

An Investor's Guide to Climate Change

May 2018



An Investor's Guide to Low Carbon Investing

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The next steps that investors need to consider when formulating an approach to climate change.

The Engaged Tracking team has extensive experience in developing corporate carbon ranking methodologies and collecting and analysing corporate carbon and climate-related data.

We are also well-versed in building low carbon indices and designing carbon analytics tools for portfolios. More and more investors are becoming interested in why managing carbon risk and developing low carbon investment strategies has moved from an optional extra to a fiduciary responsibility. We have therefore created this guide, where we have 'carbon captured' and compressed our knowledge into a series of easy to digest chapters, to break down the basics for investors.

Meet the Engaged Tracking experts



James Cameron, Chair

Thought leader in climate change policy, regulation and investment strategy.

Most recently, James has been advising the Fijian Presidency during the COP23 Climate Change negotiations. He is a senior advisor at SYSTEMIQ and Chairman of the Overseas Development Institute. He is also an adviser to the Climate Bonds Initiative and Carbon Tracker, and a trustee member of the UK Green Building Council. In addition, James is on the board of several climate change start ups. Previously, he was Chairman of CDP, a non-executive director of Solarcentury and co-founder and chairman of Climate Change Capital (CCC), which grew to \$1.5 billion under management. Whilst at CCC, James was named Leader of the Year 2013 at the BusinessGreen Leaders awards.

Chris Huhne, Senior Advisor

Expert in climate change policy and sovereign debt ratings.

Formerly the UK Secretary of State for Energy and Climate Change, as well as a member of the UK and European Parliaments, he was responsible for a UK political party's first comprehensive 'zero carbon' programme. Before politics, he founded the sovereign group at IBCA and Fitch Ratings, and was group managing director. Chris is director of, and adviser for, a number of businesses in renewable energy and climate change. Chris holds a first class degree in Politics, Philosophy and Economics from Oxford University.





Sam Gill, Chief Executive Officer

Thought leader in developing Engaged Tracking carbon, circular economy and sustainability ranking methodologies.

After starting his career at Google, Sam led the not-for-profit research body - the Environmental Investment Organisation (EIO) - to become the first organisation in the world to rank the world's largest listed companies by their greenhouse gas emissions and disclosure. In 2014 he co-founded Engaged Tracking to commercialise the work of the EIO. Sam is author of Environmental Tracking 3.0 and the main architect behind the Engaged Tracking methodology. Sam holds a first class degree in French from the University of London Institute in Paris.

Jonathan Harris, Chief Analyst

Expert in risk modelling, portfolio construction, carbon factor research.

Jonathan has over a decade's worth of expertise in portfolio risk modelling. Before joining Engaged Tracking, he completed the development of a global multi-asset class portfolio risk model at Credit Suisse. He has worked at investment and trading houses across four continents. Jonathan holds an MSc in Financial Mathematics from Stanford University and a BSc (Honours) in Physics and Mathematics from the University of British Columbia. He is currently completing an executive PhD in Finance at EDHEC Business School, the leading business school for index-related financial research.



Greg Fonai, Head of Corporate Engagement

Expert in corporate carbon reporting.

Greg is a specialist in environmental economics and greenhouse gas emissions reporting. He is responsible for the compilation of the data for the ET Carbon Rankings each year, and works closely with our product team to ensure our analytics tools for investors and corporates are best-in-class. He leads our corporate engagement activities, where he responds to corporate queries and helps companies to improve their greenhouse gas emissions reporting and disclosure. Greg holds a Bachelor's in Ecology and a Master's in Environmental Technology from Imperial College, London.

Pekka Piirainen, Senior Investor Engagement Manager

Pekka is an experienced climate and investment professional with a broad range of experience from international climate negotiations, renewable energy, and finance. He has been responsible for the development of Engaged Tracking's cutting-edge TCFD-aligned scenario analysis work, which enables investors to make asset allocation decisions in line with the latest climate science. Prior to joining Engaged Tracking, Pekka headed campaigns for the Environmental Investment Organisation (EIO), worked on onshore wind deployment at RenewableUK and represented the UK as a delegate at COP21 for the UK Youth Climate Coalition (UKYCC). He completed his military service in the Finnish Defence Forces and holds a First Class degree in History from University College London.



Carbon 101

The starting point for understanding low carbon investing is to be aware that while 'carbon' or 'carbon emissions' is the most commonly used term, investors actually need to consider all of the greenhouse gas emissions.

- While carbon dioxide (CO₂ or CO₂) is the most abundant of the seven greenhouse gases covered by the Greenhouse Gas Protocol, the others are far more potent. For example, methane (CH₄) has a global warming potential of 28 times that of CO₂ over 100 years, and across a shorter period of 20 years it is 84 times more potent than CO₂.
- However, because CO₂ is the most prevalent of these gases the others tend to be expressed in terms of their carbon dioxide equivalent (CO₂e).
- Carbon emissions are measured in metric tonnes (tCO₂e) and the intensity of these carbon emissions is typically measured in terms of tonnes of carbon produced per unit of economic activity, for example in million dollars of revenue (tCO₂e/\$m).

The global warming potential (GWP) of the six other gases is expressed below in terms of their CO₂e (CO₂e).

At Engaged Tracking, we use carbon as shorthand for greenhouse gas emissions but we are always talking about all seven gases covered by the Greenhouse Gas Protocol and never just CO₂ on its own.

Throughout the rest of this document we refer to carbon dioxide equivalent as CO₂e.

THE KYOTO 7 GHGS		CHEMICAL FORMULA	GLOBAL WARMING POTENTIAL	USER/MAJOR SOURCES
Carbon dioxide		CO ₂	1	Burning fossil fuels or solid waste, chemical reactions; cement, iron manufacturing.
Methane		CH ₄	28	Productions and transport of coal, natural gas and oil, livestock.
Nitrous dioxide		N ₂ O	265	Fertilisers, combustion.
Fluorinated Gases	Sulphur hexafluoride	SF ₆	23,500	High voltage switchgear, magnesium manufacturing.
	Perfluorocarbons (PFCs)	(CF ₃ F ₈)	8,900	Electronics, cathodes for aluminium manufacturing.
	Hydrofluoro-carbons (HFCs)	CHF ₃ (HFC-23)	12,400	Refrigerants.
	Nitrogen trifluoride	NF ₃	16,100	Production of liquid-crystals and silicone-based solar cells

Source: Myhre, G., D. Shindell, F.-M. Bréon, W. Collins, J. Fuglestedt, J. Huang, D. Koch, J.-F. Lamarque, D. Lee, B. Mendoza, T. Nakajima, A. Robock, G. Stephens, T. Takemura and H. Zhang, 2013: Anthropogenic and Natural Radiative Forcing. In: Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Stocker, T.F., D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA.

The current climate change landscape for investors

Prudent investors are developing comprehensive and robust strategies to identify, understand and manage exposure to climate-related risks and opportunities.

As of March 2018, 170 countries have now ratified the 2015 Paris Climate Change Agreement and 165 countries have submitted their Nationally Defined Contributions (NDCs) for cutting emissions.

In addition, more than 40 countries and 20 cities, states and provinces now have carbon pricing mechanisms in place. Significantly, China launched the world's largest emissions trading scheme in December 2017. This means that 25% of global emissions are now subject to some form of carbon pricing.

