

2021

IMPACT REPORT



TO BE SUSTAINABLE IS:

“MEETING THE NEEDS OF THE PRESENT WITHOUT COMPROMISING THE ABILITY OF FUTURE GENERATIONS TO MEET THEIR NEEDS” 1987 BRUNDTLAND COMMISSION

Any activity or state of affairs that cannot be sustained over an unspecified timescale is, by definition, not sustainable. Sustainability is not a by-word for improving, it is not a subjective marker of some indeterminate level of greenness, it is a hard objective fact. It is all too easy to lose sight of this fact and definition as more and more people jump on the bandwagon, without any real idea of how to keep that bandwagon on a safe course.

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An iClima report, reflecting the incredible work of the whole team. Special kudos to the words by Chris Searle and visuals by Kieran Baptista.

WELCOME.

In our two years of existence, we have produced two funds, gone through two rebalances, and directed over USD \$200 million of capital towards companies providing climate change solutions across direct and licensed products.

As 2021 comes to a close, we are going through our fourth rebalance using data from 2020. We are proud of how far we have come, but we have plenty more work to do. We are constantly looking outward, trying to hone in on the real barriers to decarbonising the economy and identifying ways of overcoming them, but also, increasingly, looking inward, challenging ourselves and our methodology to ensure that our impact truly is positive.

This report, then, outlines our philosophy and our methodology, and reflects on how we have done and what we could do better. In this way, it is like any other company report. We hope, however, that this document will be much more than that. We believe that our approach is pioneering, and has a potential impact far beyond the boundaries of iClima.

As such, **this document represents a roadmap for shifting the paradigm of sustainable finance.** For too long we as a financial community have been mired in the 'do less harm' paradigm, weighed down by the collective inertia and even greenwashing of companies around the world. Our methods are improving, the formation of the ISSB being a particular breakthrough, but there is simply no way that we will be able to achieve the scale of emissions reductions required in the time available while we continue to financially reward mainstream companies for simply doing 'less harm'. In short, **so much of this finance is just not used to tackle the climate crisis.** When we need as much investment as we do, we can't keep wasting what we do have in this way.

Our first impact report is, therefore, a bit abnormal. First, we look at the relationship between finance and the climate crisis, outlining what has gone well and what needs to change. While the private financial sector has been a driving force behind mainstreaming climate action, the world is still on course for well upwards of 2°C of warming, with most financial portfolios a distance beyond even that.

From this base, we outline our pioneering approach, and how it can take us that step further towards

meaningful decarbonisation. We go into detail on our methodology, particularly our flagship tool, potential avoided emissions (PAE). This is a term that is gaining traction, with interest from companies including Baillie Gifford, Vontobel and Schroders, but that still engenders much confusion.

PAE is nothing to do with offsetting or carbon neutrality, and is distinct from previous misleading uses of the term avoided emissions. Instead, it is a way of robustly quantifying the potential impact of climate change solutions; a much-needed tool to ensure that finance is used as efficiently as possible. **We hope that our explanation will provide a handbook for anyone who wants to harness this game-changing idea.** This is not the time for siloed, protectionist thinking. In the favourite words of our CEO, 'the world needs to know.'

We follow this by outlining the universe that emerges from the above approach. This report is not about analysis at the company scale, but about introducing the reader to the component parts of the low carbon economy. This section is a useful guide for anyone new to sustainable finance.

Next, we touch on our alignment with the SDGs. The world is facing multiple intertwined environmental crises, and blindly chasing gases in pursuit of climate change mitigation could lead to disaster. It is vitally important that all stakeholders consider their broader impact on environmental and human wellbeing, two concerns that are, beyond any shadow of a doubt, intrinsically interlinked.

We then offer a discussion of these threats to environmental and human wellbeing, packaged here as 'threats to the SDGs'. They are all examples of taking action without proper consideration of the impact of that action. Case studies include association with forced labour in Western China, and with human rights abuses at mines in the Democratic Republic of the Congo.

Our final major offering is an outline of our predictions for 2022. We highlight a number of key events, from COP27 to the US midterm elections, that could have a significant impact on the transition. Alongside these, five triggers for acceleration are highlighted. Together, they paint a picture of deepening and broadening

adoption. 2022 will be a death knell for the high carbon economy.

Although this report is primarily focused on environmental sustainability, this is not possible without a sustainable social and governance structure. **Throughout the report, we encourage readers to reflect on the meaning of the word sustainable, for it has become prevalent to the point of near irrelevance.** At root, it is very simple; it describes an endeavour that continues to fulfil its purpose over a long, if not infinite, timescale.

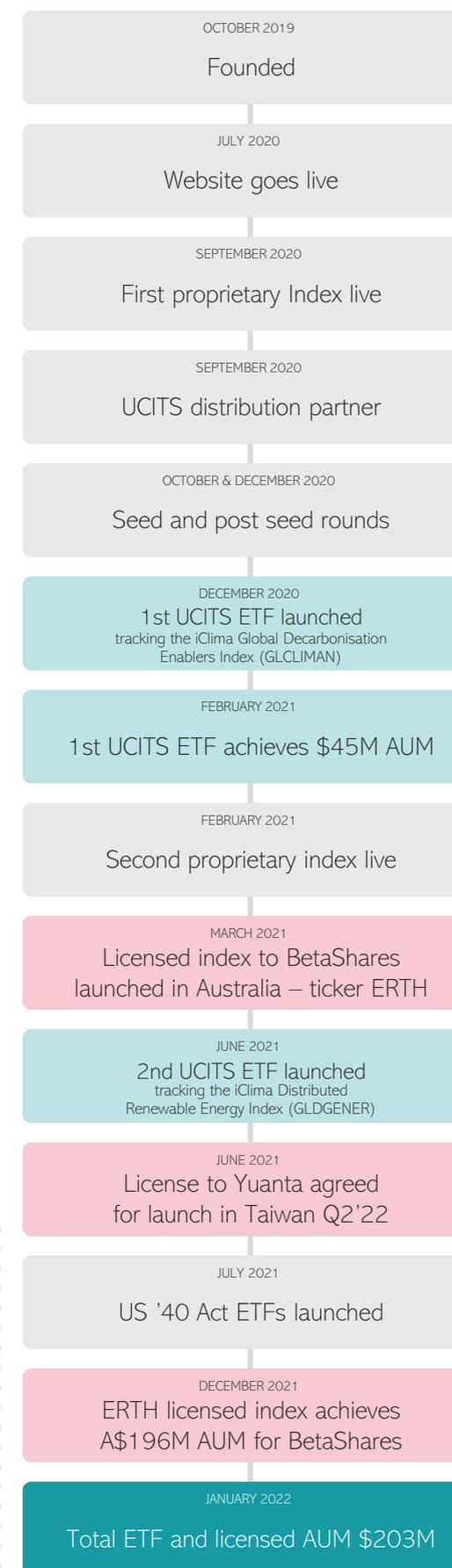
For a business to have the best chance of meeting these criteria, its strategy must emerge from a diversity of thought, and a structure that promotes more than the short-term interests of a governing minority. **In an increasingly dynamic world, siloed or constrained thinking will become a burden;** this is of course before the moral compulsion behind diversity and good governance is even considered. As well as a specific section on how our work aligns with the SDGs, the final page of the report is therefore dedicated to our team, whose composition, mindset and behaviour is driven by this forward-looking philosophy.

Together, we are working to solve humanity's greatest problem. While the paradigm of Milton Friedman still holds a firm grip over much of the economy, we operate in line with the growing view that solving such problems is the core purpose of any company, and profitability will emerge from doing so. We hope that this report will inspire others to think similarly.

While we are a private sector company rather than an NGO, we strive to be net-positive, creating good through and around our business model.

WE ARE WORKING TO SOLVE HUMANITY'S GREATEST PROBLEM

iCLIMA Earth Roadmap to Value Creation



2021 IN CLIMATE



Texas is hit by freezing temperatures and mass blackouts leading to hundreds of fatalities. Republicans initially blame 'frozen wind turbines', but the majority of retrospective evidence points to a failure of fossil fuel infrastructure combined with the effects of a changing climate.

Total becomes the first major global energy company to quit the American Petroleum Institute Lobby.



GM announces a target of being all electric by 2035.



Mauna Loa Observatory records atmospheric CO₂ concentrations reaching 417ppm for the first time.

This is 50% higher than pre-industrial levels.



President Biden welcomes 40 world leaders to the virtual Leader's Summit on Climate. Updated NDCs are announced, including a US pledge to reduce emissions by 50% by 2030.

Fossil fuel majors stumble. A landmark ruling sees a Dutch court order Shell to slash its emissions by 45% by 2030, an activist hedge fund wins three seats on the ExxonMobil board, and Chevron shareholders vote against the board in favour of a compulsory emissions reduction.

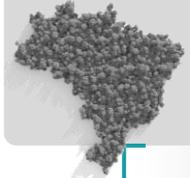


ExxonMobil



The EU enshrines its climate targets, of a 55% reduction by 2030 and net zero by 2050, in law.

A paper published in Nature shows that the Amazon rainforest has become a source rather than a sink of carbon in what is becoming a vicious positive feedback loop.



The IPCC 6th Assessment Report on the 'Physical Science Basis' for climate change is described as a 'code red for humanity'. It describes worsening impacts and the exponential nature of extreme weather versus degrees of warming. It does, however, find evidence to reaffirm that reaching Net Zero by 2050 would hold warming to 1.5°C.



Amplified by climate change, hurricane Ida sweeps across the Eastern United States causing upwards of \$60 billion in damages and causing hundreds of fatalities. It is the sixth costliest tropical cyclone on record.

China announces it will end the financing of overseas coal projects, buying the world an estimated three months in the battle to keep global warming to 1.5°C.



The UNPRI IPR consortium releases its 2021 forecast. It predicts that a drastic policy shift around the 2023 Paris ratchet will allow us to stay beneath 2°C of warming, but 1.5°C is becoming increasingly unrealistic without immediate and drastic action.

The Global Carbon Project's latest Carbon Budget shows that emissions have now rebounded to almost the same level as their pre-pandemic high, meaning we have categorically missed the opportunity to rebuild sustainably. The rebound is primarily driven by China and India. The incorporation of new land-use data does, however, show that emissions have in fact been flat for a decade.

After optimistic estimates emerged at the end of week 1, Climate Action Tracker release a devastating report finding that the new pledges place us on track for 2.4°C of warming. A UNEP paper backed up these findings.

2.4°C

Joe Biden signs the \$1.2 trillion US Infrastructure Bill into law. Amongst other things it contains \$65 billion in clean energy and grid-related investments, \$50 billion for climate adaptation and \$7.5 billion to build a network of electric charging stations.

President Biden pledges that the federal government will be carbon neutral by 2050.



15TH JANUARY

28TH JANUARY

FEBRUARY

FEBRUARY / MARCH

22ND-23RD APRIL

26TH MAY

24TH JUNE

14TH JULY

9TH AUGUST

LATE AUGUST

21ST SEPTEMBER

18TH OCTOBER

4TH NOVEMBER

9TH NOVEMBER

15TH NOVEMBER

8TH DECEMBER

20TH JANUARY

17TH FEBRUARY

26TH FEBRUARY

26TH MARCH

1ST MAY

11TH-13TH JUNE

LATE JUNE

JULY

15TH AUGUST

6TH SEPTEMBER

OCTOBER

21ST OCTOBER

1ST -7TH NOVEMBER

8TH-13TH NOVEMBER

LATE DECEMBER

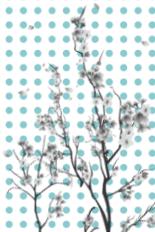
President Biden rejoins the Paris Agreement, four years after his predecessor pulled out. For the majority of those four years, the US was the only country in the world not signed up to the agreement, including war ravaged Syria and renegade North Korea.



