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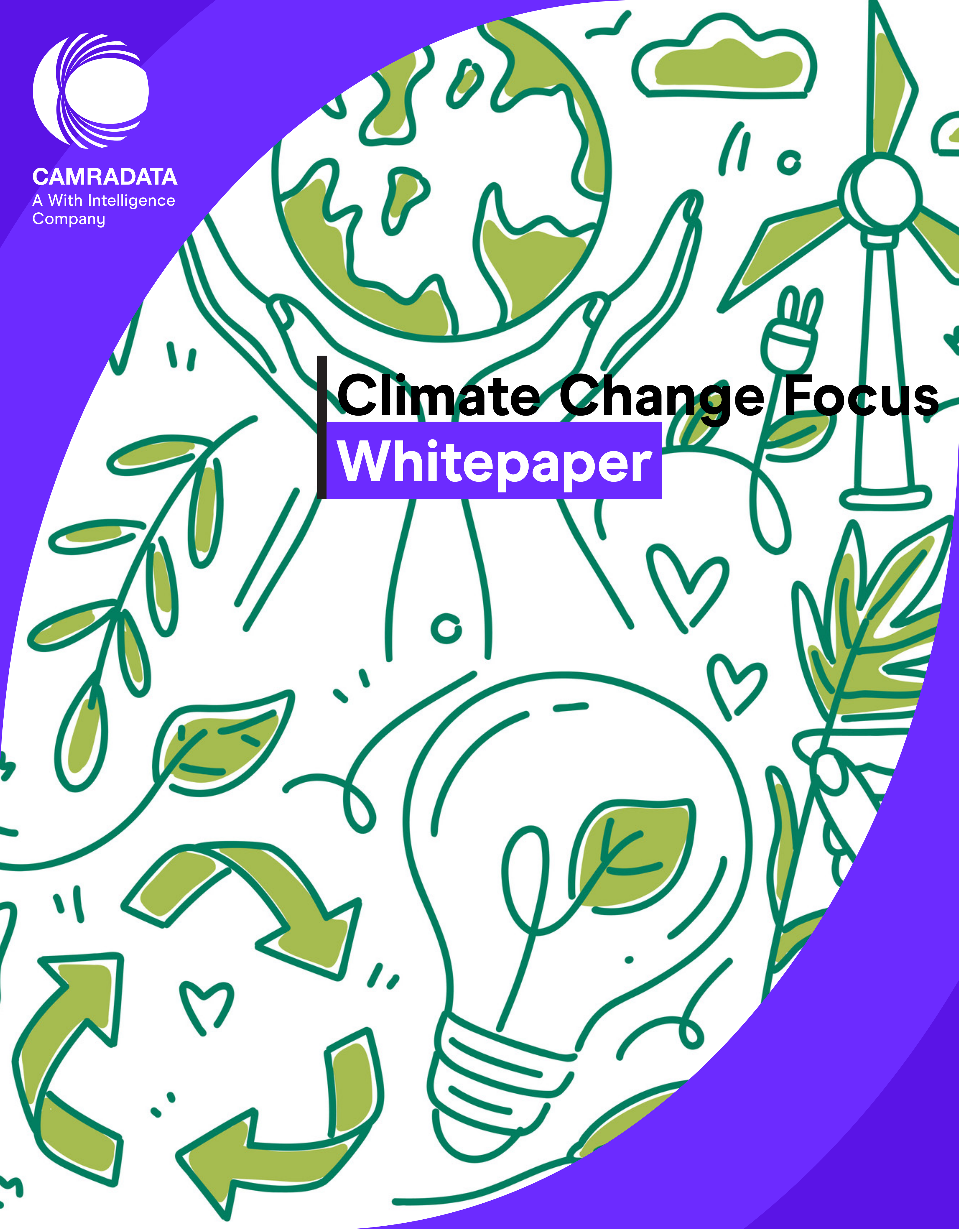
Climate Change Focus
Whitepaper



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Welcome to CAMRADATA's Climate Change Focus Roundtable

That climate change, as a term, has found its way into our modern day investment lexicon is to be encouraged. Both investors and providers of the various services they need have (mostly) all realised the phenomenon will have an impact on their short, medium and long-term objectives and achievements.

Thanks to regulation in some parts of the world, institutional investors are compelled to report their portfolio's carbon footprint. Some have even created specific principles and strategies that target net zero holdings or are implementing stewardship-driven initiatives to convince the worst offenders to change their ways.

But with the effects and impacts of climate change as broad, deep and far reaching as we are discovering almost daily, how can investors, their advisers and others, keep up?