The world is now set on a pathway towards de-carbonisation.

The arrival of carbon pricing and mandatory climate risk disclosure in key capital markets poses new business risks and opportunities. For example, the US coal sector is in decline and European power utilities face an existential crisis. It is clear that industries and companies that choose to ignore technological shifts and underestimate the speed of the shift to a low-carbon economy will suffer financially.

The G7 nations have committed to phasing out fossil-fuel subsidies by 2025 and renewable energy has finally arrived at scale.

In many countries, clean power generation is now cheaper, on average, than fossil fuels. Costs of clean power will continue to fall as technology and efficiency improve. This trend will accelerate as fossil fuel subsidies are phased out across the G7 economies.

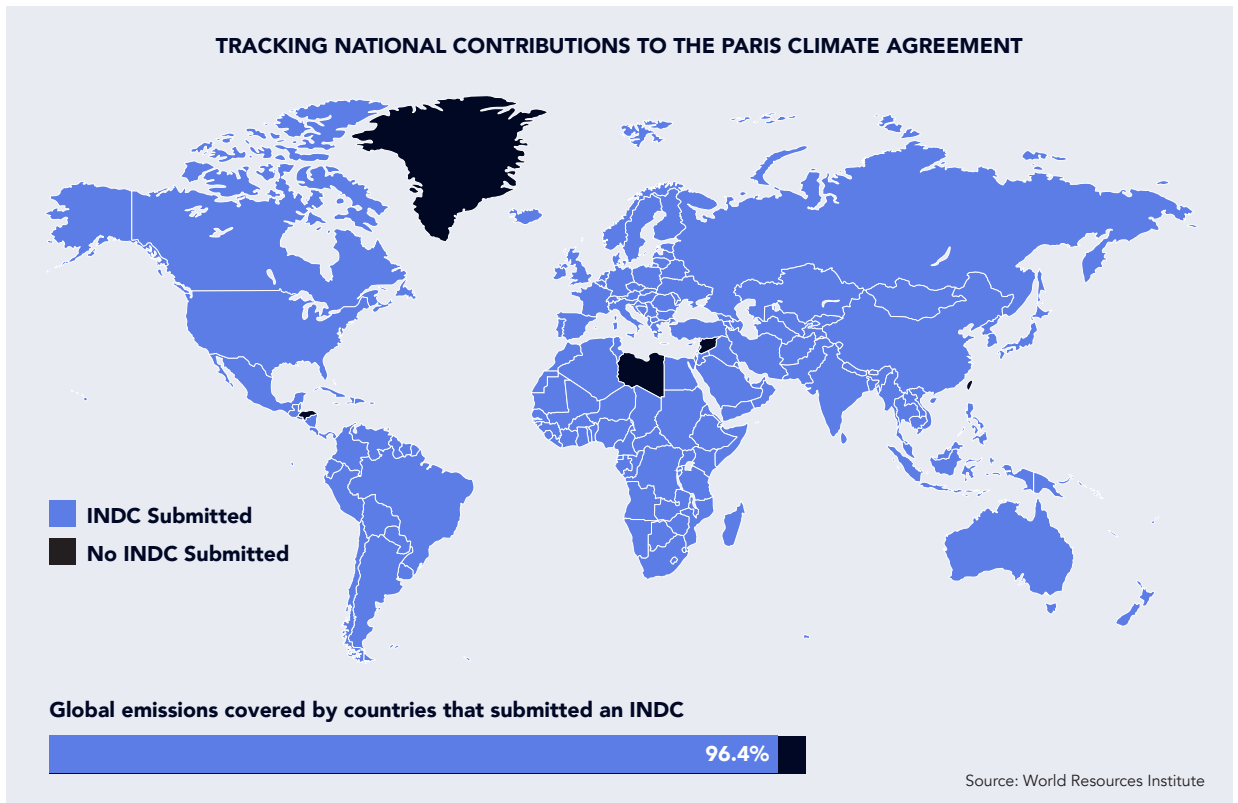
Carbon-intensive companies that do not prepare for this transition will be penalised by the market.

By ratifying the Paris Climate Agreement, governments - aside from the US - have provided a clear signal to all investors that the global economy will de-carbonise at a faster rate. As a result, we expect to see an accelerating shift in capital away from high-carbon assets towards



2015 Paris Climate Change Agreement

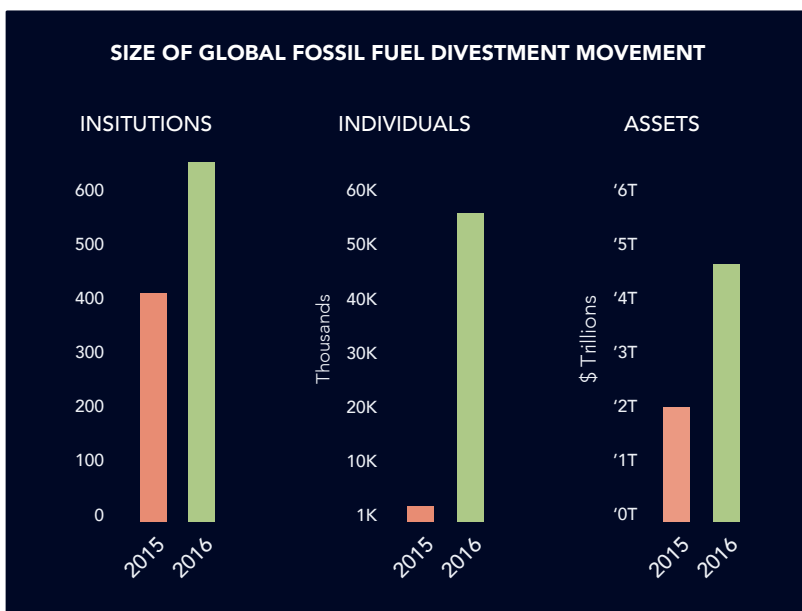
How does an increasing carbon price affect the profit margins of stocks and sectors in your portfolio?



As regulation increases in order to meet the goals of the Paris Climate Agreement, those corporates with higher carbon emissions are expected to be at a competitive disadvantage relative to their more carbon efficient peers.

The resulting devaluation of carbon-intensive assets represents a considerable carbon risk for investors.

Many are already switching to investment strategies that reduce exposure to high carbon assets. As the price of higher carbon stocks corrects, investors that move into lower carbon alternatives earlier are set to benefit the most from the outperformance of these carbon-efficient stocks.



- Investors representing \$600bn (£435bn) in assets have committed to de-carbonising their portfolios as part of the Portfolio Decarbonization Coalition.
- 150 investors representing more than \$10trn have made the Montreal Pledge, which commits to measuring and reducing the carbon footprint of their portfolios.
- More than 800 institutions representing \$5.5trn have also committed to divesting from fossil fuels as part of the Fossil Free movement.

Low carbon momentum is growing

Against this backdrop of increasing global regulation and investor awareness of carbon risk, pressure is mounting on companies to disclose their carbon emissions.

Yet, clearly there is still a long way to go. Research carried out by Engaged Tracking shows that although 76% of the largest 1,000 companies in the ET Global Developed Markets Universe made some emissions disclosure in 2017, only 59% publicly disclosed their direct and indirect electricity (Scope 1 and 2) carbon emissions data.