Ford announces that its European fleet will be fully electrified by 2026, and fully electric by 2030.



UNFCCC publishes its initial NDC Synthesis Report, as requested by the Parties of the Paris Agreement. With months left until COP26 it shows, according to the UN Secretary General, that 'governments are nowhere close to the level of ambition needed'.



Kyoto's famous pink cherry blossoms reach full bloom, the earliest day since records began in 812 CE. Global warming is cited as the cause.

NRG Energy decommissions the last remaining US CCS facility in a blow for the solution.

The 47th G7 Summit sees a strong narrative, but limited concrete commitments on climate change.



A record breaking Canadian heatwave leads to the obliteration of Lytton by wildfire and hundreds of deaths elsewhere. Scientists say such a heatwave would be 150x less likely without the influence of climate change.



A crazy month in weather sees intense flooding across Germany and Belgium. Over 200 people die, and the events are found to be 9x more likely due to climate change. Comparable floods wreak havoc in China's Henan province, in Tennessee and in London.

As temperatures rise above freezing for the third time in a decade, rain falls at the summit of Greenland for the first time on record.



A joint editorial published by more than 200 medical journals calls for 'emergency action' against climate change, arguing that world leaders' failure to deal with the crisis is the 'greatest threat to public health' globally.

Mere days before COP26, leaked documents show Saudi Arabia, Japan and Australia lobbying to influence the independent IPCC process. The fossil fuel producers urged scientists to tone down the compulsion to end the use of coal and oil.

The first week of COP26 sees a cascade of pledges including Net Zero by 2070 from India, a multi-party pledge to cut methane emissions by 30% by 2030, a similar agreement to end coal production and one to end deforestation by 2030. Private financial institutions with \$130tn in assets pledge to reach Net Zero by 2050 under the GFANZ initiative.



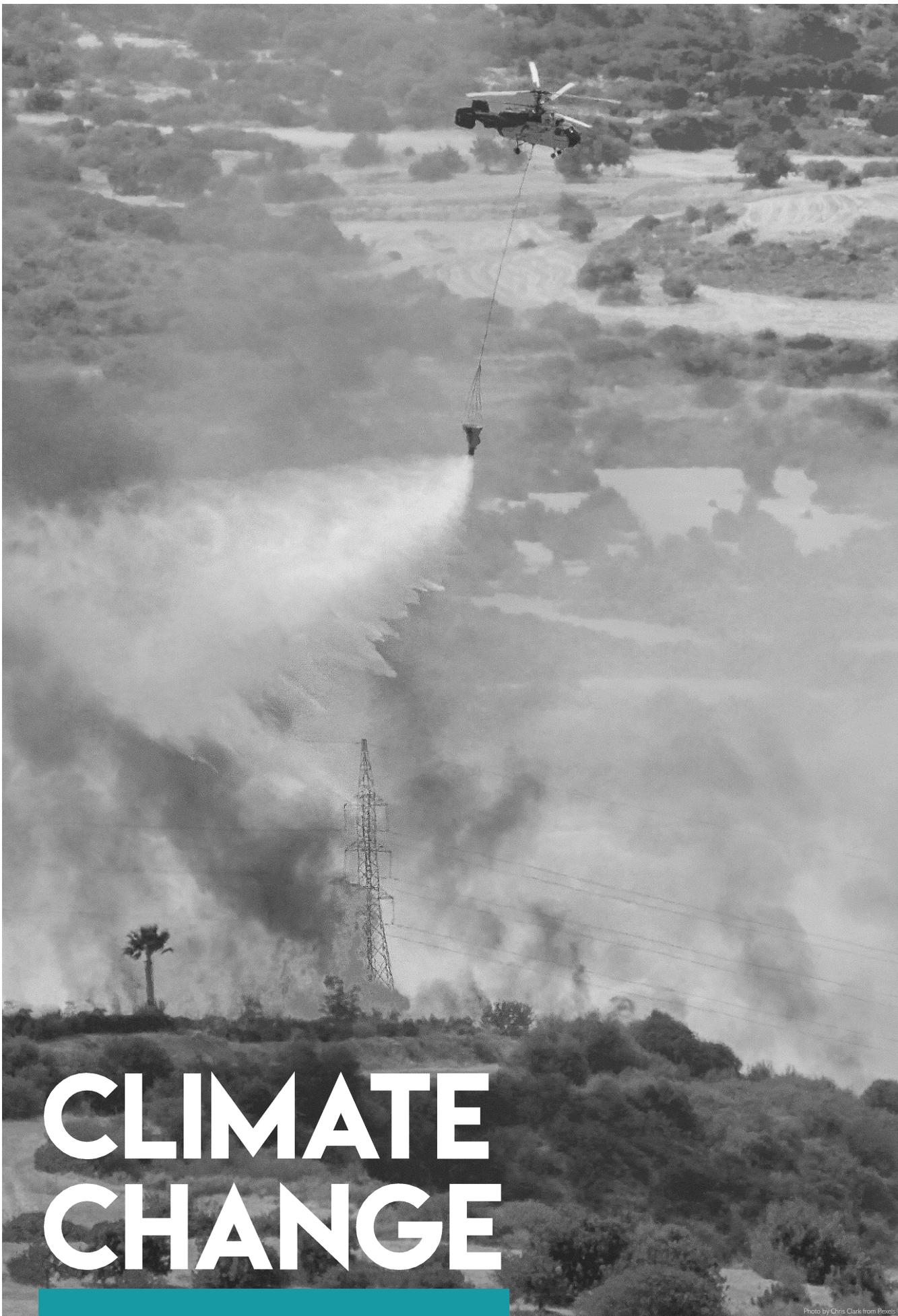
The Climate Policy Initiative releases its much-awaited Global Landscape of Climate Finance report. Whilst financial flows have increased year on year, the growth rate has slowed, and it is found that we need an annual increase of 590% by 2030 in order to meet our climate objectives.



Week 2 at COP26 results in the Glasgow Climate Pact, the first agreement to explicitly mention fossil fuels. The agreement is inadequate, but a big step nonetheless, particularly in getting parties back with new pledges annually. Article 6, the thorn in the side of policymakers, is finally sorted.

Biden's \$1.75tn Build Back Better bill, on which his climate change strategy hangs, is derailed by the opposition of a solitary democratic senator, Joe Manchin III of West Virginia. The fate of the bill hangs in the balance heading into Christmas.





CLIMATE CHANGE

Photo by Chris Clark from Pexels

CRISIS AND OPPORTUNITY

Assuming national commitments are met, we are currently on track for 2.4°C of global warming. Unfortunately, this is an assumption to which historical precedent is not kind, but even if governments pull through, **2.4°C is a death sentence** for vulnerable populations around the world and the end of life as we know it for the rest of us. At this temperature, we also risk setting off tipping points which could lead to unquantifiable dangers and potential systems collapse. To limit temperatures to the safe level of 1.5°C we have to halve emissions this decade. **Clearly, there is no time to waste.**

Thankfully, this troublesome outlook is increasingly being complemented by some more positive news: halving emissions this decade now also makes financial sense. It has been well publicised for some time that the long term economic cost of inaction would be far greater than the cost to GDP of taking action now. Sadly, such a calculation doesn't appeal to the human brain, and our discounting of risk, short term outlook and bias towards optimism have conspired to ensure that this fact hasn't made much of an impression on our collective psyche. Now, however, **the plummeting cost of renewable energy, a favourable regulatory landscape and a proliferation of low carbon innovation** have together meant that climate change mitigation not only diminishes the abstract chance of future cost, but also **offers significant concrete opportunity for profit in the near term.**

As outlined below, the dominant approach within the financial sector is to reward mainstream companies for their emissions reductions. This will not, however, deliver change in the time available. It also fails to harness the gaping financial opportunity of the low carbon transition.



Photo by George Dooling from Pexels

WE ARE CURRENTLY 
ON TRACK FOR **2.4°C**
OF GLOBAL WARMING.
AT BEST. 

FINANCE AND THE CLIMATE CRISIS

Photo by Karolina Grabowska from Pexels

WHAT IS GOING WRONG?

Not so long ago, climate change was considered a fringe issue, the sole domain of what Boris Johnson famously termed 'hair-shirt wearing, tree-hugging, mung-bean-munching eco-freaks'. As the Prime Minister noted in the same speech in late 2020, climate change is now regular headline news and the subject of an ever-increasing number of ever-more-mainstream initiatives. His own journey from outspoken sceptic to keynote speaker at COP26 is a perfect symbol of this transformation.

The private financial sector has been a huge part, and even a driver, of this shift, to the point where institutions representing \$130 trillion in assets pledged to align their portfolios with Net Zero by 2050 at COP26. **This is a monumental shift.** The term 'Net Zero' did not even exist seven years ago, and the proliferation of acronyms, from boards to standards and regulations to taskforces, has been driven in large part by the financial sector. Environmental, Social and Governance (ESG) is perhaps the most prominent acronym of all, and **it is predicted to count a third of global assets under its auspices by 2025.** There can be no doubt, finance has taken environmental concerns mainstream.

What is less obvious, however, is the extent to which this attention has translated into meaningful change. In fact, the majority of studies are not positive. In 2018, for example, it was shown that, despite growing claims to sustainability, **the S&P 500 was on track for a world of 4.9°C of warming, the MSCI World Equity for 5°C.** The Climate Policy Initiative's latest 'Landscape of Climate Finance' report was a damning reflection on the situation, **showing a required increase in annual flows of climate finance of 590% by 2030** if we are to meet internationally agreed climate objectives.

A number of explanations have been put forward to explain this failure to translate narrative into real economy change, particularly: an uncertainty over optimal pathways to Net Zero, poor quality of data, competitive disadvantages and a lack of real economy investment opportunities. These issues can all be traced back to the way that the financial sector has thus far approached the issue of climate change, and the methodologies it has subsequently used.

Here we try to provide a definitive guide to the relationship between finance and the climate crisis, before we suggest how it could look under our novel paradigm.

ESG – An introduction

ESG approaches dominate the current paradigm of sustainable investing. The concept of ESG emerged from a small UNEP working group in 2004. It was rooted in the best principles and practices of the UN and its MDGs and SDGs. **Since then, this well-meaning and, in sum revolutionary, acronym, has been somewhat co-opted for profit.**

The majority of ESG investing, regardless of specific style, is now based around ESG scores from a small number of providers. Increasing scrutiny has fallen on these often-opaque scores, which condense reams of data from various sources into a single rating. Here, we want to highlight some of the issues, while keeping in mind the numerous positives that have arisen from the ESG paradigm. **It is indeed possible to argue that we now owe its founders a climate debt to the tune of \$130tn and counting,** for all those assets are unlikely to have been pledged to Net Zero without the early impact of ESG.

According to the OECD, four overlapping ESG investing strategies have emerged, from the simplest negative screening, through the rebalancing of benchmarks in line with ESG criteria and investing with a thematic focus on a selected issue, to impact investment, where social or environmental outcomes can take at least equal priority with financial returns. It is important to consider these when assessing the benefits and drawbacks of ESG.

ESG divergence

Perhaps the most visible flaw in the ESG rating system has been the divergence of scores between providers. **Various estimates of correlation exist, with two of the most prominent being only 0.45 and 0.54.** When compared to credit ratings which can have a correlation of up to 0.99 between providers, the criticism here seems justified. An investor looking to align their portfolio with climate goals could find that their holdings look substantially different whether they use, say MSCI, Refinitiv or Sustainalytics data.

There are three clear reasons for this divergence: scope, weight, and measurement. Scope pertains to the indicators chosen to represent E, S and G, for example gender equality. Measurement is the metric used to measure these indicators, let's say number of women on the board versus gender pay gap. Finally, weight is the relative importance given to each scope in producing the overall rating.