Additionally, with something as complex as climate change, are investors being either encouraged or enabled to see the real world impact of their asset allocation decisions?

Fundamentally, the investor needs to understand the impact their capital allocation will have on climate change, but also – crucially – what impact climate change will have on their capital and its allocation.

In this sense, assessing strategies on a short, medium and long-term basis becomes increasingly difficult with the number of variables to consider. From national and international regulation to changing human behaviour, resourcing availability and migration shifts, the number of unknowns related to climate change continue to increase.

For fund managers, creating products that either manage risk or seek alpha (or do both) may also become increasingly tricky, as the multifactored impacts of climate change start to land.

Already managers are facing tough calls from investors as they try to create relatively simple products that must tackle extremely complex challenges – all while offering returns on investment.

In this whitepaper, we will be discussing the challenges investors, their advisers and fund managers face when assembling a portfolio that can both withstand the risks climate change poses, but also seize the opportunities that will help them reach their ultimate objectives.

Meet the Team

Sean Thompson
Managing Director

Natasha Silva
Managing Director, Client Relations

Amy Richardson
Managing Director, Business Development

Sam Buttress
Associate, Business Development

Sarah Northwood
Marketing and Events Coordinator

Orin Ferguson
Associate, Business Development

Climate Change Focus Roundtable

The CAMRADATA Climate Change Focus Roundtable took place in London in April 2023

Approaching climate change complexity through an investment lens

The impact and effects of climate change are complex, deep and far reaching across society.

From national and international regulation to changing human behaviour, resourcing availability and migration shifts, there are many unknowns related to climate change, and they only look set to increase. But how can investors, their advisers and others keep up with this momentum?

What challenges do investors, advisers and fund managers face when assembling portfolios to remain steadfast despite climate change? And what prospects will help them achieve their goals while navigating risk and complexity?

CAMRADATA invited industry leaders to discuss the risks, opportunities and future of climate change investment.

Over the past five years, the approach taken by institutional investors when considering climate change in the allocation of their portfolio construction has been typically cautious and slow moving.

"Looking at actual portfolio allocations, from two perspectives – top down, we think that relatively little has been done outside the focus on target setting," said Isabella Martin, Climate Lead at WTW and Researcher at the Thinking Ahead Institute. "However, from the bottom up, this is where we have seen more change, for example, from indexation funds including the WTW Climate Transition Index. In private markets, there has been movement towards more sustainable investment allocations. In the regulation space, there is compliance as investors work towards implementation of regulation, sustainability strategies and climate action – which is all really positive – but it isn't happening fast enough."

This sentiment was felt across the roundtable, but with agreement that investors and advisers are considering ESG investing, focusing on analytics and trying to understand what is happening.

Climate data exists and availability is improving, according to Véronique Chapplow, ESG Investment Specialist at investment management firm T. Rowe Price. "What has changed is the type of climate metrics that investors are now incorporating in their fundamental research. They used to look at static/point in time metrics such as carbon footprints. They now also consider more forward-looking metrics such as the likely decarbonisation path of the investments they are making."

> ***"Are we trying to have an impact on the outside world or are we entirely focused on risks to the portfolio? Alternatively, do we believe that climate presents an opportunity for outperformance? Each objective could lead to a very different strategy as we try to manage fiduciary duty to our customers"***

John Cook, Portfolio Manager and Team Co-Lead of the Greenchip investment boutique at Canadian global asset management firm Mackenzie Investments, reflected on how climate consideration has been much more active in Canada.

"The Canadian pension fund market combines a very

small group of very large plans and a larger group of very small plans, with the large plans moving at different paces and in different ways," he said.

"For example, most have now integrated ESG, some are trying to understand climate risks and a few have set portfolio emissions targets," said Cook. "That said, thematic solutions investing has been limited, and primarily limited to private infrastructure allocations. If you consider the past decade, I believe individual Canadian investors were ahead of their pension plans when it comes to connecting climate risk and opportunities to their investments."

Complexity of climate change

Across the industry, has climate change investment not been fully embraced because of its complexities?

Hetal Patel, Head of Climate Investment Risk at the Phoenix Group, emphasised that this is a nuanced matter. This depends on context and what objectives you've set as an organisation.

"Are we trying to have an impact on the outside world or are we entirely focused on risks to the portfolio? Alternatively, do we believe that climate presents an opportunity for outperformance. Each objective could lead to a very different strategy as we try to manage fiduciary duty to our customers," he said.

