting measures could also help fund this sustainable transition, but consumer uptake to-date has unfortunately been limited. There is also a need to standardise the voluntary offset market which is currently plagued with accusations of 'green washing' due to an abundance of offsets with very little environmental credibility.

The airline industry – from manufacturers to operators – are increasingly working together to develop solutions for greener air travel. Although there are near-term challenges to these sustainable solutions, we have no doubt that the technology and cost curves will improve over time.

## Hydrogen: significant opportunity or hot air?



**Natalia Luna**  
Senior Thematic Investment Analyst

Over the past year or so we have noticed a remarkable focus on green hydrogen as a clean alternative to traditional fossil fuels. Hydrogen is the most abundant molecule in the universe and its qualities have been known for a long time. So, what is driving all this hype and why the attention now?

There are, in fact, two key explanations: first, climate change is accelerating; and second, renewable energy costs have fallen dramatically.

Since the Paris Agreement in 2015, governments have turned their attention to climate change and committed themselves to achieving emissions reduction targets that will lead to carbon neutrality by 2050.

The Covid-19 pandemic has accelerated the urgency surrounding climate change policies and many governments have now announced net zero emissions targets. As policymakers look for ways of cutting emissions there are some sectors where electrification is not practical and “green” hydrogen is a feasible alternative.

The cost of renewable energy makes a big difference because green hydrogen is produced by electrolysis, splitting water into hydrogen and oxygen. When the electrical input comes from a renewable source, the hydrogen has no carbon footprint. Therefore, it can play a pivotal role in de-carbonisation.

Currently, around 66 countries have net zero emissions targets, out of which around 20 have unveiled hydrogen roadmaps. We expect more to follow.

The cost of green hydrogen has fallen significantly recently. The renewable energy used in electrolysis accounts for about 70% of the cost and has fallen in price by approximately 70% in a decade.<sup>8</sup> Additionally, the price of an electrolyser has declined by about 60% in the same time.<sup>9</sup> It is reasonable to expect that these price falls will continue, adding to the appeal of green hydrogen.

### Problems with green hydrogen

However, even after the decline in renewable energy costs, green hydrogen remains expensive when compared with other forms of hydrogen and fossil fuels. Currently green hydrogen is seven times more expensive than fossil fuels. It also takes a lot of power to produce – it is estimated that renewable energy generating capacity would need to increase by roughly seven times in the next 30 years to meet anticipated demand.<sup>10</sup>

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<sup>8</sup> Kepler Cheuvreux, All About Hydrogen, September 2020/Goldman Sachs, Carbonomics, The rise of clean hydrogen, July 2020

<sup>9</sup> BNEF, Hydrogen Economy Outlook, March 2020

<sup>10</sup> Kepler Chevereux, All About Hydrogen, September 2020

Beyond that, hydrogen is hard to store and transport. Its low density makes it considerably harder to store than fossil fuels, and in order for it to replace natural gas in the global economy, three to four times more storage infrastructure would have to be built.

Meanwhile, pipelines and power plants would require retrofitting because hydrogen can escape through existing infrastructure. It is estimated that around 70% of energy used to produce green hydrogen is effectively lost.<sup>11</sup>

Such considerable practical difficulties mean that, generally, where electrification is possible it will be the more efficient and competitive option. Therefore, green hydrogen can fill the gaps where electrification is not possible, i.e. trucking, shipping, seasonal energy storage and heavy industry.

To make hydrogen fulfil the hype, policy support and carbon pricing are essential. This will help to drive investment, promote the use of hydrogen and render it more cost competitive. Europe is at the forefront of policy support, with its "Vision 2050" strategy which aims to grow the share of hydrogen in the bloc's energy mix from less than 2% currently to 13%-14% by 2050.<sup>12</sup> The strategy also contemplates introducing supportive policy measures and regulation in the next year to set up a regulatory framework that creates demand for hydrogen.

Given the EU has the most highly developed hydrogen policy landscape, this is expected to bring the most opportunities in the near term.

### **A major role in de-carbonisation**

Higher carbon prices are crucial to making green hydrogen competitive with other fuels. To achieve higher carbon prices, carbon taxes will be crucial, and the EU's proposal to tighten its Emissions Trading Scheme and introduce a carbon border tax could drive prices higher in the next decade. Looking ahead, hydrogen has a material role to play in the 30-year de-carbonisation evolution. It is likely to account for a substantial proportion of the future energy mix.

Sizable investments will be made across transport, power and industrial processes. Policy support and higher carbon prices will bring scale and required infrastructure, reducing costs and creating opportunities in electrification, renewables, the hydrogen supply chain and green mobility. However, adoption will vary by geography and application.

While heavy transport applications may provide lower hanging fruit, most industrial applications will require both green hydrogen price declines and higher carbon prices. Those regions such as Europe with the strongest policy frameworks will take an early lead.

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<sup>11</sup> Bloomberg, 2020

<sup>12</sup> A hydrogen strategy for a climate-neutral Europe. European Commission, 8 July 2020

## Sustainable infrastructure investment in a post-Covid world



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The nature of sustainable infrastructure investment is one of many areas changed by Covid-19 and efforts to slow its spread.

### Policies aligning toward a cost-effective, secure and “just” transition

The idea that investing in infrastructure can benefit the environment and/or mitigate the impact of climate change is not new. But the pandemic has changed some of the dynamics.