Scope and weights divergence are not as problematic as they have often been made out to be. Many in fact argue that disagreement is inevitable and even positive, because it allows investors to consider a range of perspectives. Imagine for a moment that there was one universal 'economic' score offered for each company. There would be no market, no use for the knowledge and skills of investment managers, and no way to make progress. It is vital to keep this in mind when considering ESG as a concept. If it is used correctly, it becomes a data source for independent decision making. **It becomes dangerous primarily when it is used uncritically in the manner of a credit rating, which much of the industry has done in a lazy attempt to make money.**

Measurement divergence can be more problematic. Unfortunately, it also accounts for 53% of the divergence between providers, with scope causing 44% and weight only 3%. Whilst in some cases the same principles apply (i.e. the use of different metrics simply offers different opinions), it has also been shown that some simple and theoretically objective metrics such as membership of the UN Global Compact or CEO/Chairperson separation are inexplicably measured differently.

ESG Absurdity

At the level of the overall rating, such absurd cases are not uncommon, driven by a combination of scope, weight and measurement issues. **Blackrock's ESG aware fund, for example, is more heavily weighted in twelve fossil fuel stocks than the S&P 500 which it tracks.** What is more, a recent Edhec paper found that 35% of companies with deteriorating environmental performance nonetheless receive an increase in weight within ESG funds.

Fossil fuel majors abound in ESG indices, driven in large part by the fact that ratings are standardised by industry, so an average oil major receives an average overall rating as standard. Similarly, a company that

discloses poor performance is sometimes rated higher than one which doesn't disclose at all. This all hints at a more insipid feature of the ESG paradigm – the predominance of corporate risk.

The predominance of corporate risk

It is of course no surprise, and no great issue, to find that risk mitigation is a big part of ESG investing. What is troubling, however, and was blown open by a recent Bloomberg Businessweek investigation, is that what is generally packaged as risk to stakeholders and the environment created by company activities, actually measures the risk to company activities created by stakeholders and the environment. **MSCI's 'water stress' indicator is therefore not, as a well-intentioned investor might assume, the pressure a company puts on the local water supply, but simply the security of that supply for the company.**

In a similar vein, MSCI, one of the top ratings providers and the focus of the investigation, does not measure potentially harmful activities if they do not present either a risk or opportunity to the company. The example offered by the Bloomberg reporters was McDonalds, whose emissions increase was not considered during a ratings upgrade. The biggest issue with this predominance of corporate risk is its packaging. While **MSCI never lies, its methodological explanations are hidden in company reports, while users instead focus just on headline scores.**

MSCI dominance

As well as being a major provider of ESG scores, MSCI is also a major provider of ESG fund ratings. It is worth briefly highlighting the perplexing situation that this has created. ESG scores, given their divergence, are most sympathetically seen as a provider's opinion on the issues that matter and how to measure them. **Using the same provider for both the underlying data, and the assessment of that data is therefore a bizarre state of affairs.**

Inevitably, MSCI's fund ratings will rate highly the funds that take the same approach as MSCI, i.e. those built on MSCI data. Imagine if Coca-Cola wheeled out a corporate product ranking soft drinks brands; you would presume that their brands, which dominate the industry, would fair quite well. The dominance of one perspective here is similarly not a minor issue. Of the top 10 ESG funds by AUM, 8 are

built on MSCI data, and MSCI fund ratings are widely used to guide investment. This is an issue that is yet to be widely studied or publicised, but is adding a further layer of obfuscation to an already opaque situation.

Taking a step back

In its current form, ESG is a blunt tool creating less than clear outcomes. Opaque methodologies hide questionable decision making and perplexing measurement. **It is undeniable, however, that the ESG paradigm has been hugely influential in dragging the focus of financial institutions beyond the confines of short-term shareholder returns.**

What is more, its association of E and G has been important in emphasising the link between governance and climate change, something that became a major focus of the landmark Task Force on Climate Related Financial Disclosures (TCFD). If used correctly, ESG can be a fantastic source of data on the performance of companies, and can point investors towards the key points and debates around ESG issues. We are not here simply to bash ESG, it has been, and can still be, a powerful tool.

The 'doing less harm' paradigm

Having said that, **the paradigm of ESG is fundamentally limited, and has historically been used beyond those limitations.** ESG, with its backwards looking data and sector standardised ratings, ends up rewarding mainstream, 'vanilla' companies who have simply done a bit less harm. **If we step back, this is not going to solve our overwhelming, pressing environmental crises.**

A look at the composition of the top ESG funds tells you all you need to know. MSCI themselves have conducted an analysis of the twenty largest ESG funds by AUM, together accounting for USD 150 billion, or 13% of the assets in ESG equity funds. Information technology was by far the most held sector, with household names such as Alphabet Inc, Microsoft and Apple dominating the top holdings. **As we face perhaps the greatest energy transition since the Industrial Revolution, there was almost zero allocation in energy.**

In fact, ESG funds bare heavy resemblance to mainstream indexes. **This is the world that set us on a**



path for environmental breakdown. It cannot also be the one that keeps us from it without significant overhaul, and that overhaul will not be driven by retrospective rewards for minor improvements.

What is the alternative? The next section outlines our pioneering approach, shifting the focus from the users to the solution providers, whose products can enable wider and deeper decarbonisation. We believe that decarbonisation as a cost will never be as impactful as decarbonisation as a revenue source.

It is important to note here that blanket divestment from polluting companies is also not desirable. The financial sector has a role to play in managing the transition of emissions intensive companies and assets by putting pressure on them and suggesting ways forward. **It is vitally important, however, that such investment practices are classified explicitly as 'transition' activities, rather than being conflated with solutions under a general ESG or even a 'green' label.**

Before we outline our approach, take a look at the following list of ETFs. It covers general ESG approaches and impact focused funds that we consider most similar to ours, which are given for comparability. Very few approaches have a quantitative, transparent and forward-looking metric like PAE, and there is much scope for questionable or opaque allocations, as shown in the column of top 10 holdings.

	FUND	METHOD NOTES	HIGHEST PUBLISHED FORM OF QUANTITATIVE ANALYSIS?	USES MSCI INDEX?	ENVIRONMENTAL METRIC IS FORWARD OR BACKWARDS LOOKING?	TOP 10 HOLDINGS	OUR VERDICT
ESG	Vanguard ESG U.S. Stock	Negative screening of companies 'involved in Vice products ... Non-Renewable Energy...Weapons ... Controversial Conduct ... Diversity practices'	Negative screening.	No	Backwards	TESLA APPLE INC. MICROSOFT CORP AMAZON COM INC. ALPHABET CLASS A ALPHABET CLASS C UNITEDHEALTH GROUP JPMORGAN CHASE & CO META PLATFORMS INC NVIDIA	FAANG/MAMAA stocks for the past years have dominated the ESG ETF space. These large cap US names rank high on several data provider scorecards. We question the environmental impact of the tech names and urge a distinction between climate change solution providers and users.
	Xtrackers MSCI USA ESG Leaders Equity ETF	Offers 'exposure to companies with high environmental, social and governance (ESG) factors'	ESG Scores	Yes	Backwards	TESLA MICROSOFT CORP ALPHABET CLASS A ALPHABET CLASS C JOHNSON & JOHNSON PROCTOR & GAMBLE CO VISA INC-CLASS A SHARES MASTERCARD INC-CLASS A HOME DEPOT INC NVIDIA CORP	Another example of a filter being applied to large cap US stocks. What is the tangible impact of the theme? And the tangible metric? MSCI ESG ratings measure corporate risk not stakeholder risk.
	iShares ESG Aware MSCI EM ETF	'Higher rated ESG companies'	ESG Scores	Yes. Based on MSCI Emerging Markets Extended ESG Focus Index	Backwards	TAIWAN SEMICONDUCTOR MANUFACTURING TENCENT HOLDINGS LTD SAMSUNG ELECTRONICS LTD ALIBABA GROUP HOLDING LTD MEITUAN NAVER CORP INFOSYS HOUSING DEVELOPMENT FINANCE CORPORATION CTBC FINANCIAL HOLDING LTD CATHAY FINANCIAL HOLDING LTD	A filter to the MSCI Emerging Markets Index, designed to maximize exposure to stocks with high ESG ratings. Another example of a blackbox filter, and the use of MSCI data.
	iShares MSCI USA SRI UCITS ETF	'ESG screened companies'	ESG screening	Yes. MSCI USA SRI Select Reduced Fossil Fuel Index	Backwards	HOME DEPOT INC NVIDIA CORP MICROSOFT CORP TESLA INC WALT DISNEY CISCO SYSTEMS INC PEPSICO INC COCA-COLA TEXAS INSTRUMENT INC LOWES COMPANIES INC	Main benefit is reduced exposure to fossil fuel names. While it does not own Chevron or Exxon, it has Cheniere Energy Inc, Oneok Corporation (both US liquified natural gas producers), and Valero Energy. Is that what one expects of an ESG screen? It also uses another MSCI index.
	iShares ESG Aware MSCI USA ETF	'Higher rated ESG companies'	Yes	Yes. MSCI USA Extended ESG Focus Index	Backwards	APPLE INC MICROSOFT CORP AMAZON COM INC TESLA INC ALPHABET INC CLASS C ALPHABET INC CLASS A NVIDIA CORP META PLATFORMS INC CLASS A JPMORGAN CHASE AND CO HOME DEPOT INC	It is supposed to provide exposure to US companies that have "positive environmental, social and governance characteristics". As of Jan 20th 2022, Chevron, Exxon, Conoco Phillips, Hess, Marathon Petroleum are constituents of the fund. We advocate for negative screening disclosures. At the risk of being boring, it also uses an MSCI index.
	KraneShares MSCI China Clean Technology Index ETF	'Derive 50% or more of their revenue cumulatively from the five CleanTech (CT) themes ... Companies are then evaluated for the level of involvement in and strategic commitment' to the themes	Percentage revenue from CleanTech themes	Yes. Based on MSCI China IMI Environment 10/40 Index	Both - 'revenue' and 'strategic commitment'	XPENG A ADR LI AUTO A ADR NIO A ADR BYD CO H CONTEMPORARY AMP A CHINA CONCH VENTURE CHINA LONGYUAN POWER LONGI GREEN ENER A ZHUSHOU CRRC TIMES H XINYI SOLAR HOLDINGS	Unique and very interesting fund. It provides exposure to companies with "at least 50% of their revenues from environmentally beneficial products and services". It would ideally refer to the use of a tangible, forward looking metric to assess environmental benefit.