With the impact of climate change happening so swiftly, part of the problem is also the short-term view across the market, argued Jonathan Roe, Investment Manager at Cardano. "I don't think you'd find any investment manager willing to invest on a 30-year time horizon, and we still see a focus on quarterly or yearly performance. There needs to be a shift in mindset to allow a greater focus on sustainable thinking and to properly account for all the risks/opportunities that climate change introduces."

Edina Molnar, Sustainable Investment Consultant at Redington, provided insight at the roundtable on how investors feel, rather than backing the notion of complexity.

"It's a big challenge as there are those that feel comfortable with uncertainty when looking at different and changing metrics and reassessing it often to see if it works, and then there are those more comfortable with using certain data."

However, Cook believes it is less complicated than others thought. "My view is there is far less uncertainty than what is being discussed around the table," he said. "I understand there are social challenges related to the energy transition, for example, transitioning away from coal will create significant unemployment in parts of India. But in terms of how we are going to re-engineer the economy in a way that will allow us to economically grow in a more sustainable way, it is very clear."

Chapplow pointed out that the main challenge faced by the majority of existing funds is that they are not set up as absolute return vehicles but have a benchmark they

> ***“Money can be printed, capital cannot. Capital is power but we have to get back to the responsible management of money.”***

need to beat. While investing in sustainable businesses on the right side of the carbon transition makes sense over the long term, asset managers must be able to justify short-term underperformance when fossil fuel assets rally. The challenge rests with managing funds incepted well before climate considerations became material.

Drivers in investment behaviour and management

The roundtable turned its attention on what is working to increase momentum towards increased climate awareness in portfolios.

“Quantifying in dollar terms the direct and indirect impact of global warming on the value of their investment is the moment Portfolio Managers start to get their arms around the issue of climate change,” Chapplow said. “Adopting this climate approach does not happen overnight. To fast track the process, T. Rowe Price has created dedicated tools to allow it to better appreciate the financial costs associated with climate change. Speaking that financial materiality language has really helped make the difference.”

Patel believes we still work in a society where activity and change is ‘top down’ driven. The introduction of TCFD disclosures has elevated the subject in the boardroom and this focus has permeated across the organisation. At the same time, bottom up social awareness as a result of influential figures like environmental activist Greta Thunberg, reinforces the market focus.

Cook focused on the state of investors, which he believes are feeling like the system is broken. “They are unconfident about the future, worried about financial security and climate. However, if you develop messaging that acknowledges these insecurities and offer solutions to them , you can shift them away from near-term performance concerns and focus investors on long term possibilities. When you get people to feel there is a positive future, and they can do something about it, that’s where you get movement,” he said.

In the current environment, Cook added that climate change has attracted the attention of younger consumers. “The younger demographic are aware of these issues, particularly in consumer, fast-fashion type sectors . I find great comfort in the next generation’s comprehension of ecological limitations. But at the time it seems many are still trying to have their cake and eat it – have their current lifestyles while trying to be climate focused.”

Navigating complexity

While investors are gradually focusing on sustainable investing, how are they adapting to changing environments and the challenges of climate change?

With positivity, according to the roundtable. “Talk about opportunities, talk about realities, climate and resource scarcity, then the investment opportunity is loud and clear,” said Cook.

For Chapplow, she felt it’s not about climate reporting to the decimal point but about getting a grasp of the range of potential outcomes. “It is important to look at the value at risk from modelling different climate scenarios. It is also important not to look at climate in isolation but to integrate it with intertwined issues such as biodiversity and equity. Stewardship efforts around climate are also very important. But to deliver their full potential, they must be tracked, and escalation may be required.”

Martin added that one positive trend in the industry is increased stewardship and engagement. She said: “At Thinking Ahead we are working with Principles for Responsible Investment (PRI) to provide thought leadership and inform stewardship best practices, as well as to develop a calculation methodology enabling desired levels of stewardship resources to be benchmarked. So, investment companies can ask do we have enough and are we adequately allocating to stewardship resources? Getting more people geared towards this way of thinking is more positive.”

Patel emphasised that evidence of climate change clearly exists, but the question is, what are the priorities for investors? Is it making money or reversing long-term damage to future generations?

He explained that whilst there is an increasing climate awareness in investment, implementation is not a straightforward matter. "A typical institutional approach would be to have prudent tilts for core portfolios whilst pursuing racier climate related strategies in distinct satellite sleeves. Whilst more capital is needed to fund the transition, not all opportunities are suitable for investors' risk profile and appetite. There needs to be more coherent policy support from government and clear workable regulatory frameworks."

Cook echoed this sentiment and added that there needs to be less confusion in the marketing of products and names of products as there is no clarity in the industry both at the consumer and institutional level.