Reduced travel, industrial activity and electricity generation during Covid-19 saw global emissions fall by up to 7% in 2020, according to the UN Environment Programme<sup>13</sup> and this will have extended with lockdowns into early 2021.

Despite this, global emissions remain far from what scientists estimate is needed to avoid the worst impacts of the climate emergency. The level of atmospheric CO<sub>2</sub>, which is what heats our temperatures, continues to rise. Much more needs to be done to prevent the post-pandemic economic recovery leading to a rebound in emissions. Transformation across the entire energy value chain is required, including how energy is produced, stored and distributed; existing infrastructure and industry needs to adapt and decarbonise by adopting new technologies and fuels. At the same time, with many regions facing deep economic impacts, the health and social effects will be felt across economies.

Opportunities to make investment linked to climate-change mitigation are likely to increase: the European Union, for example, has indicated it will put the environment at the centre of its Covid-19 economic recovery plans<sup>14</sup> while the UK has announced more ambitious proposals to meet its emissions targets.<sup>15</sup> In February, the US re-joined the Paris Agreement and several US states already have goals in place to hit at least 50% renewable energy by the end of the decade.<sup>16</sup>

There seems to be more consistency of policy than ever before toward promoting a cost-effective, secure and “just” transition underpinned by industrial transformation, technology and innovation. This could not only reduce emissions but also foster investment which leads to job creation in critical manufacturing, construction and small and medium-sized businesses, as well as save consumers money.

The European Commission estimates the need for €350 billion in additional annual energy investment between 2021 and 2030, compared with the previous decade. Most of the extra money is to finance interconnections to link up countries’ grids and new capacity, including replacing old power and industrial plants.<sup>17</sup>

<sup>13</sup> <https://www.unenvironment.org/emissions-gap-report-2020>, 9 December 2020

<sup>14</sup> [https://ec.europa.eu/info/strategy/recovery-plan-europe\\_en](https://ec.europa.eu/info/strategy/recovery-plan-europe_en)

<sup>15</sup> <https://www.ft.com/content/3eda6c6f-265f-4804-a017-a260d1e101cc>

<sup>16</sup> Bank of America Merrill Lynch, May 2020

<sup>17</sup> <https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/eu-says-higher-climate-goal-requires-350b-extra-energy-investment-per-year-60382093>



All of this technology demands security, reliability and resilience. It must also service everyone. Modern businesses, digital customers, people working from home – geography is no longer a hinderance to what you do or where you do it, but connectivity can be. People in rural areas need fast and reliable fibre broadband just as much as those in cities and towns.

If anything, Covid-19 makes even more compelling the case for high-security, high-capacity, highly resilient and broad-reaching digital infrastructure – and to maintain smooth operations, the need for investment is more important than ever.

### **Socially beneficial investment**

Covid-19 has also created a widespread need for socially beneficial investment, and this need is unlikely to disappear as we emerge from the pandemic.

A strong barometer for trends in environmental and social investing is the public bond markets and the issuance of specific use of proceeds bonds, especially green, social and sustainability. Issuance in 2020 was underpinned by a sharp increase in the issuance of social bonds (more than 700% year-on-year)<sup>18</sup> – with debt financing channelled into specific projects with agreed socially beneficial outcomes. This could be the creation of jobs, setting up of healthcare programmes or facilities, or provision of education or training services – all areas on which the pandemic has had a devastating impact.

By the end of November, a total of \$155 billion were issued<sup>19</sup>, an increase of 869% on the same period in the previous year. Around \$100 billion was raised by issuing dedicated Covid-19 bonds covering either social and/or sustainability projects.<sup>20</sup>

The wide range of social bonds issued over the last year, and the likelihood of this trend continuing, means investors and institutions now have a much wider choice of socially beneficial investments – alongside those with green and/or sustainability credentials.

Heading into the pandemic, sustainable investment was typically more likely to focus on the environment and climate change mitigation strategies. However, investing to produce more beneficial or equitable social outcomes is now firmly in the spotlight.

### **Interplay between social and environmental concerns**

The recent rise in the importance of social investing may have helped create a better understanding among investors of the interplay between environmental and social concerns: investment in green infrastructure is one example. There is growing realisation that infrastructure investments have long-term benefits for communities, and ultimately that integrating ESG is an opportunity to create value by shaping positive outcomes.

Some policymakers see a new green deal as the ideal route out of the pandemic-induced recession because of its ability to create thousands of new employment opportunities, not just because it will help the bloc reach its emissions deadlines. Indeed, recent research suggests that investment in green projects has the potential to create up to three times as many jobs as investment in competing fossil fuel-based projects.<sup>21</sup>

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<sup>18</sup> Columbia Threadneedle analysis, 2020

<sup>19</sup> Bloomberg, November 2020

<sup>20</sup> Columbia Threadneedle Investments, June 2020

<sup>21</sup> Will Covid-19 fiscal recovery packages accelerate or retard progress on climate change? May 2020 Cameron Hepburn, Brian O'Callaghan, Nicholas Stern, Joseph

A reduction in reliance on oil and gas can have additional social benefits: improvements in air quality as a result of the switch to electric motor vehicles, for example, are expected to deliver major health benefits, and these will be felt disproportionately by those living in more crowded urban areas.

Ultimately, though, progress in minimising the impact of climate change will inevitably have huge social implications in terms of reducing the prevalence of extreme weather events, thereby limiting the extent to which they can ruin harvests, damage property and displace people in the decades ahead.



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