	FUND	METHOD NOTES	HIGHEST PUBLISHED FORM OF QUANTITATIVE ANALYSIS?	USES MSCI INDEX?	ENVIRONMENTAL METRIC IS FORWARD OR BACKWARDS LOOKING?	TOP 10 HOLDINGS	OUR VERDICT
THEMATIC OR IMPACT FOCUSED	iShares MSCI ACWI Low Carbon Target ETF	'Target and overweight companies with low potential and measured carbon emissions relative to higher carbon-emitting peers.'	Potential and measured carbon emissions	Yes. Based on MSCI ACWI Low Carbon Target Index	Both	APPLE INC MICROSOFT CORP AMAZON COM INC TESLA INC ALPHABET INC CLASS A ALPHABET INC CLASS C NVIDIA CORP META PLATFORMS INC CLASS A TAIWAN SEMICONDUCTOR MANUFACTURING JPMORGAN CHASE AND CO	It is another example of a "climate change" ETF that represents the "companies doing less harm", where decarbonization is a cost line item. These holdings are the users of solutions. We would ask whether it is misleading to imply that we will move away from BAU high emissions by investing in FAANG/MAMAA's? It uses yet another MSCI index.
	ALPS Clean Energy ETF	'Differentiated pure-play approach which concentrates on companies ... whose primary operations are focused across the clean energy sector'	Percentage revenue from clean energy business	No. Based on the CIBC Atlas Clean Energy Index	Backwards	TESLA PLUG POWER ENPHASE ENERGY FIRST SOLAR NEXTERA ENERGY SUNRUN NORTHLAND POWER INC HANNON ARMSTRONG SUSTAINABLE INFRASTRUCTURE CAPITAL INC BROOKFIELD RENEWABLE PARTNERS LP CHARGEPOINT HOLDINGS INC	We like the revenue based approach. With 46 constituents the fund is concentrated and does not represent solutions across the board. For example, over exposure to Plug Power caused a drag in 2021. There is no clear and transparent forward looking metric for assessing the potential impact of prospective clean energy companies.
	iClima Global Decarbonisation Enablers Index (GLCLIMAN)	Both inclusion and exclusion screening criteria	Companies that generate revenue from products or services enabling CO2e avoidance'	No	Forwards	TESLA INC BYD COMPANY LTD ENPHASE ENERGY INC PLUG POWER INC BLOOM ENERGY CORP XPENG INC EAST JAPAN RAILWAY ALBEMARLE CORP REPUBLIC SERVICES INC INFINEON TECHNOLOGIES	Focus on companies that preclude emissions from ever happening. Includes negative screening, a metric for assessing the percentage of company business contributing to environmental goals (green revenue), and a metric for assessing the potential impact of that percentage (PAE). It has a clear theme, with diverse holdings spread across 28 subsegments, using findings from Project Drawdown and Mission Innovation.

	FUND	METHOD NOTES	HIGHEST PUBLISHED FORM OF QUANTITATIVE ANALYSIS?	USES MSCI INDEX?	ENVIRONMENTAL METRIC IS FORWARD OR BACKWARDS LOOKING?	TOP 10 HOLDINGS	OUR VERDICT
THEMATIC OR IMPACT FOCUSED	iShares MSCI Global Impact ETF	'Derive a majority of their revenue from products and services that address at least one of the world's major social and environmental challenges' (as identified by SDGs)	Vague - percentage revenue from products and services that address social and environmental challenges	Yes. Based on MSCI ACWI Sustainable Impact Index	Backwards	WEST FRASER TIMBER LTD KIMBERLY CLARK CORP DAIWA HOUSE INDUSTRY LTD JOHNSON MATTHEY PLC UMICORE SA VESTAS WIND SYSTEMS EAST JAPAN RAILWAY AMGEN INC ELI LILLY WH GROUP	Interesting idea. Exposure to real estate, consumer staples and health care are high. An impact fund should state clearly the driver and purpose of the impact and state its metric. Unclear what their forward looking tangible metric is (if any). MSCI index.
	Invesco MSCI Sustainable Future ETF	'Derive at least 75% of their revenues from environmentally beneficial products and services' across six themes	Percentage revenue from 'environmentally beneficial' products	Yes. Based on MSCI sustainable futures index	Backwards	TESLA INC ENPHASE ENERGY NIO A ADR DIGITAL REALITY TRUSR VESTAS WIND SYSTEMS XPENG A ADR PLUG POWER CENTRAL JAPAN RAILWAY CO. LI AUTO A ADR KINGSPAN GROUP	Some interesting solutions, but the fund is ca. 19% Real Estate and REITs exposure. How are asset owners like Vornado, Maple Tree Commercial, Capital Land leading sustainability? Based on an MSCI index.
	Rize Environmental Impact 100 UCITS ETF	168 companies found to align with the classification of the EU Taxonomy. From these, each company is assessed for its economic exposure (green revenue), then assessed on its potential environmental impact determined using a proprietary framework comprised of quantitative and qualitative indicators and in respect of which it receives an Environmental Impact Score	Green revenue and 'quantitative indicators' to assess potential environmental impact	No. Based on the Foxberry SMS Environmental Impact 100 Index	Both - 'revenue' and 'potential environmental impact'	ECOPRO AKER CARBON CAPTURE TESLA INC FALCK RENEWABLES WSP GBL AMARESCO 'A' EVOQUA WATER TECHS STANTEC NIBE INDUSTRIER AB KINGSPAN GRP	LIFE is certainly a great ticker. With 100 constituents, it is supposed to provide 'exposure to the 100 most innovative and impactful companies', but what it has is material exposure to water and waste names (Biffa, Sao Paolo Waste Mgmt Co, Republic Services, etc), while missing completely on true innovation as it has no green hydrogen, LDES, or EV names (other than Tesla).
	Invesco Global Clean Energy UCITS ETF	Companies are 'assessed based on their focus in ... renewable energy businesses, as well as energy conversion, storage, conservation, efficiency, materials relating to those activities, carbon & greenhouse gas reduction, pollution control, emerging hydrogen and fuel cells'	Vague - 'assessed based on their focus in' a range of clean energy related products	No. Based on the WilderHill New Energy Global Innovation Index	Backwards	EVGO INC ILJIN MATERIALS CO PLUG POWER ENPHASE ENERGY LITHIUM AMERICAS GROUP CANOO FISKER INC WOLFSPEED INC LI-CYCLE HOLDINGS CORP MP MATERIALS CORP	Interesting fund but without clear metrics. It represents many companies with no revenue such as Fisker, Canoo, Lordstown, Rivian, and Lucid Group, all already in the fund.
	Goldman Sachs Future Planet Equity ETF	'Contribution of the Key Themes to the companies' 'revenues, earnings, capital expenditure, intrinsic value, future growth, corporate strategy, or other relevant metrics.' A company 'may not ... derive any of its revenue from its efforts to address environmental problems.' Focus on 'what a company is producing rather than 'how', meaning an issuer can be aligned with a Key Theme but still exhibit negative ESG characteristics.	Contribution of the Key Themes to the companies' 'revenues, earnings, capital expenditure, intrinsic value, future growth, corporate strategy, or other relevant metrics.'	Mentions MSCI contributing to 'The Global Industry Classification Standard (GICS)' but doesn't say what that is or how it relates to the fund. Doesn't name the underlying index	Both - vague	ECOLAB INC ENEL SPA (ADR) DAIKIN INDUSTRIES LTD KONINKLIJKE DSM NV BALL CORP DANAHER CORP INFINEON TECHNOLOGIES AG SCHNEIDER ELECTRIC NEXTERA ENERGY INC XYLEM INC	An active fund targeting the green economy. It currently has 52 constituents. Currently their biggest exposure is to Enel SpA (at 4.2%). Italian giant Enel has 3,328 MW of nuclear power plants, 11,711 MW of oil & gas generation, 8,893 MW of coal, 15,007 MW of gas fired combined cycle plants. It is clear that Goldman does not negatively screen for their Future Planet fund.
	First Trust EIP Carbon Impact ETF	'Companies identified ...as having or seeking to have a positive carbon impact' through 'a mixture of quantitative and qualitative screens'	Screens for 'positive carbon impact'	No mention of underlying index.	Forwards	NEXTERA ENERGY PARTNERS LP NEXTERA ENERGY INC IBERDROLA S.A. (ADR) ATMOS ENERGY CORPORATION CHENIERE ENERGY ENEL SPA (ADR) QUANTA SERVICES, INC CHENIERE ENERGY PARTNERS, LP XCEL ENERGY INC AMERICAN ELECTRIC POWER COMPANY, INC	An active ETF looking for a positive carbon impact. That seems to be achieved via the "less harm" route, as top constituents are DT Midstream, Cheniere Energy, Atmos Energy, distribution and storage energy names.

	FUND	METHOD NOTES	HIGHEST PUBLISHED FORM OF QUANTITATIVE ANALYSIS?	USES MSCI INDEX?	ENVIRONMENTAL METRIC IS FORWARD OR BACKWARDS LOOKING?	TOP 10 HOLDINGS	OUR VERDICT
ICLIMA	iClima Global Decarbonisation Enablers Index (GLCLIMAN)	Both inclusion and exclusion screening criteria	Companies that generate revenue from products or services enabling CO2e avoidance'	No	Forwards	TESLA INC BYD COMPANY LTD ENPHASE ENERGY INC PLUG POWER INC BLOOM ENERGY CORP XPENG INC EAST JAPAN RAILWAY ALBEMARLE CORP REPUBLIC SERVICES INC INFINEON TECHNOLOGIES	Focus on companies that preclude emissions from ever happening. Includes negative screening, a metric for assessing the percentage of company business contributing to environmental goals (green revenue), and a metric for assessing the potential impact of that percentage (PAE). It has a clear theme, with diverse holdings spread across 28 subsegments, using findings from Project Drawdown and Mission Innovation.
	iClima Distributed Renewable Energy Index (GLDGENER)	The Index, which has both inclusion and exclusion screening criteria for constituent companies, provides exposure to seven segments directly related to the growing Distributed Energy Resource (DER) business model. The focus is given to smaller, renewable, distributed power sources combined with energy storage solutions, smart grids, measurement instruments and building energy management.	'Carbon emission avoidance'	No	Forwards	BYD COMPANY LTD AMRESKO INC MEIDENSHA CORP TESLA INC PLUG POWER INC FUELCCELL ENERGY INC MYR GROUP INC DEL EVGO INC NUJWE HOLDING CORP CLEANSPARK INC	Focus on digital, decentralised and decarbonising companies. Includes negative screening, a metric for assessing the percentage of company business contributing to environmental goals (green revenue), and a metric for assessing the potential impact of that percentage (PAE). It has a clear theme, targeting one potentially revolutionary aspect of the low carbon economy, distributed renewable energy.



OUR APPROACH

SHIFTING THE PARADIGM OF CLIMATE CHANGE FINANCE

Rather than focus on incremental changes based on backwards looking reductions, our paradigm-shifting approach is to zero in on the solution providers. Major historical emissions reductions have been driven by falling costs and the improving performance of low carbon technologies. Mainstream companies then take up these solutions not for any altruistic reasons, but for this cost and performance. Solar and wind power are perfect examples.

DECARBONISATION AS A COST WILL NEVER BE AS IMPACTFUL AS DECARBONISATION AS A REVENUE SOURCE.

Of course, we are not the first to focus on solutions. Venture capital has been in the space for years, and an increasing number of thematic ETFs are emerging based on clean energy and other low carbon technologies. **Evident in the previous table, however, is the lack of focus; the lack of a binding, standardisable and trusted methodology for compiling these funds or directing capital.** A clean energy ETF is all well and good, but within the dense array of companies **it is nigh on impossible to calculate its actual impact.** Many companies oversee multiple operations, some components are far more CO₂e efficient than others, and the size of a company's potential reach is highly varied. Placing our well-intentioned capital in these funds is therefore a leap of faith in the methods, and climate change focus, of the manager. **When the stakes are so high, we can surely do better.**

Our approach, then, is focused on quantifying in a transparent way the potential impact of low carbon technologies and the companies that supply them. We do this using three key metrics: green revenue, brown revenue (neither of which are hugely revolutionary) and potential avoided emissions (which we think will be). **Looking at green revenue is a far superior method of assessing a company's holistic purpose than black-box ESG scores, and will become the dominant tool across the financial sector as the EU Green Taxonomy reaches finalisation and**

implementation over the coming years. Brown revenue is a similarly simple and relatively objective method of negative screening without relying on opaque third-party scores. 'Potential avoided emissions' (PAE) is a metric championed by Mission Innovation, an initiative borne out of COP21 in Paris and tasked with fostering the development of revolutionary low-carbon solutions. Where data is available, we assess all of our constituent companies using the PAE metric, which is outlined here.