Progress is being made, however, as while just 25% of these companies disclosed their full Scope 1, 2 and 3 carbon emissions, this is an increase from 18% the previous year. This suggests that carbon emissions disclosure is becoming a core part of investment analysis, with even non-disclosure figures being equally informative from an investor point of view.

The urgent need for improved corporate carbon disclosure has also been the focus of the G20 Financial Stability Board and its specially created Task Force on Climate-related Financial Disclosures (TCFD). The TCFD recommendations, published in 2017, call on companies to publicly disclose their carbon emissions, risk management strategy and de-carbonisation plans.

The TCFD also provides clear guidance to institutional investors on how to measure and report on their carbon risk exposure. Notably, the TCFD advocates that investors stress-test their portfolios to ensure they are correctly managing their carbon risk exposure.

However, many asset owners and asset managers have yet to grasp the importance of the issue. Of the 500 companies rated in the AODP 2017 Global Climate 500 Index, 201 were 'X-rated Laggards', meaning they are completely ignoring climate risk in their portfolios.



Mark Carney and Michael Bloomberg launch Task Force on Climate-related Financial Disclosures

Why a 2°C climate change target won't work for investors

There is a real danger that a 2°C target will lead to 'runaway climate change'. In this scenario – where temperature increases accelerate exponentially – portfolio losses are more likely to be significant, and potentially total.

In order to limit the chances of 'runaway climate change' investors should seek to incentivise and encourage continued carbon emission reductions across both portfolios and the wider economy.

What is 'runaway climate change'?

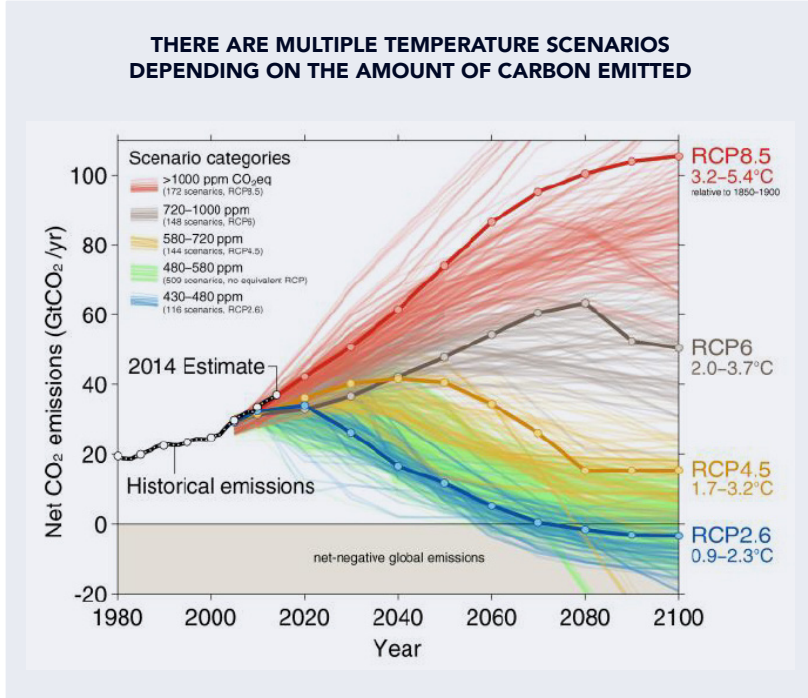
Positive climate feedback loops have the potential to accelerate global temperature increases exponentially¹. This phenomenon occurs when certain environmental thresholds are crossed and the effects become self-perpetuating. For example, when increased global warming leads

to the thawing of permafrost that then begins to emit methane, which in turn contributes to more warming. Methane is a greenhouse gas with a global warming potential of 36 times that of carbon dioxide over a 100 year period².

Once these positive climate feedback loops are triggered, global warming could spiral uncontrollably leading to far greater temperature rises than predicted. This phenomenon is known as 'runaway climate change'³.

It is not known precisely what level of temperature increase would be required to trigger non-linear positive climate feedback loops. However, what is known is that the higher the temperature, the more likely this is to occur.

We have already had at least 1.2°C of warming above pre-industrial levels⁴. According to Frederick van der Ploeg of the University of Oxford: "It is optimal to shut down carbon emissions by mid-century and cap temperature rise at 1.4°C instead of 3°C by 2100 in the baseline. In that case, there is only an 11% chance of crossing one or more tipping points by 2100 compared with a 46% chance in the baseline"⁵.



Source: Sabine Fuss, et al., "Betting on negative emissions," Nature Climate Change 4 (10), September 2014, pp. 850–853.

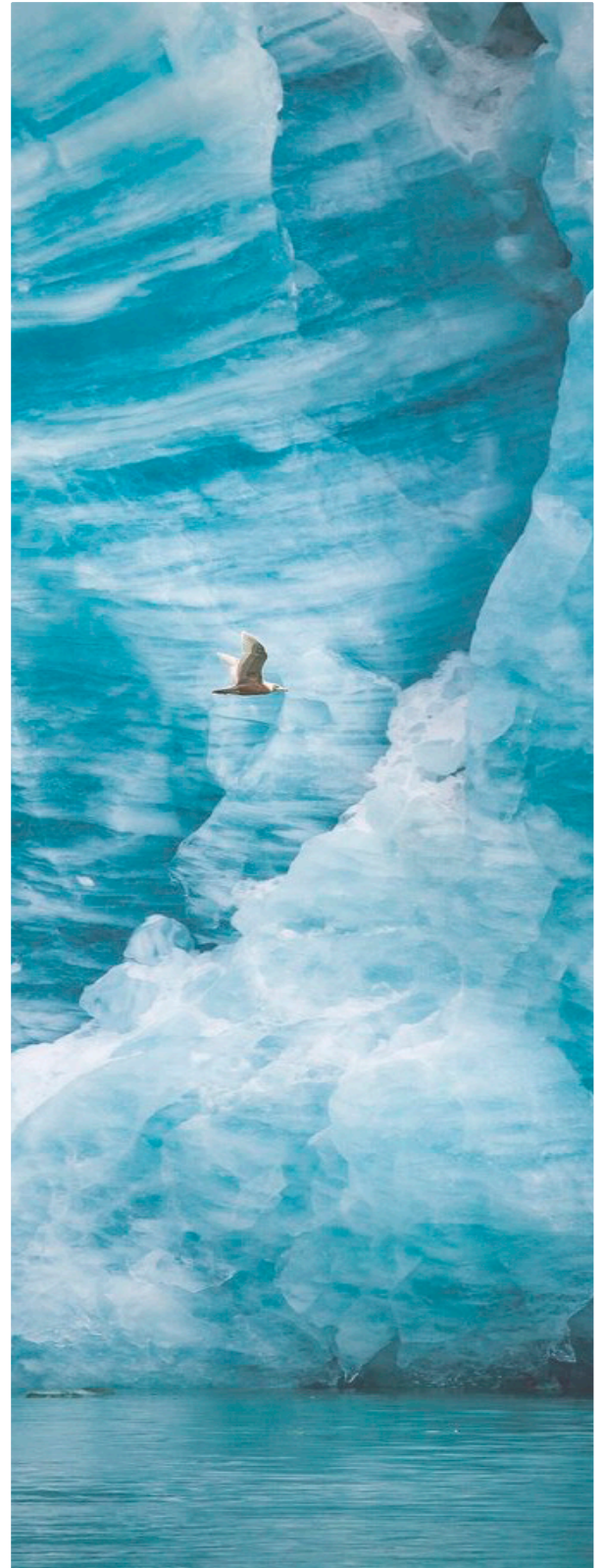
Investor implications

Research shows that a 1°C increase in global temperature can lead to a 5.7% decline in equity valuations. Therefore, at current rates, global emissions are reducing stock market returns by 0.20% each year showing that climate change is having a material impact on returns today.