"Confusion just creates momentum for those that want this all to fail, [and for] strategies that are likely to underperform. And there isn't enough discussion as to why they are likely to fail.

"The industry must provide clarity around which strategies actually invest to create value vs. those depending on security price momentum. There is tremendous need for capital for getting renewable energy projects off the ground and so on. We're going to need more copper mines, lithium mines, nickel, manganese and cobalt – materials to build sustainable infrastructure but nobody wants to back these companies right now. And in my view, this is where the institutional investors needs to come in and refocus their attention on the potential of these investments, in time, these investments will pay.

He added, however, that it was important to be truthful with people that the cost of renewable energy will not keep declining forever.

"There needs to be an honest conversation about the reality of the economic climate we are in currently," he said. To do this, Cook believes investors can take back some power and added, "Money can be printed, capital cannot. Capital is power but we have to get back to the responsible management of money."

Overcoming investment challenges

When investing with a climate change lens, there are challenges that investors need to overcome – but can be done so convincingly.

"Investors are in this tricky position," said Molnar. "As an individual in their role, then as an investor and wanting to be a good steward, and sometimes those two are not in harmony."

But she added that we need to use what the industry already has access to – data and stewardship.

"For asset owners, it is about focusing on what matters," Molnar continued. "It's not perfect but we have data we can work with, use that data, understand risks and impacts and prioritise engagement. Also, we need to consider the agent and principal relationship – for example, looking at stewardship, we find that often asset managers prioritise company engagement from their own perspective rather than from the asset owner's perspective. It's a challenge but there's progression."

Roe felt that it comes down to what investors believe in and setting this out upfront. "Everyone talks the talk, but the challenge is in making sure they walk the walk," he added. "This can be improved by focusing on training for underlying investors to help them understand the potential risks and opportunities and how they can affect change."

"In the last few years, there has been huge growth in the number of climate-related funds available in the market. The choice of potential solutions for investors can be confusing. They need to understand that different approaches require different skill sets; for example if you are opting for a climate transition fund, ensuring sufficient resources to engage with companies and drive change is of paramount importance," Roe added.

According to Martin, leadership in climate investment is happening across Europe, where progressive investment is taking place. In Australia, there is also real passion for investing in sustainability. But she pointed out that it's not all about countries acting as a shining example.

"It's about filtering out the noise, having a long-term strategy and setting the way forward focusing on cultural change, beliefs, purpose and values," she emphasised.

"It is also clear that a major role needs to come from governments and policymakers. I would love to see more public policy engagement to make real change happen."

Roundtable Participants

John A. Cook, CIM

Senior Vice President, Portfolio Manager, Team Co-Lead Mackenzie Greenchip Team

Personal Profile

Joined Mackenzie in 2021; investment experience since 1991.

- John brings 30 years of experience ranging from mutual funds, venture capital and social finance

- Before co-founding Greenchip in 2007, John was President of MaRS Discovery District, one of Canada's largest innovation hubs. He also held a number of executive positions at Canadian mutual fund companies

- BA from Queen's University; Chartered Investment Manager (CIM) designation

Company Profile

Mackenzie Investments, founded in 1967, is a leading Canadian global asset manager, headquartered in Toronto with international investment teams in Boston, Dublin and Hong Kong. As part of IGM Financial Inc., a subsidiary of Power Corporation with a history dating back to 1925, Mackenzie benefits from the financial stability of a deep corporate structure while maintaining a boutique investment management profile.

Our distinct and experienced investment teams offer both fundamental and quantitative approaches with expertise across traditional and non-traditional asset classes, including equities, alternatives, currency and multi-asset strategies.

We provide investment management services to pension plans, consultants, foundations and other institutions, building trusting relationships that seek to understand client perspectives. We are committed to delivering strong investment performance and offering innovative, relevant solutions to our clients by drawing on the experience gained through over 50 years in the investment management business.

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Investments

Véronique Chapplow

Vice President - ESG Investment Specialist

Personal Profile

Véronique Chapplow is an investment specialist focused on environmental, social, and governance (ESG) capabilities in the Equity Division. She is a vice president of T. Rowe Price International Ltd.

Véronique's investment experience began in 2000, and she has been with T. Rowe Price since 2021, beginning in the Investment Specialist Group within the Equity Division. Before joining the firm, she spent five years as an investment director for Equities, ESG & Impact at M&G Investments. In that role, Véronique not only met with clients, prospects, and consultants to discuss ESG and impact equity strategies, but she also was heavily involved in advocacy work to promote awareness of ESG and impact investing.

Véronique earned an M.B.A. (distinction) from Heriot-Watt University in Edinburgh.