In detail

Three sources provided the foundation for our work. The first, Project Drawdown, is the most comprehensive roadmap to decarbonising the planet you are likely to find. It outlines the reductions needed sector by sector, at a more granular level than similar work – the perfect compass therefore for finding companies to enable decarbonisation. **To a large extent, our work has simply been to 'operationalise' Project Drawdown,** taking it a step further to find the real economy players who can actually undertake the theoretical work outlined in the Drawdown Review.

Green and Brown Revenue

Having outlined our potential universe using Project Drawdown for inspiration, and before calculating PAE, we calculated green and brown revenue. The aim here was to assess the proportion of avoidance enabling solutions versus higher emission solutions and tracking how the share of each changes with time.

The lack of a standardisable and transparent metric to assess company business activities has been well documented. The EU taxonomy was created in response to this issue. Becoming fully operational in 2023, a draft of the taxonomy was released in 2020 outlining rigorous criteria for business activities to contribute to one of six environmental objectives without compromising the others. We measured the percentage of revenue that fit these criteria.

Companies were variously defined as upcoming, partial, majority or pure players, with the former having to demonstrate high growth in the green segment, and each classification having to conform to our rules on brown revenue. **In our first analysis, 44% of companies in GLCLIMAN were defined as pure players, 28% majority players, 23% partial players and 5% upcoming players.**

Similarly, we measured the percentage of brown revenue of each company. In its current form the EU taxonomy does not provide guidance on brown activities (ie environmentally harmful and thus undesirable). Our approach therefore addresses this clear need, and we hope will offer inspiration for further consensus on the issue. Our thresholds for brown revenue are shown in the table below.

Summary of negative screen for brown economic activities

Source of Brown Activity	% of revenue	Brown Activity
Coal	<1%	<ul style="list-style-type: none"> Coal power generation *1% buffer applies to predominantly renewable energy companies No exploration and processing
Oil & Diesel	<1%	<ul style="list-style-type: none"> Diesel power generation No exploration and processing Retail of petroleum diesel allowed at 10% limit
Natural gas	<50%	<ul style="list-style-type: none"> Natural gas power generation Natural gas distribution Natural gas heating
Association with Fossil Fuels	<40%	<ul style="list-style-type: none"> Transmission and distribution of fossil fuel-based electricity Sales to clients that enable fossil fuel E&P and distribution Sales to clients that enable automotive ICE run on fossil fuels

Transparency

This exercise was far from a perfect science. The main challenge we came across in our green revenue analysis effort was a dearth of the granular data required to accurately classify company business lines as generating green or brown revenue, a challenge that has been echoed by many investors and highlighted by research from [FTSE Russell](#):

“Less than 30% of companies with green revenues provide disclosures that are granular enough to allow investors to systematically break out and quantify companies’ green business activities”

Some companies tend to report their revenues at a granular level, based, for example, on different types of power generation, products and end markets. For these companies, green and brown revenue estimates can be precise. However, many companies report their revenue based on business operation segments made up of several products or services that may contain a mixture of brown, green and neutral products and activities. In these cases, we tried to contact the company’s investor relations team. Unfortunately, not all companies responded or were able to provide the necessary data. For the few that didn’t we made estimates using other company

data as a proxy or industry averages.’ For those that didn’t, we used industry average data. Our master table, reproduced on page 19, shows which companies fully disclosed all data needed and which we had to use some aspects of estimation for. As we look to up our stewardship work in 2022, we will be encouraging the companies in our indices to report more thoroughly. Transparency and disclosure are the building blocks of a sustainable financial system, and if these companies are to truly lead the fight against climate change, they must lead here too.

Transition Solutions

Having conducted our analysis, it became clear that a number of solutions had high potential avoided emissions, but also a decent proportion of brown-revenue-generating high emissions activities. The perfect example of this paradox is a waste to energy plant, which can be used in place of a coal power plant, saving a considerable volume of emissions. It also provides a way of disposing of waste without the methane emissions associated with landfill. It does, however, still produce a significant amount of CO₂e.

RATHER THAN EXCLUDE SUCH PRAGMATIC SOLUTIONS, WHICH ARE NECESSARY UNTIL TECHNOLOGY EVOLVES, WE CLASSIFY THEM AS TRANSITION SOLUTIONS, AND MONITOR THEIR PROGRESS CLOSELY.

We expect that they will only be used in the short term and that they will shift towards low-carbon alternatives. Further examples are fuel cells using natural gas and diesel, bio-diesel and ICE car-pooling. Transition solutions in GLCLIMAN are highlighted in the master table on page 19.

[In order to assess the potential impact of the climate change solutions provided by our companies – termed our ‘climate champions’ - we employed the concept of PAE based on Mission Innovation’s \[Avoided Emissions Framework\]\(#\)](#)

The next page offers an outline of the technique. We hope that readers will consider leveraging it in their own work, for we truly believe it is the key to successfully allocating capital against climate change.

POTENTIAL AVOIDED EMISSIONS



At a glance

The concept was [suggested](#) by the GHG protocol as early as 2013, but has never been mainstreamed. Mission Innovation, who provided the first comprehensive outline and methodology, argue that it can seamlessly enhance existing disclosure frameworks such as the TCFD, CDP and the EU Taxonomy who all suggest reporting on some variation of ‘[products that enable a third party to avoid GHG emissions.](#)’

Avoided emissions are emission reductions that occur as a result of a solution, product or service that provides the same or similar function as an existing product in the marketplace but with significantly less GHG emissions. Classic examples are electric vehicles (EVs) versus internal combustion engine (ICE) vehicles, plant-based burgers versus beef burgers, or solar versus coal fired power generation. Avoided emissions can be summed up as follows:

$$\text{NET AVOIDED EMISSIONS} = \text{BAU BASELINE EMISSIONS} - \text{EMISSIONS OF THE SOLUTION ENABLED SCENARIO}$$

Going deeper

Calculating avoided emissions boils down to one equation. The elements are of course, like any forward-looking analysis, premised on future projections and assumptions, but the core equation is markedly simple:

$$\text{TOTAL CARBON AVOIDANCE (TCO}_2\text{e)} = \text{CARBON AVOIDANCE FACTOR (TCO}_2\text{e/UNIT)} \times \text{VOLUME}$$

Where

- The Carbon Avoidance Factor is the emissions avoided per determined unit of use, for example a 100-mile journey in an electric vehicle (EV) versus an equivalent internal combustion engine car (ICE). This should be based on existing academic or industry studies where possible, or by using transparent calculations and assumptions otherwise.
- Volume is the number of units sold per year. This allows for comparability across solutions.

The term ‘potential’ comes in to play when the above equation is based on a future scenario, as is the case when the metric is used to decide between prospective investments.

We focused on the stage of a product’s life-cycle where we believe the avoidance takes place and where data is available to conduct relevant accurate estimates. Conducting a Full-Life-Cycle Analysis (“LCA”), where the emissions from source materials, production and distribution of a product are also included in the analysis, is currently challenging given available data; however, should the data become available, we hope to evolve our approach to encompass a full LCA analysis.

Uptake

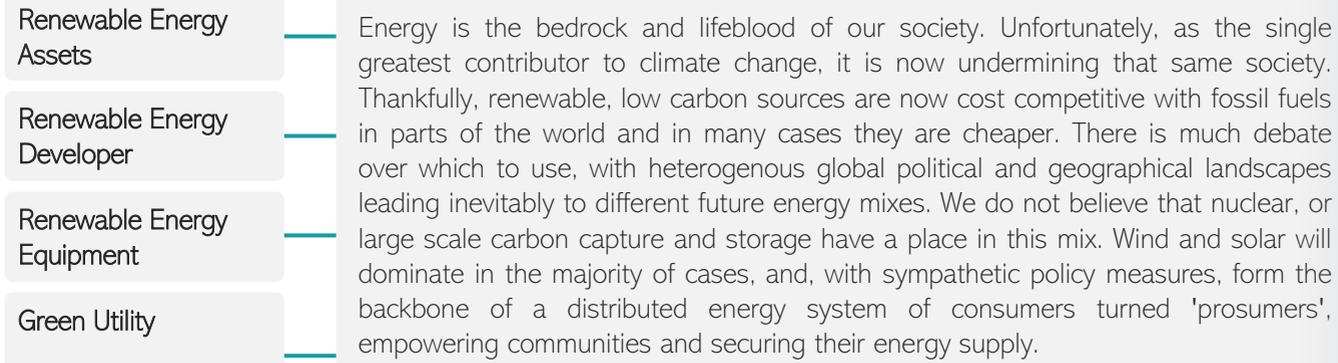
PAE offers us for the first time a robust tool for comparing climate change solutions. We strongly advocate for its uptake and share our methods and findings wherever possible. We know that [Baillie Gifford](#), [One Ninety](#), [Vontobel](#), [Schroeders](#) and [DNB](#) are all looking into the use of PAE, and hope that this momentum will continue.

The full findings of our first analysis are shown on the following pages. First, a brief description of each segment in the iClima Global Decarbonisation Enablers Index (GLCLIMAN) is given. This page is a useful guide for anyone new to sustainable finance or climate change, because GLCLIMAN aims to cover the majority of the low carbon economy. Our other index, GLDGENER is a deep-dive into one segment; distributed energy generation. Next, our master table of green revenue, brown revenue and PAE for GLCLIMAN is reproduced.