The perils of higher temperatures

The 2006 Stern Review, produced for the UK government to assess the risks of climate change, estimated that if climate change continued unabated it would result in losses of 5-20% of global GDP per year, forever⁶. The Stern Review states that these predictions are much more likely to be at the higher end of this range if temperatures exceed 5-6°C in global warming.

Kevin Anderson, a professor of energy and climate change and former director of the UK's leading climate research institution, the Tyndall Energy Program, suggests that "more than 6°C of warming would be incompatible with global organised society"⁷.



Why investors need to understand a portfolio's carbon exposure

With a quarter of global emissions now covered by some form of carbon pricing, companies with higher carbon emissions will be at an increasing competitive disadvantage relative to their more carbon-efficient peers.

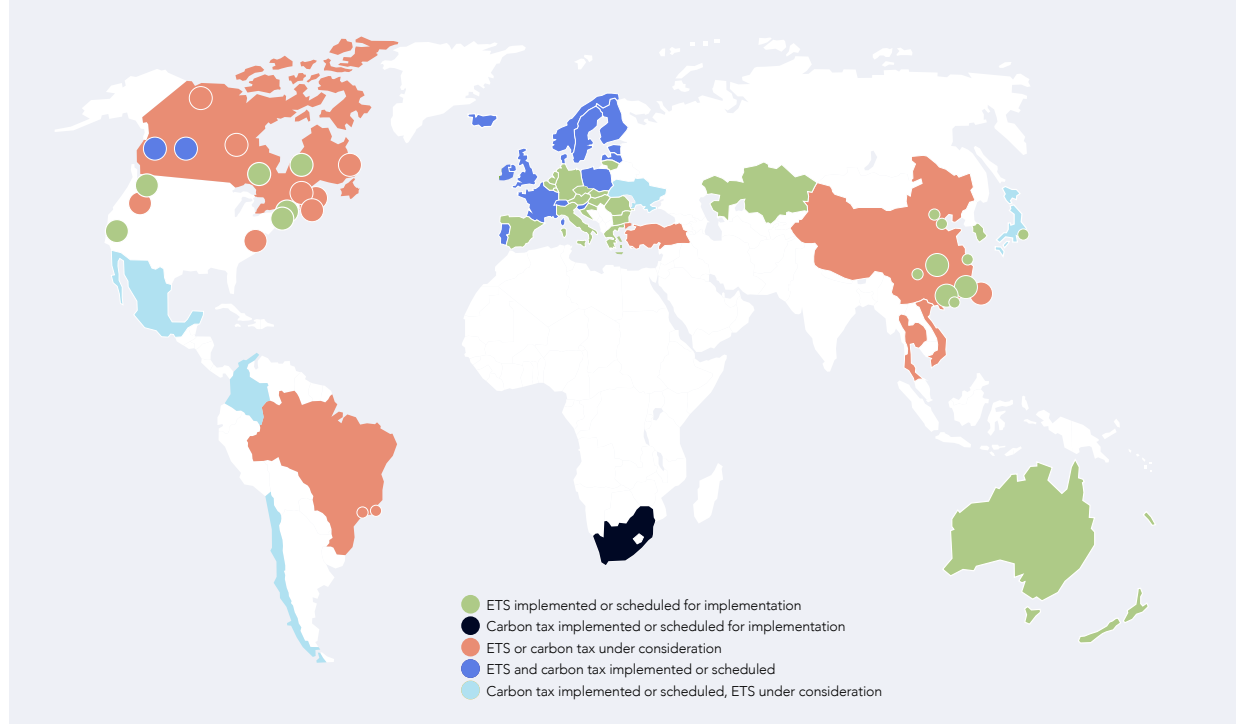
Understanding exposure to carbon emissions is a critical first step in developing a comprehensive carbon risk management and low carbon investment strategy.

In a rapidly de-carbonising world, companies with higher emissions will be increasingly penalised by the market relative to their more carbon-efficient peers.

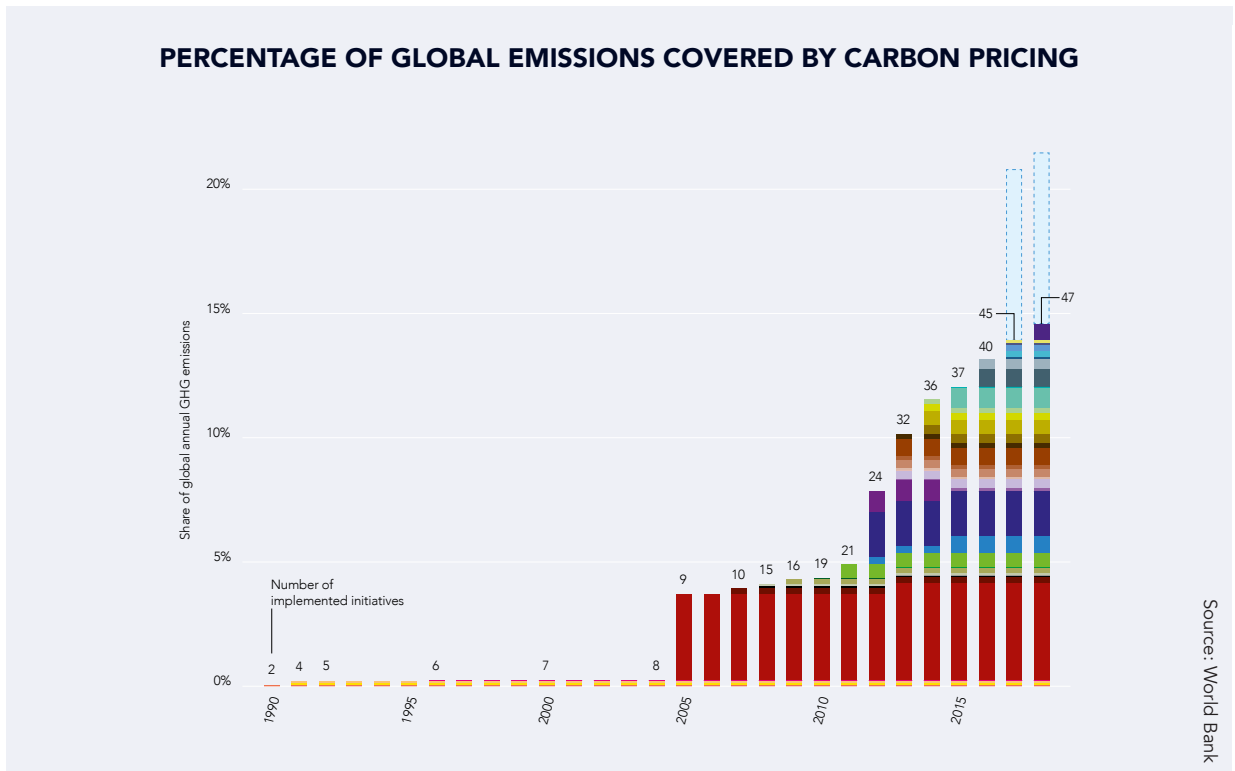
There are a multitude of reasons for measuring the carbon emissions profile of investments, including, but not limited to:

- Climate change is being caused by increasing levels of greenhouse gas emissions. Research carried out by Engaged Tracking has found that the 2,000 largest listed global companies account for approximately 30% of global emissions.
- Under the Paris Climate Agreement, governments around the world have agreed to reduce greenhouse gas emissions.
- As a result of the National Defined Contributions (NDCs) mechanism enshrined under the Paris Climate Agreement, countries are submitting proposals to reduce emissions. The effects are starting to be felt with the emissions intensity of the global economy falling for a third consecutive year, by 2.6% in 2016.⁸
- Efforts to cut emissions have led to a global increase in the implementation of climate-related policy and regulation. Research from the Grantham Institute shows the number of climate-related laws across the globe has increased from 60 in 1997 to 1,260 in 2017.⁹

MAP OF CARBON PRICING INITIATIVES IMPLEMENTED, SCHEDULED FOR IMPLEMENTATION AND UNDER CONSIDERATION (ETS AND CARBON TAX)



What forms of climate regulation are your investee companies facing, and how will it affect their profitability?



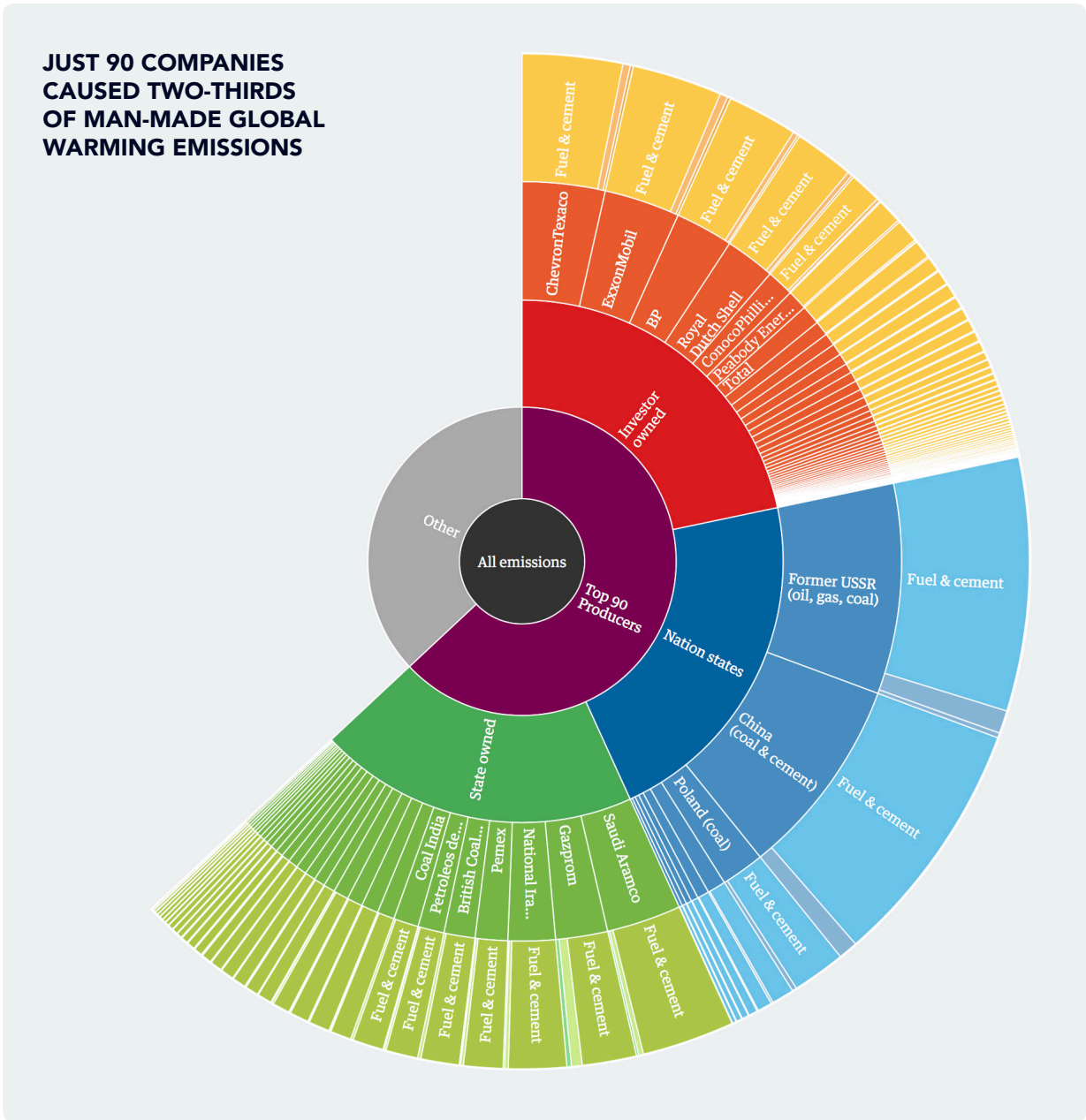
The introduction of more stringent measures to cut carbon emissions is expected to increase over time. Under the Paris Agreement countries are required to re-submit increasingly ambitious plans every five years¹⁰.

China, one of the largest emitters in the world, has launched the world's largest carbon emissions trading scheme, signalling its intention to gradually increase the carbon price to \$45/tonne¹¹.

Prudent investors are getting ahead of the market by identifying, understanding and managing their exposure to carbon intensive assets.

Regulation and policy, including but not limited to carbon taxation and carbon pricing mechanisms, is focused on creating incentives for companies to lower emissions and penalising companies with higher emissions.

Therefore, companies with higher carbon emissions will be at an increasing competitive disadvantage and certain high carbon assets, such as fossil fuel reserves, may even become defunct 'stranded assets', leading to significant or even total shareholder losses.



Source: Guardian <https://www.theguardian.com/environment/interactive/2013/nov/20/which-fossil-fuel-companies-responsible-climate-change-interactive>