Company Profile

At T. Rowe Price we're solely focused on providing investment management and long-term results for you and your clients.

Founded in 1937, we're an independent investment management firm managing over GBP 1.1 trillion in assets*. We service clients in 56 countries across Europe, the Americas, Asia and the Middle East and opened our UK off ice in 1979, going on to launch our OEIC Fund Range in 2016.

We offer investors a full range of equity and fixed income strategies across multiple asset classes, sectors, styles, and regions. Our experience through all types of market conditions contributes to a proven investment strategy designed to produce strong performance for the long term.

*As at 31 December 2022

Roundtable Participants

Jonathan Roe

Investment Manager

Personal Profile

I have over 13 years of experience in investment consulting. I joined Cardano in March 2021 as an Investment Manager in the Manager Research Team. My role involves selecting and monitoring equity and equity-related strategies. Previously, I spent seven years undertaking equity manager research at Stamford Associates. I am a CFA Charterholder.

Hetal Patel

Head of Climate Investment Risk

Personal Profile

Hetal Patel is Head of Climate Investment Risk at Phoenix Group where he's responsible for assessing the exposure of the Group's investment portfolios to climate risks and opportunities and for developing and setting targets for its decarbonisation ambitions.

Prior to joining Phoenix in 2020, Hetal had a rich background in institutional investments. He spent 9 years at Legal & General where he held various roles supporting its With Profits Fund, latterly leading the team responsible for its investment strategy and fund manager oversight. He also worked in the pensions sector, initially as an Investment Consultant with KPMG and then as an in-house Investment Manager for Lloyds Banking Group supporting its various heritage pensions schemes. Hetal started his career in banking as a bond trader with Goldman Sachs working on the European Government Bonds desk.

Hetal is a fellow of the Institute and Faculty of Actuaries.

cardano

Phoenix

Edina Molnar

Vice President,
Sustainable Investing

Personal Profile

Edina is a Vice President in Redington's Sustainable Investment team. Edina helps clients to integrate ESG in their investment decision-making. Her main focus since joining Redington has been supporting clients in setting climate objectives, including net- zero targets, and ensuring these are reflected in their investment strategy.Edina sits on a number of industry working groups including as part of the Investment Consultant Sustainability Working Group and the Institutional Investors Group on Climate Change.

Edina has been at Redington since May 2020. Previous to starting with Redington, Edina worked on climate-related disclosures for the financial sector at CDP and completed a graduate programme in EY's Assurance team. Edina holds a CFA Certificate in ESG Investing, an MSc in Climate Change Management and Finance from Imperial College London and a Bachelor of Economics from McGill University.

Isabella Martin

Senior Associate

Personal Profile

Isabella joined the Thinking Ahead Institute and WTW in early 2022. She splits her time between the Sustainable Investment team at WTW where she is Climate Lead and at the Thinking Ahead Institute where she is a researcher.

Prior to this, she spent several years working in and researching corporate social responsibility, impact investing, and impact measurement and management, including at the Impact Management Project. Isabella has a Master of Development Practice from the University of California, Berkeley.

Moderator

Elizabeth Pfeuti
Chief Client Officer

Personal Profile

Former Dow Jones staffer Elizabeth Pfeuti is Rhotic's Chief Client Officer and a member of the Rhotic Media executive leadership team. A highly-decorated journalist, Elizabeth has been in financial journalism for around 15 years. At Dow Jones, she covered the asset management, investment banking and investor services beats for Financial News, where she also wrote on a wide range of regulatory themes

She was previously the European Editor for CIO Magazine and boasts an exceptional contact book of buy-side and in-house institutional CIOs and asset management executives. More recently she has worked on corporate briefs for pension consultants, investment banks and asset management groups.


Environmental investment pioneers
A focus on value
A commitment to real impact
Not all environmental-themed strategies are created equal. The Mackenzie Greenchip team has 15 years' experience of investing in innovative companies at the forefront of the fight against climate change, with an aversion to hype and commitment to value. This is how sustainable investing should be.
Partner with Mackenzie Greenchip and unlock a $2.5 trillion window for diversification and opportunity.
Real impact. Real sustainable investing.
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Mackenzie Greenchip Q1 2023 note

The carbon calculation conundrum

"Greenchip has always tried to steer clear of environmental oversimplifications and buzzwords, as we feel that it can distract capital investment away from where it is needed"

When Greenchip was founded in 2008, it would have been hard to imagine how prolific the word "carbon" would become in the investment industry. Today, almost every publicly traded fund publishes its weighted average carbon intensity (WACI) score and there is continued institutional momentum toward low carbon strategies.