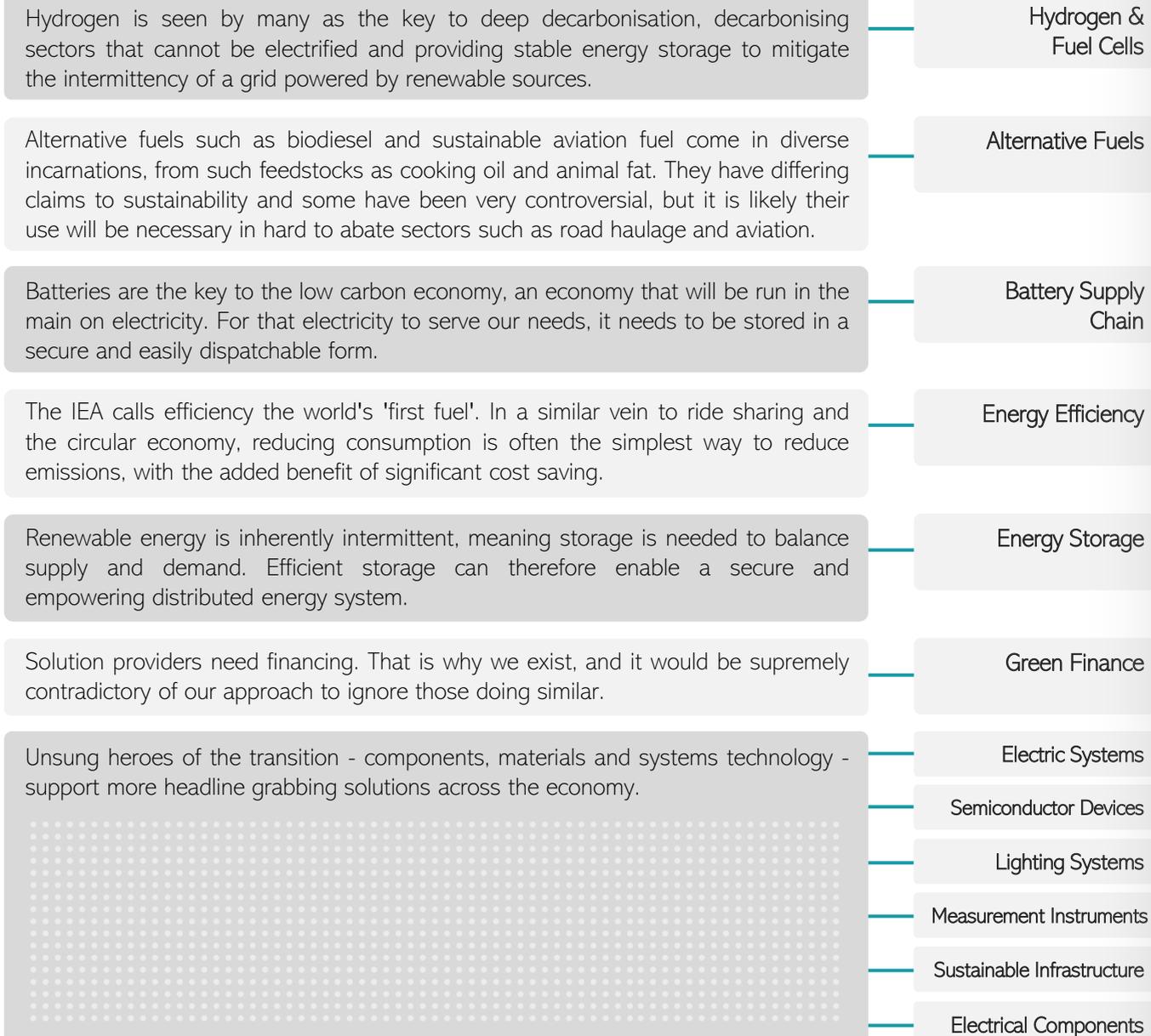


SECTOR OVERVIEWS

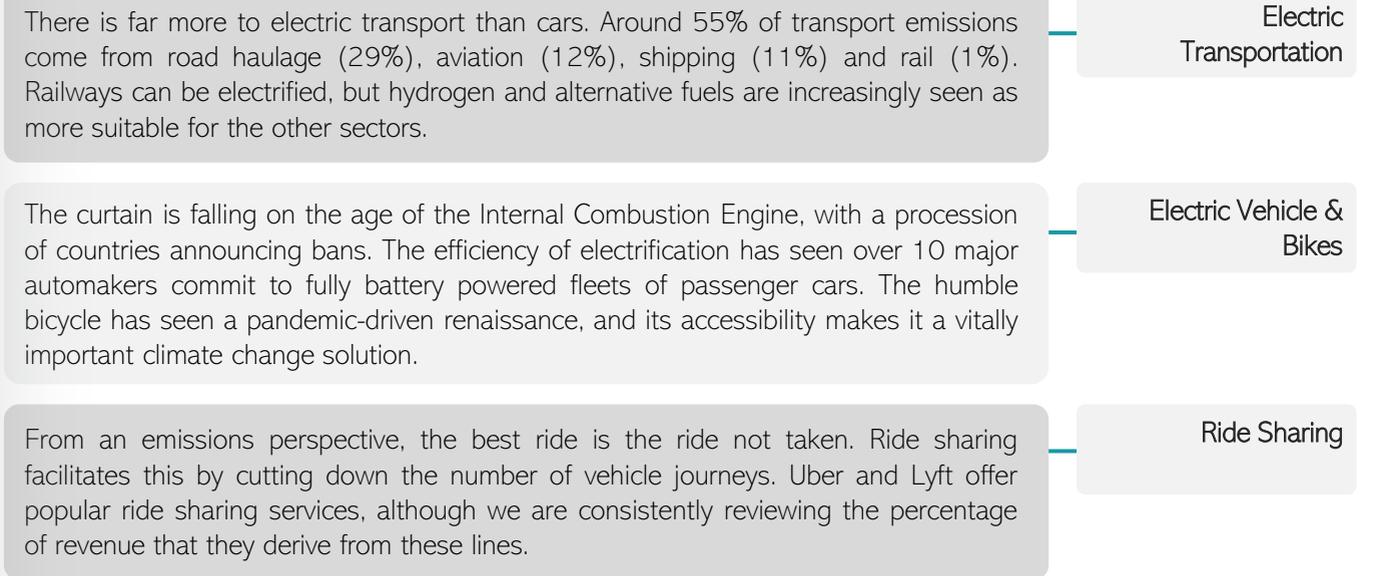
GREEN ENERGY



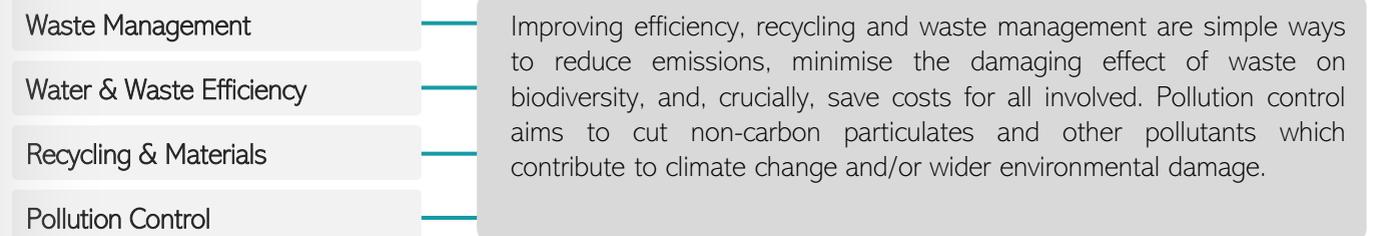
ENABLING SOLUTIONS



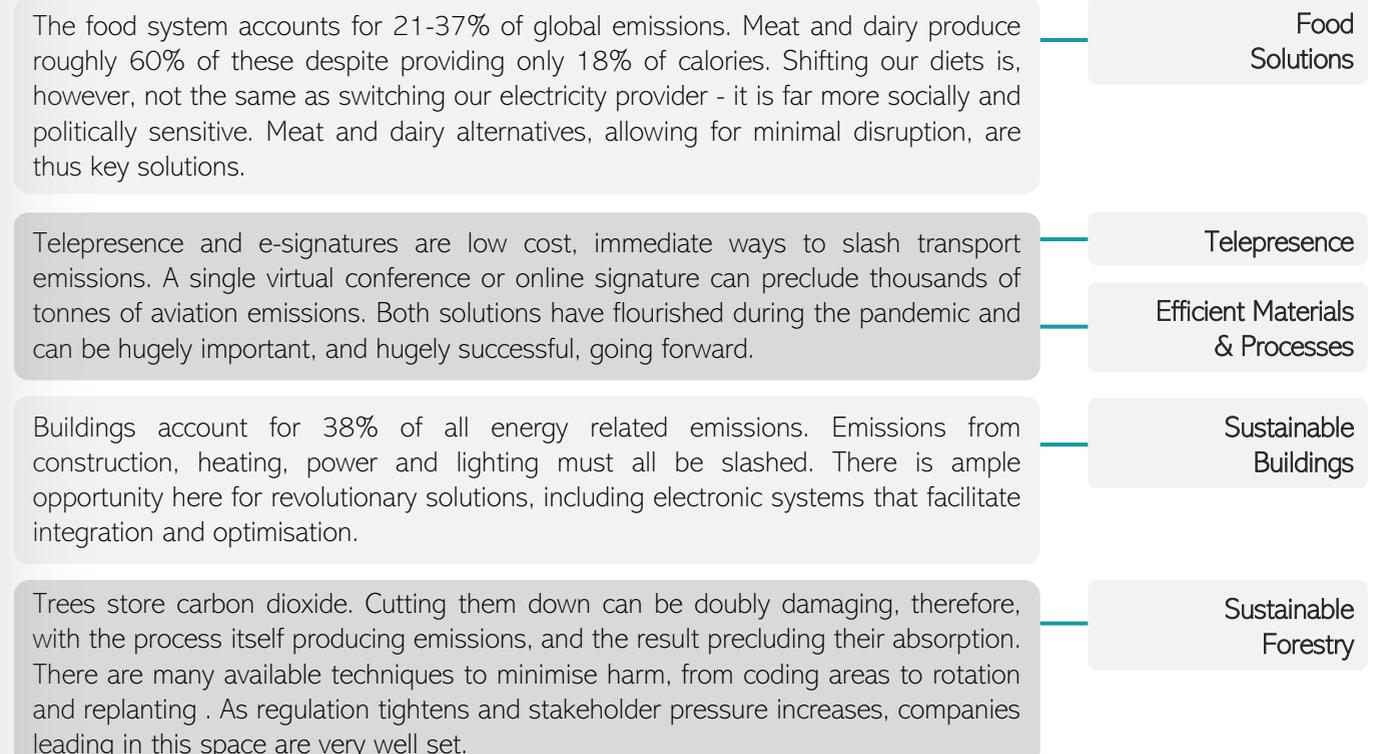
GREEN TRANSPORT



WATER & WASTE IMPROVEMENTS



SUSTAINABLE PRODUCTS



No	Sector	Sub Segment	Company	Green Revenues (% of total revenue)				Brown Revenues (% of total revenue)				CO ₂ e Avoidance (MMtCO ₂ e)						
				Estimated or Disclosed	Upcoming Player	Partial Player	Majority Player	Pure Player	Estimated or Disclosed	<0.25%	<0.50%	<0.75%	<1%	Estimated or Disclosed	<1	1 - 3	3 - 10	>10
					<20%	20-50%	50-90%	>90%		<12.5%	<25%	<37.5%	<50%		<10%	<20%	<30%	<40%
104	Enabling Solutions	Energy Efficiency	Ameresco Inc	D					E					D				
105		Osram Licht AG	D					E					D					
106		Energy Storage	Enersys	D					E				NA					
107		Green Finance	Hannon Armstrong Sustainable Infra Cap	E					E				NA					
108			LSE Group	E					NEI				NA					
109		Semiconductor Devices	Applied Materials Inc	E					E				NA					
110			Veeco Instruments Inc	E					E				NA					
111		Lighting Systems	Acuity Brands Inc	E					E				D					
112			CREE Inc	D					E				D					
113		Measurement Instruments	Alfen Beheer BV	D					E				NA					
114			Badger Meter Inc	D					E				E					
115			Halma PLC	D					E				E					
116			Itron Inc	D					E				E					
117			Smart Metering Systems PLC	D					E				E					
118			Trimble Navigation	E					E				NA					
119		Sustainable Infrastructure	Acciona SA	D					E				E					
120			MYR Group Inc	E					E				NA					
121			Quanta Services Inc	E					NEI				NA					
122		Electrical Components	Advanced Energy Industries	E					E				NA					
123			Delta Electronics Inc	E					E				D					
124	Eaton Corp PLC		E					E				D						
125	Infineon Technologies AG		E					E				D						
126	Littelfuse Inc		E					E				NA						
127	Nexans S.A.		D					NEI				E						
128	Vicor Corporation		D					E				NA						
129	Food Solutions	Beyond Meat Inc	D					E				E						
130		HelloFresh SE	D					E				E						
131		Kerry Group PLC	E					E				NA						
132		Koninklijke DSM NV	E					E				NA						
133		Tattooed Chef Inc*	D					D				NA						
134	Telepresence	Bandwidth Inc	E					D				NA						
135		Zoom Video Communications	D					E				E						
136	Efficient Materials & Processes	DocuSign Inc	E					E				D						
137		IDEX Corp	E					E				NA						
138	Sustainable Buildings	A.O. Smith Corp	E					E				E						
139		Compagnie de Saint Gobain	D					E				D						
140		Ferguson PLC	E					E				E						
141		Kingspan Group PLC	E					E				D						
142		Lixil Group Corp	E					E				D						
143		Nibe Industrier AB	D					E				E						
144		Resideo Technologies Inc	E					E				E						
145		Sunnova Energy International Inc	D					E				E						
146		SunRun Inc	D					E				E						
147		Trane Technologies PLC	D					E				D						
148	Vivint Smart Home Inc	D					E				E							
149	Vonovia SE	E					E				D							
150	Sustainable Forestry	Ence Energia y Celulosa SA	D	TS				E				NA						
151		Klabin SA	D					E				D						
152		Mondi PLC	E					E				NA						
153		Potlatch Deltic Corp	D					E				NA						
154		Sumitomo Forestry Co Ltd	D					E				NA						
155		Suzano SA	E					E				NA						
156		UPM Kymmene	E					E				NA						
157	Weyerhaeuser REIT	D					E				NA							

*Company added at Feb 21 rebalance - Data reflects 2020 revenues
TS = Transition solution



Photo by Tiff Ng from P&G

progress and still has many gaps (as we aim to highlight). As with all parts of our approach, we welcome feedback and collaboration.