Carbon Disclosure and the Law

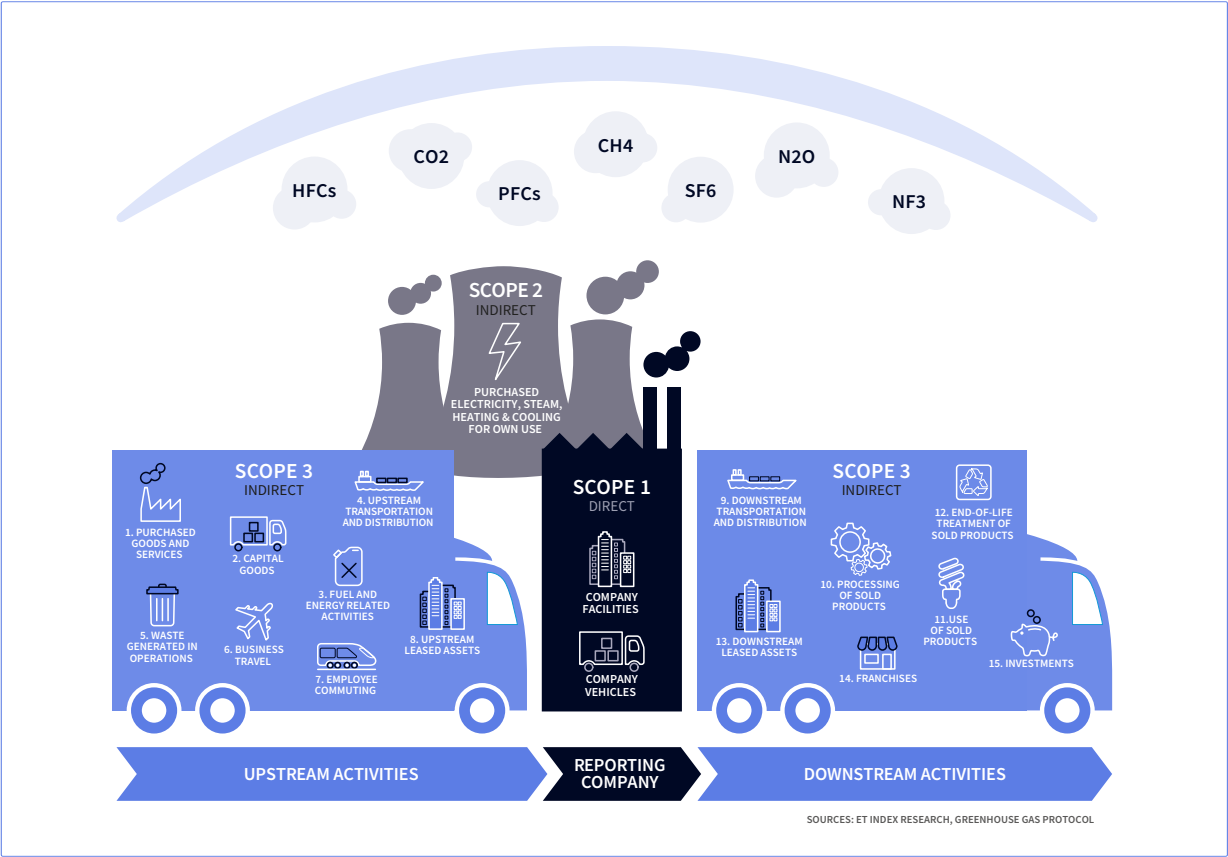
Regulations are continuing to evolve, with France having now made it a legal requirement for investors to report on how they are managing their exposure to the transition to a low carbon economy.¹³

Meanwhile in the UK the Institute and Faculty of Actuaries has highlighted the financial risks of climate change to actuaries and asked them to ensure they communicate to their clients the extent to which this risk has been included in their advice.¹⁴

With both the EU Commission Action Plan for Sustainable Finance and UK Government Green Finance Task Force endorsing the recommendations from the Task Force on Climate-related Financial Disclosures, we believe it is only a matter of time before the disclosure regime becomes mandatory.

Defining portfolio carbon emissions

The Greenhouse Gas Protocol



The Greenhouse Gas Protocol, the most widely used international carbon accounting framework, classifies greenhouse gas emissions according to Scope 1 (direct), Scope 2 (indirect electricity) and Scope 3 (supply chain) emissions.

Research from Engaged Tracking found that 28% of companies in the ET Global Developed Large Cap Index universe reported all 15 Scope 3 categories. Comparatively, 60% of companies disclosed their complete Scope 1 and 2 emissions data only.

Scope 1 Emissions – direct emissions from a company's operational activities.

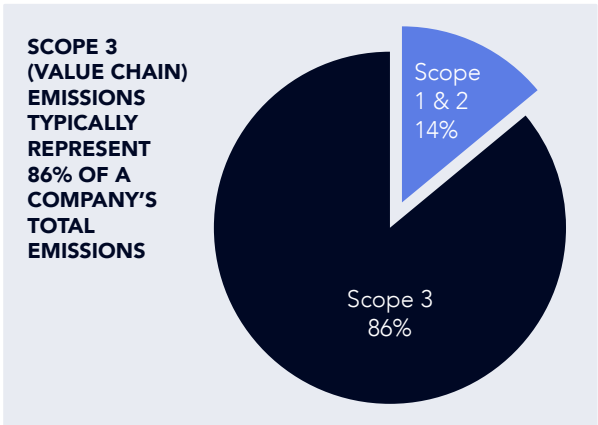
Scope 2 Emissions – indirect emissions generated from the purchase of electricity.

Scope 3 Emissions – all other emissions over which the company has influence but not control, such as distribution of goods, transportation of purchased goods, transportation of waste, disposal of waste, employee commuting, business travel or investments.

These figures suggests there is now sufficient Scope 3 emissions data for them to be factored into the investment decision-making process.

Companies do not exist in isolation from their supply chains, therefore failure to include the carbon risk from a company's supply chain is not providing a complete view of carbon exposure, creating hidden investment risks.

Of these three categories, it is critical that investors understand Scope 3 emissions because they typically make up more than 85% of a company's carbon footprint. Given the nature of today's interconnected global supply chains, by understanding Scope 3 emissions investors can grasp the level of exposure to increasing carbon costs across the value chain.



Case study: Automotive sector

Automotive companies with higher Scope 3 emissions are exposed to market risks as consumer preference and government support switch to lower and zero emissions vehicles.¹⁵ Recent scandals, such as those involving Volkswagen and Mitsubishi Motors indicate how tightening emissions regulations and the enforcement of existing rules can lead to rapid value destruction for shareholders.

Emissions rules are tightening across all G20 countries and more regulators may follow the US Department of Justice in penalising misconduct.¹⁶ The world's largest automotive manufacturers must be ready to address the environmental and human health impacts of excessive air pollution from their products, including carbon emissions.



Case study: Oil, Gas and Coal sector

Global action to keep climate change below 2°C threatens the business model of oil, gas and coal companies. Mark Carney, Governor of the Bank of England, has warned that vast reserves could become unburnable stranded assets, threatening investors with huge losses¹⁷.

But some companies, such as Exxon, can appear carbon-efficient if judged solely on their Scope 1 and 2 emissions, particularly if they have high revenues and are relatively carbon-efficient in their process for extracting and distributing fossil fuels. This approach has led some index providers to label Exxon a 'carbon leader'.

But the true impact of a fossil-fuel company is in the use of the products it sells and this is captured within a company's Scope 3 emissions, under category 11: Use of Sold Products.¹⁷ In the case of a company such as Exxon, the Scope 3 emissions are essential to understanding its true carbon efficiency. This is because falling demand for fossil fuels across the economy will directly affect oil and gas companies upstream in the supply chain. By understanding the full extent of a company's carbon exposure through the value chain investors have a much better appreciation of the carbon risk of such a company.

It is therefore essential that investors include Scope 3 emissions in their carbon risk management and low carbon investment strategy.

Why investors need more transparent corporate carbon reporting

While carbon disclosure has improved in recent years, there are still major gaps in most investor portfolios.

The 2017 CDP response rates across several indices highlight the problem we are facing:

- 70% non-disclosure among FTSE All Share companies.
- 56% non-disclosure among MSCI ACWI companies.
- 47% non-disclosure among S&P 500 companies.

In order to accurately manage exposure to carbon risk, investors need to first understand their exposure to it. Corporate emissions reporting will be a central metric for investors in tracking the transition to a low-carbon economy and managing transition risk.

“Without the necessary information, market adjustments to climate change will be incomplete, late and potentially destabilising.”