We have always tried to stay clear of environmental oversimplification, believing it can distract capital from where it is most needed to make real environmental change. In this note, we highlight our research on carbon emissions metrics and how they can be both helpful and harmful in making investment decisions.

Background on emissions accounting

Carbon and greenhouse gas (GHG) emissions are the release of various gases that trap heat in Earth's atmosphere, including carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O) and others. Companies report emissions associated with their operations under three scopes:

- **Scope 1**: emissions from sources that a company owns or controls, for example, emissions that a car company generates by manufacturing a engine.
- **Scope 2**: emissions created indirectly through purchased energy. For example, energy purchased by the car company to power its manufacturing facility.
- **Scope 3**: emissions that a company is indirectly responsible for, both upstream and downstream in its value chain. For example, emissions associated with the production of cast iron used in the car engine, or created by the customer driving the finished car. These emissions are difficult to measure and are not widely or accurately reported.

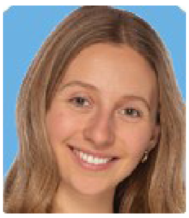
To compare emissions of different companies, the absolute volume of scope 1 and 2 emissions must be normalized by a common unit of activity. It is best practice to use an industry-specific unit of activity, such as tonnes of ammonia produced in the fertilizer industry. For cross-industry comparisons, revenue is often used.

$$\text{Carbon intensity} = \frac{\textbf{scope 1 and 2 emissions} \text{ (tonnes of } CO_2e\text{)}}{\textbf{revenue} \text{ (millions of USD)}}$$

OR

$$\text{Carbon intensity} = \frac{\textbf{scope 1 and 2 emissions} \text{ (tonnes of } CO_2e\text{)}}{\textbf{tonnes of ammonia produced}}$$

Author:



Elise Macdonald
Investment Analyst,
Greenchip Team

An example of emissions complexity

In fall 2022, we studied emissions associated with the fertilizer industry, which comprises ~7% of assets we manage. While nitrogen-based fertilizers are essential to sustainably feed the world's population, their production contributes 1-2% of global GHG emissions.

We studied emissions from four of the world's largest nitrogen-based fertilizer producers. The following two charts show the publicly reported emissions intensities, with chart 1 using revenue and chart 2 based on volume of ammonia produced.

CHART 1: PUBLICLY REPORTED EMISSIONS INTENSITIES BY REVENUE (M USD)

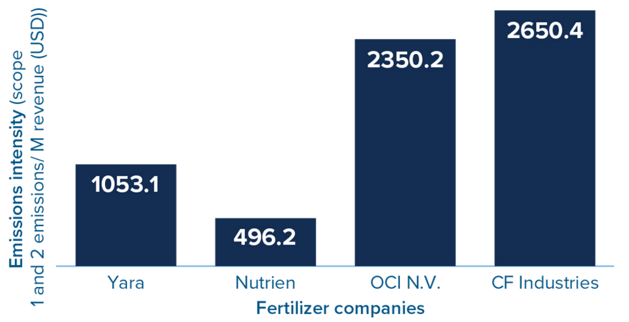
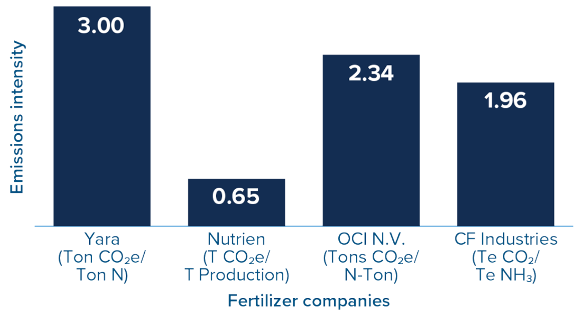


CHART 2: PUBLICLY REPORTED EMISSIONS INTENSITIES BY VOLUME OF PRODUCTION



At face value, the two charts draw different conclusions about which companies generate higher emissions. We spent several months researching and engaging with the companies to better understand the assumptions and methodologies used to calculate emissions. We found a lack of standardization was creating significant differences in how carbon intensity was calculated. Let's examine the impacts at three levels: sector, company and portfolio.

Comparing emissions across a sector

Inconsistencies with scope inclusion The most notable problem was a difference in methodologies: two companies followed the GHG Protocol and two followed the EU Emissions Trading System (ETS) standard. The EU ETS requires downstream emissions from urea be counted as a scope 1 emission, whereas the GHG Protocol does not.

Urea is a solid nitrogen-based fertilizer that emits 0.733 kg CO2e per kilogram when applied. It accounts for 16-39% of total fertilizer production among the companies we studied, which means there was a significant amount of CO2 either being added or left out of the emissions calculation, depending on the methodology.