SFDR screening

Our mapping of green and brown revenue alongside PAE is in itself highly useful in considering SDG alignment. Having gone through this process once, we re-appraised our methodology in Spring 2021, taking note of the following: from December 2022, the EU Sustainable Finance Disclosure Regulation (SFDR) will require all small and medium sized Financial Market Participants (FMPs) to disclose how they incorporate ESG risks into their methodology. While our purpose was always to lead with climate impact, we saw this as an opportunity to ensure that our wider systems impact was aligned with the SDGs and the world we want to live in. We therefore undertook the SFDR process ourselves over a year before mandated to do so. It involved analysing the companies in our fund against fourteen set Principle Adverse Impact Indicators (PAIs). These are as follows:

Climate and other environment-related indicators:

1. Greenhouse Gas (GHG) emissions
2. Carbon Footprint
3. GHG intensity of investee companies
4. Exposure to companies active in the fossil fuel sector
5. Share of non-renewable energy consumption and production
6. Energy consumption intensity per high impact climate sector
7. Activities negatively affecting biodiversity-sensitive areas *
8. Emissions to water
9. Hazardous waste ratio

Social and employee, respect for human rights, anti-corruption and anti-bribery matters:

10. Violations of UN Global Compact principles and Organisation for Economic Cooperation and Development (OECD) Guidelines for Multinational Enterprises *
11. Lack of processes and compliance mechanisms to monitor compliance with UN Global Compact principles and OECD Guidelines for Multinational Enterprises *
12. Unadjusted gender pay gap
13. Board gender diversity
14. Exposure to controversial weapons (anti-

personnel mines, cluster munitions, chemical weapons and biological weapons)

Having engaged multiple ESG providers, we chose S&P Trucost due to its disclosure of raw indicators rather than being largely reliant on a scorecard based system. The starred PAIs above are those not provided by Phase 1 of S&P Global Data. Additionally, the SFDR requires disclosure on two further indicators, which the FMP can choose.

Two of the fourteen mandatory indicators contain criteria that would require the exclusion of the holdings from our indices. These are exposure to controversial weapons, and forced or child labour. Where companies are performing particularly poorly against other indicators, we aim to engage them and try to influence the issue. If change is not forthcoming then we may exit the investment, but we believe that in these cases engagement is more effective than immediate divestment, particularly at this stage of the low carbon transition when there is **still much ESG-agnostic capital around which could easily sustain the company and its poor practice.**

Alignment with the SDGs

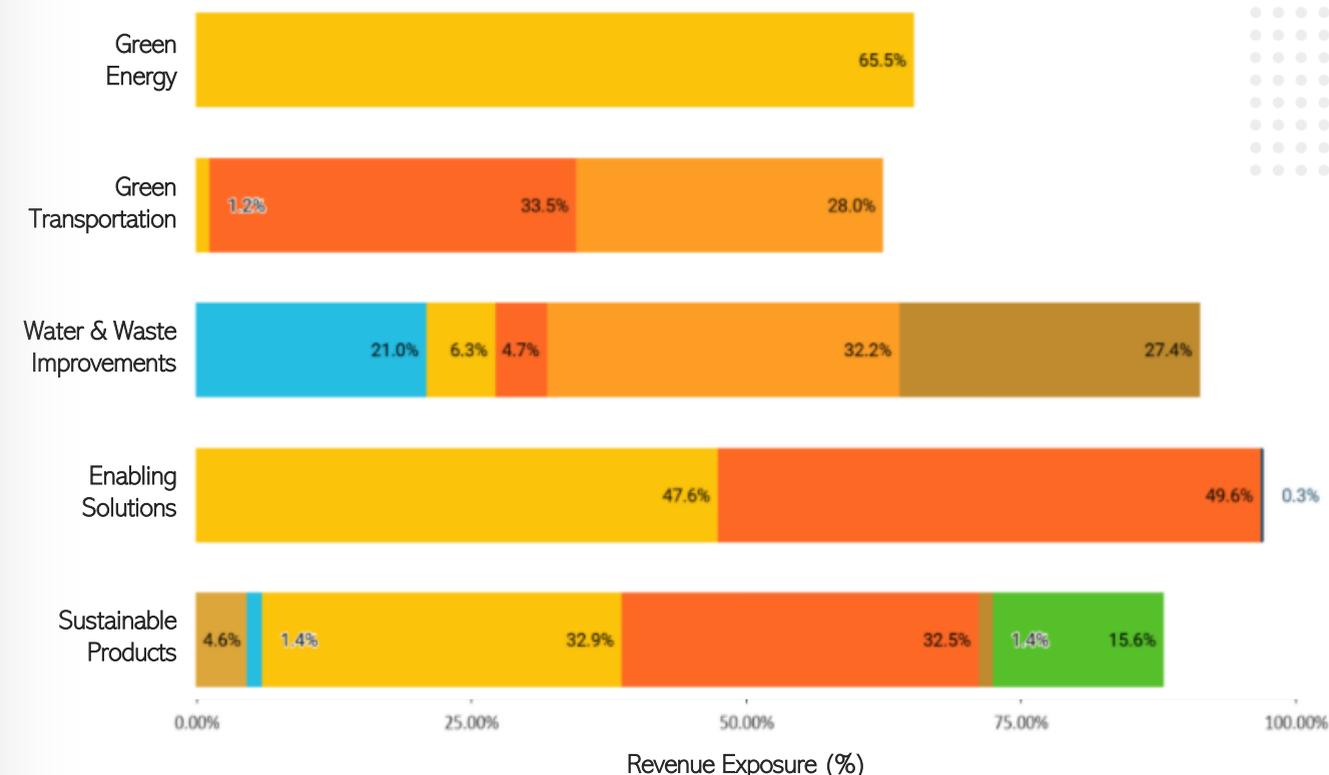
As a result of our screening processes, we believe that all of our companies contribute to SDG 13: 'taking urgent action to combat climate change and its impacts'. Criteria for contributing to this goal, as provided by the [SDG Compass](#) supported by the UN Global Compact, are as follows:

"Companies can contribute to this SDG [13] by decarbonising their operations and supply chains through continuously improving energy efficiency, reducing the carbon footprint of their products, services and processes, and setting ambitious emissions reductions targets in line with climate science, as well as scaling up investment in the development of innovative low-carbon products and services. In addition, companies should build resilience in their operations, supply chains and the communities in which they operate."

The companies in our benchmark particularly contribute by providing innovative low-carbon products and services that serve as alternatives to those with higher emissions. That is why we believe that 100% of our companies contribute to SDG 13. The SDG targets provide a description of results to be achieved by 2030 within each goal, with clear cut indicators used to measure progress toward each target. Once again, we used a tangible, revenue focused approach to map green revenue onto SDG targets, to see how our companies were contributing to a holistically sustainable world.

The chart below shows the results from fiscal year 2019 for reference. We are proud of our findings and plan to re-do this valuable exercise in 2022.

iClima's Revenue Alignment with Sustainable Development Goals



WE BELIEVE THAT
ALL OF OUR
COMPANIES
CONTRIBUTE TO
SDG 13

THREATS TO THE SDGs

The greatest threat to humanity is a lack of action on climate change. This was sharply emphasised by the WEF's [2022 Global Risks Report](#), where climate change and extreme weather took the top two spots. There are, however, also risks involved in taking action. In our rush to decarbonise, seemingly 'green' technology can mask negative impacts on both people and the environment. Here, we identify six such risks. Some are relevant to companies in our universe, others serve as a general guide to help investors. Myriad more issues will exist, and we welcome feedback and dialogue on what they may be. Once again, we cannot blindly chase gases, or we will find ourselves in a place we truly don't want to be.

The Uyghur Crisis

Over the past year, increasing global scrutiny has fallen on the Xinjiang region of Western China, where it is alleged that the minority ethnic Uyghur population are subject to forced labour and internment. The region is the world leading exporter of polysilicon, a crucial material in solar panels. In mid-2021, a Sheffield University [study](#) showed the potential entanglement of major solar players with the situation through their supply chains. **Researchers found nineteen companies implicated within two supply chain steps.** Many more are likely to be connected downstream. Companies have been under significant regulatory pressure and are starting to take action, but investors must continue to press for change.

Extraction

Social issues

Throughout human history, resource extraction has caused problems. It has been wrapped up in issues of colonial violence, indigenous rights, political destabilisation and human rights violations. While a sustainable economy will halt fossil fuel mining, its components are often resource intensive, and many of those resources are rare and geographically concentrated. **There is a risk that the same exploitative patterns will emerge.** A case in point is cobalt, supplies of which are concentrated in the conflict-ridden Democratic Republic of Congo. Child labour and other human rights violations are already well reported. Similarly, lithium extraction in South America is threatening indigenous ways of life. **As of mid-2021, over 115 companies have been accused of human rights violations through such instances.**

Environmental issues

While mining remains essential for solving climate change, poor practice threatens other environmental goals. Lithium extraction, for example, has been found to [threaten](#) water resources and biodiversity. Most forms of mining carry a risk of pollution, particularly of water supplies. Cadmium, lead, nitrogen, ammonia and even radioactive elements [are](#) all

possible by-products. In general terms, mining can [destabilise](#) already fragile ecosystems, particularly through deforestation, erosion and water systems disruption.

Coal Powered Solar

Human rights aren't the only issue with China's solar panel production system. It has recently [come to light](#) that many companies [use](#) state-subsidised coal to produce the high temperatures needed to manufacture solar components, **emitting tonnes of CO₂e and undercutting the rest of the global market on cost in the process.** The region under focus is once again Xinjiang, where an estimated [45%](#) of the world's polysilicon is produced. Investor pressure on this issue will be crucial in 2022.

Just Transition

The low carbon transition will create winners and losers, that much is well documented. **There is a risk, however, that those losers are vulnerable populations who have very little agency over the situation.** Classic examples are coal mining communities or low-income households who can't afford expensive yet necessary low carbon items. As global supply chains shift, these examples can easily be extended to encompass myriad communities threatened by forced extraction, loss of livelihoods or environmental degradation. Indeed, the REDD+ afforestation for carbon offset scheme has already led to multiple [instances](#) of forced eviction in vulnerable countries. **While governments have a primary role to play in ensuring the transition is 'just', the private sector must also step up,** considering the ramifications of each decision made. The [LSE 'Investing in a Just Transition'](#) initiative outlines both the case and potential strategies for doing so.

Geopolitical Insecurity

As the world economy transitions, geopolitical lines of power are due to be redrawn. Control over much of the necessary rare earth minerals lies with China, and unexpected countries like Chile or Morocco are coming up trumps with abundant sources of renewable power. Countries will have different strategies; some will fail and some will succeed. **There is a risk that some of these new relationships may be so one-sided as to present threats to human rights and security.** [Examples](#) of China using its monopoly on rare earth minerals to exert political influence are already well documented, and deals with less developed mineral rich countries have seen profits [flow](#) once again from the developing to the developed world.

Currently, these risks are highlighted at the systems level. We are yet to drill down into company operations and establish granular exposure and our specific approach in each case. This will be part of our [stewardship campaign](#) on which we hope to embark in early 2022.