Mark Carney, Governor of the Bank of England & Chair of the Financial Stability Board and Michael Bloomberg, Chair of the Task Force on Climate-related Financial Disclosures.¹⁹

Measuring and disclosing direct and indirect electricity emissions - Scope 1 and 2 - is an absolute minimum requirement for the largest listed global companies, particularly in light of the accelerating global de-carbonisation now underway. But it is the Scope 3 figures, those that could potentially reveal hidden carbon risks in the supply chain, where investors need to concentrate their attention. It is clear that increasing pressure from investors is beginning to have an effect.

Analysis by Engaged Tracking has found that Scope 3 emissions disclosure among the 1,000 largest companies is improving across the board. Analysis showed that in 2016 just 18% of the 1,000 companies reported all 15 categories of Scope 3 data, but this increased to 25% in 2017.

Meanwhile, more than half of the companies analysed – 53% - reported at least five categories of Scope 3 data, up from 45% a year ago, and 62% now report on at least one category, an improvement from 57% in 2016.

This is a positive trend that most large companies now disclose some form of Scope 3 emissions data. But investors should be aware that having information on which companies in a portfolio are failing to disclose their emissions is equally important. Identifying those companies who are not disclosing data allows investors to choose the best approach to managing a potentially material risk issue – be it through engagement or portfolio changes.

As understanding of the importance of carbon disclosure grows, many more investors are now supporting initiatives that encourage improved public corporate carbon disclosure, including greenhouse gas emissions as well as carbon risk management strategies. Internal Engaged Tracking research suggests that disclosure of greenhouse gas emissions and equity risk is inversely correlated, when controlling for all other factors, providing a strong investment case for more company disclosure.



Cutting carbon is now a fiduciary responsibility for investors

While carbon disclosure has improved in recent years, there are still major gaps in most investor portfolios.

Pressure on investors to manage their carbon risk exposure is increasing, with individual managers and trustees being challenged through the courts regarding their investment decisions.

There is no common law or statutory basis to suggest that acting to manage carbon and climate change risk contradicts the principle of fiduciary responsibility to ensure financial returns for beneficiaries.

In fact, the 2014 report from the UK Law Commission on the Fiduciary Duties of Investment Intermediaries clarified: "Trustees are not required to 'maximise returns'. Trustees must weigh returns against risks, including long-term risks."²⁰

The report also clarified that trustees should take into account factors such as climate risk in making investment decisions where they are financially material.

Meanwhile, the Bank of England, World Bank, IMF and the TFCF led by Mark Carney and Michael Bloomberg all describe climate change as a "material financial risk issue".

Indeed, Mercer's 2011 report 'Climate Change Scenarios - Implications for Strategic Asset Allocation' suggests up to 40% of a global investment portfolio should be reallocated to counter the negative impacts of climate change.²¹

Meanwhile, law firm Baker and McKenzie stated in a report produced for Trustees²²:

"It is solely a matter of time before a trustee that fails to consider such impacts, which result in significant losses for the asset owners with respect to the investments they manage, will be forced to defend their actions in a litigious context. Incorporating a risk management approach that addresses climate change risk, will not only limit the risk of trustees being sued for negligence, but it will protect the investments over which trustees are only custodians."

As a result of this increased focus, the UN PRI has produced a useful set of guides as part of its Fiduciary Duty in the 21st Century project.

Helping investors implement the right low carbon strategy

Investors, inspired by this guide, may consider that following a low-carbon investment strategy is a logical imperative. However, not all low-carbon strategies are created equal.

According to Martin Skancke, Chair of the UN PRI, investors “need to differentiate between products that reduce individual exposure to carbon risk versus those that reduce collective aggregate climate change risk.”

An investor who merely shifts the weights in their portfolio to low-carbon stocks, without engaging with other market participants or investee companies, reduces their own exposure to carbon risk but does nothing to reduce systemic risk.

In contrast, investors who not only reduce their own exposure but also engage with other market participants and investee companies to encourage the flow of capital to low-carbon investments, benefit both themselves and the market.

For those investors considering the next steps for taking action to manage carbon risk, the Engaged Tracking Toolkit is a good place to get started. The Toolkit is designed to help investors identify, understand and manage their carbon risk exposure.

Our team of experts are on hand to offer dedicated support in shaping a strategy that fits with your objectives and needs.

This can include the use of the ET Carbon Dataset, which provides a comprehensive time series of the Greenhouse Gas Protocol defined Scope 1, 2 and 3 emissions of more than 4,000 of the largest global companies, with modelled data available for 30,000+ securities. In addition we have developed a range of products and services including the ET Low Carbon & Fossil Free Index Series, which is the only low carbon and fossil free index series on the market to fully take account of Scope 3 emissions.

Without a transparent reweighting system underpinning a low carbon or fossil free index, investors cannot be sure that lower carbon companies are getting a greater weighting than higher carbon companies every time.

All of the ET Low Carbon & Fossil Free Index Series are rankings-based. This means that constituent weightings are directly linked to a company's position in the public ET Carbon Rankings. It also means that the ET Carbon Rankings and the ET Low Carbon & Fossil Free Index Series act as an engagement tool to encourage companies to improve their behaviour.

ET Toolkit Overview: visit www.engagedtracking.com for more information.

Become an Engaged Tracking Investor by subscribing to our comprehensive toolkit for managing carbon and climate-related risk.

What we offer

SERVICE	DESCRIPTION	HOW INVESTORS ARE USING OUR SPECIALIST SERVICES
ET Advisory	Leverage the world-class expertise of the ET Research team to inform your low carbon/responsible investment strategy and goals.	<ul style="list-style-type: none"> To supplement in-house resources with independent, external expertise.
ET Corporate Engagement	Data-driven engagement with companies on behalf of investor clients, across the entire ET Carbon Rankings universe to encourage better disclosure and improved carbon and climate performance.	<ul style="list-style-type: none"> To track the carbon and climate-related performance of companies over time in a transparent way through the ET Carbon Rankings. To be publicly recognised as taking an active leadership role in corporate engagement. To support and encourage the adoption of the corporate disclosure recommendations outlined by the TCFD by providing a clear signal to companies that this is demanded by ET Investors. To encourage companies to reduce carbon and climate-related risks in their business operations and supply chains.
ET Carbon Dataset	<p>Access the ET Carbon Datasets that underpin the ET Carbon Rankings, a public corporate carbon benchmark.</p> <p>The ET Carbon Dataset includes information on the Scope 1, 2 and 3 emissions of global companies, the completeness of the data publicly reported by companies, whether it has been third-party assured, as well as statistical analysis and estimation models for non-disclosing companies.</p>	<ul style="list-style-type: none"> To identify carbon risk exposure and inform asset allocation decisions. As a data input and/or methodological framework for the construction of low-carbon investment strategies. To respond to mandatory and voluntary reporting requirements, e.g. TCFD, French Law, Asset Owners Disclosure Project etc. To perform in-house carbon footprinting. To inform universe selection and/or stock exclusion. As an input into risk models and scenario analysis. As an engagement tool that can be used with investee companies. To supplement and sense check other carbon datasets.
ET Bespoke Data Collection	<p>Are you looking for more data on your investee companies?</p> <p>We offer a bespoke data collection service to clients wishing to outsource their data collection needs, allowing them to focus on their core business.</p>	<ul style="list-style-type: none"> To understand the carbon emissions and disclosure profile of investee companies. To inform investment decision making processes. To select which companies to engage with. To inform their engagement agenda with investee companies.