Another problem relates to emissions inclusion along the value chain. More vertically integrated companies had higher scope 1 and 2 emissions, as they are directly responsible for a larger portion of production. This translated into differences in emissions depending on how much ammonia was purchased or produced, and whether captured CO2 sold to industrial customers was included in calculations.

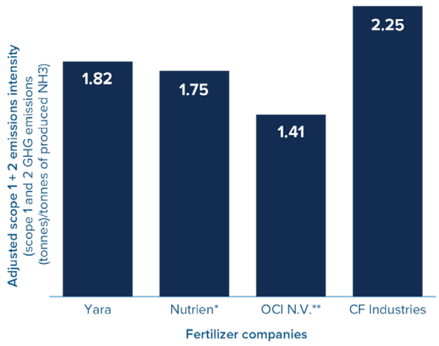
We noted the major data providers for scope 1 and 2 absolute emissions (MSCI, S&P and Bloomberg) did not correct for these differences, so data discrepancies are being passed to the industry at large.

Finding a common unit of activity

Further complication arises from the range of denominators used, as seen in chart 2. Some companies use a weighted average of products produced, whereas others use tonnes of ammonia or nitrogen.
Using revenue as the denominator is extremely problematic given the volatility of input prices, such as natural gas. From 2020 to 2021, CF Industries' revenue grew by an unusual 58%, as natural gas prices spiked. Yet the volume of ammonia produced declined by 10% and emissions were reduced by 7%. Measuring CF Industries' carbon intensity using revenue as the denominator would be misleading — it would show a 42% year-over-year decrease that could be mistaken as a dramatic improvement in emissions efficiency.

Relying on reported data alone provides misleading information to investors. Chart 3 shows Greenchip's calculations of the carbon intensity of nitrogen-based fertilizers for the four companies, after normalizing for assumptions and methodology. The results show a completely different emissions intensity profile.

CHART 3: CALCULATED NORMALIZED EMISSIONS INTENSITIES

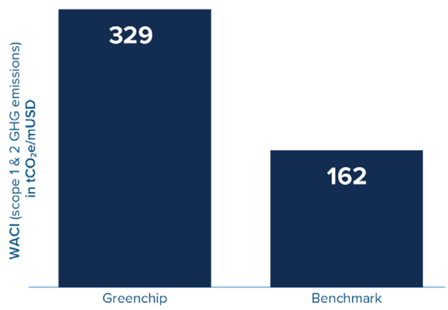


Note: Following normalization, emissions for Nutrien only reflect the nitrogen production operational unit. Nutrien also produces less emissions intensive potash and phosphate fertilizers, which lowered the carbon intensity in charts 1 and 2. Emissions for OCI N.V. only reflect the company's nitrogen production activities. OCI N.V. also produces methanol as ~15% of total production.

Portfolio level carbon accounting can be misleading

At the portfolio level, the flaws of the most widely used carbon intensity metric, WACI, can be seen. It is calculated by multiplying portfolio weights by the corresponding carbon intensity (using revenue as the denominator). Year-over-year changes to WACI are not necessarily due to improved efficiency or the inclusion of more sustainable companies. We struggle with this, as our strategies have a high WACI compared to their benchmark, as seen in chart 4. A focus on lowering carbon intensity can drive capital away from sectors where environmental investment is most needed.

CHART 4: WEIGHTED AVERAGE CARBON INTENSITY (WACI) OF GREENCHIP VS. BENCHMARK



All Emissions Data for chart 4 are sourced from S&P Trucost Limited © 2023 Trucost.

Why it matters

Current methods of reporting carbon metrics make comparisons challenging across companies, industries and portfolios. At Greenchip, our focus is on allocating capital to industries and companies that will have the greatest impact and generate superior returns. We pay attention to widely used metrics, but go much deeper to understand companies in a way that better informs us of their impact and enables us to make better decisions for our strategies. We don't have an answer for the best way to quickly evaluate companies from a carbon perspective, but we advocate for global disclosure standardization and increased climate-metric literacy to support more effective investment in a transition to a more sustainable world.

How climate and biodiversity considerations are driving credit risk

"A more thorough analysis and understanding of the risks and how well they are being managed will likely influence investor decisions and could ultimately impact the cost of capital."