KEY EVENTS

January & February

All eyes will be on the US as the 'on again, off again' Build Back Better bill hangs in the balance. The proposal has already been reduced to \$1.75 trillion. Sen Manchin told reporters on Jan 4th that no negotiations were taking place but conversations are clearly happening behind closed doors. Partially a climate change bill, with \$550 billion of climate investments, the approval of BBB would provide further momentum to EV adoption and energy efficiency programs. Meanwhile on the west coast, there will be a vote on the California Public Utility Commission's (PUC) proposed monthly utility charge of \$8/kW on solar rooftops. Criticism has been intense, including from Elon Musk who has voiced complete disapproval of this solar tax idea.



The GFANZ initiative will celebrate its first anniversary. We expect to see Mark Carney in the media, sharing revised figures on the acceleration of private financing towards climate change mitigation.

April

May

The COP15 Convention on Biological Diversity will be held in Kunming, China, after suffering multiple covid-induced postponements. Our pressing biodiversity crisis is rising to prominence alongside climate change, and the two must not be considered in isolation. Scientists hope for a 'Paris style' agreement on ending biodiversity loss.



July

The UN Ocean Conference will take place in Lisbon, Portugal. Businesses and individuals are also to engage in the discussion on how to curb marine pollution and commit to the responsible consumption of ocean resources.



August

From the 2nd onwards, financial advisers in the EU will need to consider their clients' ESG preferences in their appropriateness assessments. From that day, funds will need to report on the percentage of assets deemed sustainable in accordance with the new EU Green Taxonomy, and how they take "principal adverse impacts" into account.

September

The Intergovernmental Panel on Climate Change (IPCC) will launch its first comprehensive assessment report since the adoption of the Paris Agreement in 2015. NY Climate Week will take place from the 19th to the 25th, designed to coincide with the UN General Assembly event.



November

The month begins with midterm elections in the US. On Nov 8th all 435 seats in the lower house and 34 out of 100 seats in the Senate will be contested. COP27 will take place in Egypt from the 7th to the 18th. We expect new commitments from the 40 countries that did not submit new Nationally Determined Contributions (NDC) in Glasgow. In Egypt, we expect to see clarity on mandatory disclosures, revised targets by GFANZ, phase out of coal language and further regulation of the voluntary offset carbon markets.



ACCELERATION TRIGGERS & EVIDENCE

Solar accelerates in the USA:

The US EIA expects solar to account for almost half of all the new generating capacity of ca. 46 GW that is to be added to the grid in America in 2022. From the 21.5 GW of utility scale solar to start operation in 2022, most will be in Texas (28% of the national total). Natural Gas fired power plants will represent the second largest source of new electricity with 9.6 GW being added to the system, followed by wind at 7.6 GW. About 51% of all new wind in 2022 will be located in Texas, and the 999 MW Traverse wind park in Oklahoma, the largest new wind farm to start operation in the year, will reach COD in April. The year should also see 5.1 GW of in front of the meter clean energy storage added to the grid in the US alone.

Wind accelerates in Germany:

In Germany, the new Economy & Climate Action Minister has said early in the year that he wants measures in place to drive renewables to 80% by 2030 and make the country climate neutral by 2045. The new plan would add up to 10 GW of onshore wind every year until the end of the decade, achieved by streamlining permitting processes and making 2% of land available to wind. The new target for offshore wind is 30 GW by 2030. All new buildings in Germany also need to have solar energy fitted in.

EVs in the EU and the UK increase in adoption rates:

Experts continue to update expectations of sales of BEVs. As 2021 was another stellar year of EV sales growth and 2022 will mark the launch of over 30 new BEV models, a new study projects ICE sales to be below electric units as early as 2025. In 2022 we expect to see further evidence of consumer sentiment moving away from high emission ICEs.

China accelerates & embraces ESG as a lending tool:

As 2021 came to a close, the Chinese Research Group of the Green Finance Committee of China Society for Finance and Banking, a consortium of government, academic and private-sector experts, released a 200 page report predicting and accounting for investments equivalent to US\$75 trillion in carbon

neutrality financing until 2050. Investments would target a wide range of green technologies. Green loans already represent ca. 10% of the outstanding credits of Chinese banks, and this is expected to rise to 25%, while banks will also increasingly be prompted to reduce lending to high-emissions industries and to embrace ESG in the underwriting process.

Hydrogen - from hype to concrete projects:

2021 marked the year where hydrogen took centre stage as a climate change solution. The speed with which countries are promoting the zero-emission fuel is impressive and 2022 will mark several milestones. In the UK the launch of a GBP 240 million hydrogen fund is expected, with first contracts awarded in early 2023. The UK government's aim is 5 GW of low carbon hydrogen production by 2030. In Europe, S&P predicts 65,000 mt/year of low-carbon hydrogen production capacity will come online in 2022 alongside a wave of new additions in 2023 & 2024 that will bring total hydrogen production to one million mt/year. In 2021 the largest project in Europe was a 10 MW electrolyser opened by Shell in Germany. Several 20 MW and 30 MW plants are under construction and will come online in 2022. Europe's first 100 MW electrolysers will begin production in 2023. Globally, S&P Global Platts predicts that there will be just over 2 million mt/y of low-carbon hydrogen capacity by the end of 2022, rising beyond 6 million mt/y by 2025 and to over 24 million mt/y by 2030. The majority of that will be green hydrogen (4.4 million mt/year to come online by 2025, rising to 16.7 million mt/y in 2030).

V2G becomes a household acronym:

Starting in 2022, all EVs produced by Volkswagen will be bidirectional, being able to discharge electricity back to the grid. VW joins Nissan, Kia and Mitsubishi which have all launched V2G enabled BEVs from as early as 2013. Ford starts the production of its V2G truck, the F150 Lightning in the spring of 2022. Further standardization to key equipment components will be an additional support for scalable V2G applications to take off, the upcoming publication of the ISO standard 15118-20 an important early example.

MEET THE TEAM

Gabriela Herculano – CEO and Co-founder

Gaby has over 25 years' experience in finance and in energy. She started her career in equity research, covering the Latin American electric utility sector at Lehman Brothers. After business school she moved into the buy side, where she worked at greenfield project finance and M&A at energy developer AES Corporation and as an Executive Director at GE Capital's Energy Financial Services team in London. When structuring private equity infrastructure investments her primary focus was on renewable energy assets across Europe, having invested into solar and onshore wind, and screened several opportunities also in offshore wind. Gaby combines solid fundamental analysis skills with energy industry knowledge. Moreover, she has been involved with sustainable development since 1992 when she attended the UNFCCC Earth Summit in Rio de Janeiro. Gaby earned her MBA from Wharton in 2002.



Shaila Leekha – COO and Co-founder

Shaila has more than 20 years' professional experience across the private, public and multilateral sectors, including most recently at Fitch's ESG rating business where she rolled out a fixed income ESG product. Her prior experience includes energy project finance at GE Capital in London, equity infrastructure investments at AMP Capital in London, and infrastructure and telecoms project finance at the IFC in Washington DC. She started her career in banking at Houlihan Lokey Howard & Zukin in New York. Shaila also served in a senior role at the UK's former Department for International Development (DFID), overseeing a division of 80 professionals and £2.5bn of the UK aid budget including policy and disbursements to the World Bank, other multilateral institutions, and private sector institutions like CDC (DFID's wholly owned £5bn balance sheet private equity vehicle). Shaila serves on two charitable international boards, at Nutrition International and CGE Europe. Shaila earned her MBA from Wharton in 2004.



Chris Searle - Sustainability Research Analyst

Chris joined the team in September after finishing his BA in Geography at the University of Oxford. During his time there he was heavily involved with Six Degrees sustainability consulting and wrote multiple pieces for us. Chris is fascinated in the climate crisis, with a particular interest in what makes people and organisations engage (or not), and how we can better communicate the issue to this end. His work at iClima focuses on sustainability in the financial system and wider policy environment, drilling down on instances of greenwashing and the just transition. Before engaging in the climate crisis himself, Chris held a professional cricket contract with Hampshire CCC, going on to play four first class matches and captain Oxford University at Lords. He is now looking to marry his two passions alongside his work at iClima, building a campaign to mobilise previously disengaged groups to take action on climate change through their careers and personal lives, using sport as a vehicle.



Gary Hart - Sustainability Research Analyst

Gary is a physicist by training, graduating Kings College London with a BSc in Physics in 2009. His passion for cutting edge technology has underpinned much of his career since, joining Virgin Media's Technology Strategy team straight out of university. Seeking a different angle, Gary undertook a masters in Climate Change, Management and Finance at Imperial College London, which included a summer project at Impax Asset Management. The course spiked Gary's interest, and he soon became employee number one at iClima, settling into a year of granular research which formed the basis of all that we do. Gary always has one eye on emerging technology and still refuses to shy away from some deep analysis. Gary's second love is football. After a promising youth career and some dodgy knees, he turned his hand to coaching at Hayes and Yeading FC, where the next generation now benefit from his thorough approach to life.



Brigita Darminto - Science Researcher

Brigita is a materials scientist and energy storage enthusiast. She's been fascinated with batteries since high school and has ended up doing research on energy storage, both in academia and industry, since 2016. Currently, she's pursuing a DPhil in Materials at the University of Oxford, spending 5 to 6 days a week in the lab trying very hard to come up with a novel solid electrolyte for sodium batteries. Prior to her DPhil, she worked for Jaguar Land Rover across multiple teams, from advanced manufacturing to advanced cell design, and had a taste of working in the defence industry for BAE Systems. With iClima, she's been exploring a way of communicating her passion for batteries to investors while learning about the finance side. Her articles can be found on the company's research page. To prevent herself from getting burned out by batteries, she loves singing with the University Chorus, bending herself into cobra and downward dog poses among others, trying out global cuisines, and learning data science.



Rina Cerrato - Climate Change Advisor

Rina has always been a strong believer that climate change and the environment make business sense. Rina applied this belief early in her career by switching from non-profit environmental advocacy work to the private sector, specialising in carbon markets. Rina worked in carbon markets before the first commitment period of the Kyoto Protocol came into place (2008-2012). This allowed her to become knowledgeable in climate change regulations and GHG quantification methodologies and models, having reviewed over thousands of emission reduction investment projects for a large private investment/broker firm. When carbon markets suffered due to political inaction, Rina continued to pursue her interest in climate change by advising clean tech companies, leading into the carbon market spin-off of low carbon fuels. Rina currently works with a specialised team developing and commercialising renewable fuels feedstock. In her free time, Rina enjoys working with smart, innovative companies looking to deliver impactful action against the climate change challenge.



Jayhan Selvarajah - Sustainability Research Analyst

Jay graduated from the University of Nottingham in 2019 with a BSc in Industrial Economics, before spotting an opportunity to move into a growing field, undertaking an MSc in Climate Change Finance and Management from Imperial College London. This dual theme of economics and the low carbon transition guides Jay's work at iClima, where he focuses on all things data, research and financial analysis, a highlight being a thorough report on the previous day's market activity each morning. When not engaged in all things climate change you'll find Jay engrossed in the latest cryptocurrency trends. While this may seem immediately contradictory, Jay is convinced that there are synergies between the two emerging trends, as decentralised finance and the tokenisation of real-world assets continues to grow. When not chewing your ear off about Ethereum or Tesla price forecasts, you can find Jay on a rugby pitch, where he describes himself simply as a 'failed footballer'.



Kieran Baptista – Design Manager

Kieran cut his teeth in the world of experiential marketing, with stints at DDB, WPP and Publicis Groupe, before he decided to turn his hand to more impactful work. A product designer by training, he now turns our work into stunning visuals. Since coming on board, he has transformed the way that our data is presented, creating a series of compelling infographics and placing his own style on pieces like this report. Kieran would describe himself as a visual storyteller, and is motivated by the idea that his work can help to make the world a better place. When not working he loves to take himself on extremely long walks through his home city of Mumbai, alongside extolling the benefits of a plant based diet, collecting art, and reading or streaming science fiction.