What we offer

SERVICE	DESCRIPTION	HOW INVESTORS ARE USING OUR SPECIALIST SERVICES?
ET Portfolio Analytics	<p>We provide portfolio carbon footprint and carbon risk analysis reports to investors that want to better understand their carbon risk exposure and meet their reporting requirements. Our bespoke reports enable investors to identify and understand climate-related risks in their portfolios quickly and easily.</p> <p>Our reports are aligned with best practice as advocated by the Task Force on Climate-related Financial Disclosures (TCFD) and the reporting requirements of Article 173 of the French Energy Transition Law. At a minimum, both require investors to calculate the carbon exposure of their holdings, stress test different scenarios and communicate their strategy for managing those risks to their stakeholders.</p> <p>Results are presented in a customised report that can be made public and used as a communication tool for internal and external stakeholders. This is ideal for French investors responding to Article 173, Montreal Pledge signatories and investors seeking to improve their rating in the Asset Owners Disclosure Project Global Climate Index.</p>	<ul style="list-style-type: none"> • To fulfill disclosure requests, e.g. national mandatory reporting requirements, Montreal Pledge, Asset Owners Disclosure Project etc. • To report on carbon emissions exposure of funds to stakeholders/clients. • To compare carbon emissions exposure of funds to multiple benchmarks. • To perform scenario analysis as advocated by the TCFD. • To identify high risk assets within a portfolio. • To inform engagement strategies. • To inform asset allocation strategies. • To monitor changes in portfolio risk exposure over time.
ET Bespoke Portfolio Construction	<p>The ET Carbon Dataset can be used as the basis for the construction of Exchange Traded Funds or other fund vehicles.</p> <p>The ET Carbon Dataset can:</p> <ul style="list-style-type: none"> • Inform universe or portfolio selection. • Determine stock weightings for passive portfolio strategies that incorporate engagement via the ET Carbon Ranking Series. • Be combined with other datasets to create multi-factor approaches. 	<ul style="list-style-type: none"> • To leverage quality-assured, standardised and useful carbon data to inform portfolio construction and weighting. • To construct and market 'engaged tracking' investment strategies based on transparent data, underpinned by the public ET Carbon Ranking Series.
ET Low Carbon Index Series & ET Fossil Free Low Carbon Index Series	<p>License the ET Low Carbon Index Series as a benchmark or for the creation of index-based investment products.</p> <p>Custom strategies are available with varying tilts and tracking error targets relative to the underlying market capitalisation weighted index.</p>	<ul style="list-style-type: none"> • To increase exposure to companies set to benefit from the transition to a low carbon economy. • To reduce exposure to companies expected to be disadvantaged by the transition to a low carbon economy. • To decarbonise portfolios and support transparent mechanisms to bring about emissions reductions in the global economy (ET Carbon Ranking Series). • To incorporate a data-driven engagement strategy directly into their low carbon investment strategy via the ET Carbon Ranking Series.

About Engaged Tracking

We help investors identify, understand and manage carbon risk exposure to **achieve better risk-adjusted returns**. Our mission is to accelerate the transition to a **lower carbon, more circular and sustainable economy**.

Climate change is like no other risk issue that investors have had to contend with before. The non-linear distribution of risk from the threat of runaway climate change means that a failure to de-carbonise the economy could lead to total losses and the collapse of the global economy.

Investors should therefore consider the investment strategy that maximises their ability to reduce the systemic threat of climate change, as well as their own individual exposure to carbon risk.

Engaged Tracking represents a new approach to low carbon investing. We are a mission-driven organisation that believes impact investing is most effective when it is simple, transparent and measurable. We believe in creating a clear link between corporate climate performance and capital allocation through our indices. Our mission is to accelerate the transition to a low carbon economy.

We publicly rank the world's largest listed companies according to their Scope 1, 2 and 3 greenhouse gas emissions each year. Our public Engaged Tracking (ET) Carbon Rankings reward carbon efficiency and penalise non-disclosure. The rankings provide a data-driven corporate engagement platform allowing investors to track carbon disclosure and performance across their holdings in a transparent way.

Each company's position in the ET Carbon Ranking Series informs its weighting in the investable ET Low Carbon Index Series. This is an 'engaged' approach to index investing whereby there is clear and transparent link between a company's climate performance and its weighting in the index. ET Low Carbon Indexes include Scope 3 emissions, which typically account for 85% or more of a company's carbon risk exposure. Including Scope 3 emissions means the full extent of a company's carbon risk exposure is not overlooked.

We believe that truly low carbon investing is not just about reducing individual portfolio exposure to carbon risks but reducing system-wide climate change risk at the same time.

Engaged Tracking investors reduce their own exposure to carbon risk while simultaneously incentivising corporate emissions reduction, since emissions reductions are rewarded with a greater capital allocation via the ET Low Carbon Index Series.

ET CARBON RANKINGS

ET Disclosure Category ?	Number of Scope 3 Categories Disclosed	Company Name	Country ?	Sector ?	Scope 1, 2 and 3 Emissions Intensity ?
1	15	VMware Inc	United States	Technology and Com...	21
1	15	Amadeus IT Grou...	Spain	Technology and Com...	24
1	15	Accenture PLC	United States	Technology and Com...	28
1	15	Adobe Systems Inc	United States	Technology and Com...	29
2	15	Infosys Ltd	India	Technology and Com...	29
1	15	Oracle Corp	United States	Technology and Com...	29
1	15	Swisscom AG	Switzerland	Technology and Com...	39
1	15	Tech Mahindra Ltd	India	Technology and Com...	45
1	15	Telefonica SA	Spain	Technology and Com...	48

VIEW THE [ET CARBON RANKINGS ONLINE](#)

Read more on how to start implementing a low carbon strategy in our other guides and our latest blog posts.

Please visit www.engagedtracking.com for more information.

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- ³ Stern, N, 2008. The Economics of Climate Change. Available at: <http://pubs.aeaweb.org/doi/pdf/10.1257/aer.98.2.1>
- ⁴ Yale Environment360, 2016. 2016 Temperatures Measure 1.2 Degrees C Above Pre-Industrial Levels. November 14 2016. Available at: https://e360.yale.edu/digest/2016_hottest_year_on_record_wmo_12_degrees_c
- ⁵ Van der Ploeg, F, 2016. Reacting to multiple tipping points. Nature, May, 2016. Available at: <https://www.nature.com/articles/nclimate2962.pdf>
- ⁶ Lord Stern on behalf of the UK Government. 2006. The Stern Review on the Economic Effects of Climate Change. Available at: http://mudancasclimaticas.cptec.inpe.br/~rmclima/pdfs/destaques/sternreview_report_complete.pdf
- ⁷ The Brutal Logic of Climate Change. Available at: <http://grist.org/climate-change/2011-12-05-the-brutal-logic-of-climate-change/>
- ⁸ PwC: The Low Carbon Economy Index- Is Paris Possible? 2017. Available at: <https://www.pwc.co.uk/services/sustainability-climate-change/insights/low-carbon-economy-index.html>
- ⁹ Global trends in climate change legislation and litigation. Available at: <http://www.lse.ac.uk/GranthamInstitute/publication/global-trends-in-climate-change-legislation-and-litigation-2017-update/>
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