Over recent months, extreme weather events around the world have increasingly dominated the news flow, and the United Nations Secretary-General at COP27 was unequivocal that the goal of limiting global warming to 1.5°C is now on "life support—and the machines are rattling." While mitigation—the fight to limit global warming—remains essential, adaptation to the impacts of climate change that are increasingly being felt is now also necessary. A number of countries are engaging in some form of adaptation planning and directing capital toward these efforts. But levels of investments remain small and are not generally keeping up with the pace of climate change. Currently, only 7% of climate-related investments get spent on adaptation, according to the Climate Policy Initiative.[1]

This is also where the opportunity lies for governments. They have tools to direct funds toward both emission reduction and climate change adaptation strategies, and markets can play a role by influencing the cost of capital. The Global Commission on Adaptation's 2019 report[2] estimated that USD 1.8 trillion of investment in five areas of climate adaptation could generate USD 7.1 trillion in net benefits: early warning systems, resilient infrastructure, dryland agriculture crop production, mangroves protection, and resilient water resource management.

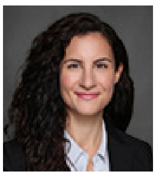
Climate change issues are key considerations for sovereign and credit risk

As bond investors, we are focused on an issuer's ability and willingness to pay coupons and repay the principal. We would argue that certainly for longer-dated maturities, sovereign-level emissions trajectories; biodiversity net positive ambitions; and broader environmental, social, and governance (ESG) considerations could become even more important drivers of sovereign credit risk.

This is particularly important in instances where there are likely to be bigger implications for a nation's gross domestic product prospects. For example, countries that are heavily dependent on arable agriculture will likely find that production is particularly vulnerable to changing weather patterns. In some cases, rising sea levels could threaten a sovereign issuer's very ~ existence. This may seem extreme, but Pacific Island countries such as Tuvalu are already having to prepare for this devastatingly probable, worst-case scenario.

As ESG integration becomes standard practice, investor scrutiny on environmental considerations and their implications for the potential risk and reward profile of any given investment opportunity is increasing. A more thorough analysis and understanding of the risks and how well they are being managed will likely influence investor decisions and could ultimately impact the cost of capital. This is one way that investors can signal what is important to them or where action is deemed insufficient.

Authors:



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Some investors—particularly, larger institutional asset owners and asset managers—may have a greater ability to influence issuers and debt structures through engagement. For instance, liaising with issuers ahead of new bond issuance can provide a chance to impart views, urge best practice and strong disclosure, and support the process of evaluating the investment opportunity.

Supranational organisations can leverage capital markets presence

Supranational organisations can play an important role by leveraging their capital markets presence to create innovative financing solutions. The World Bank was a key player in the development of the labeled sustainable debt market through the world's first recorded green bond issuance in 2008.[3] Since then, green bonds have been issued by corporates, sovereign, supranational and agencies (SSA), the municipal market, and securitised borrowers. And the World Bank, in and of itself, has issued more than 200 green bonds.

With a track record as a high-quality bond issuer, access to environmental projects needing finance, and the infrastructure in place to support the necessary reporting, a supranational organisation like the World Bank was—and remains—well positioned, in our view, to support the stewardship of capital directed toward solutions aimed at tackling the world's most pressing issues.

A recent example of novel financing came in the form of the World Bank's (IBRD) Wildlife Conservation Bond, also known as the "Rhino Bond." This bond is channeling financing toward the conservation of the critically endangered black rhino population in South Africa. Rather than paying coupons to investors, this innovative bond makes payments to finance conservation activities. At the bond's maturity, in addition to principal redemption, investors may receive a conservation success payment based on the achieved rhino population growth rate.

We believe that asset managers and asset owners can work with organisations such as the World Bank to continue to support innovative financing options, insist on ambitious targets and credible measurement of progress, and provide the essential underlying investments.

Important role for investment industry in helping support emissions reduction

According to a report by UN Climate Change,[4] the country-level targets that have been set so far remain insufficient to limit a global temperature rise to 1.5°C by the end of the century. Unfortunately, even for those targets that have already been committed, in many cases, policies are not in place to ensure that they will be achieved.

Continued development of sustainable finance and engagement by the investment industry alone will not be sufficient. However, the industry can play a role in helping to move the dial and providing some of the capital needed to fund the economic changes and innovations that will support a reduction in emissions and help the world adapt to rising temperatures.

[1]Source: Global Landscape of Climate Finance 2021, Climate Policy Initiative. As of December 2021.

[2]Global Commission on Adaptation: Adapt now: A global call for leadership on climate resilience. As of September 2019

[3]https://www.worldbank.org/en/news/feature/2021/12/08/what-you-need-to-know-about-ifc-s-green-bonds

[4]UN Climate Change. Nationally determined contributions under the Paris Agreement. Synthesis report by the secretariat. October 2022.

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