

W
E
A
L
T
H

THE CAPCO INSTITUTE
JOURNAL
OF FINANCIAL TRANSFORMATION

ESG

Integrating climate transition
risk into investment portfolios

MICHAEL LEWIS | CARSTEN KEIL

**WEALTH & ASSET
MANAGEMENT**

#51 APRIL 2020

THE CAPCO INSTITUTE

JOURNAL OF FINANCIAL TRANSFORMATION

RECIPIENT OF THE APEX AWARD FOR PUBLICATION EXCELLENCE

Editor

Shahin Shojai, Global Head, Capco Institute

Advisory Board

Michael Ethelston, Partner, Capco

Michael Pugliese, Partner, Capco

Bodo Schaefer, Partner, Capco

Editorial Board

Franklin Allen, Professor of Finance and Economics and Executive Director of the Brevan Howard Centre, Imperial College London and Professor Emeritus of Finance and Economics, the Wharton School, University of Pennsylvania

Philippe d'Arvisenet, Advisor and former Group Chief Economist, BNP Paribas

Rudi Bogni, former Chief Executive Officer, UBS Private Banking

Bruno Bonati, Former Chairman of the Non-Executive Board, Zuger Kantonalbank, and President, Landis & Gyr Foundation

Dan Breznitz, Munk Chair of Innovation Studies, University of Toronto

Urs Birchler, Professor Emeritus of Banking, University of Zurich

Géry Daeninck, former CEO, Robeco

Jean Dermine, Professor of Banking and Finance, INSEAD

Douglas W. Diamond, Merton H. Miller Distinguished Service Professor of Finance, University of Chicago

Elroy Dimson, Emeritus Professor of Finance, London Business School

Nicholas Economides, Professor of Economics, New York University

Michael Enthoven, Chairman, NL Financial Investments

José Luis Escrivá, President, The Independent Authority for Fiscal Responsibility (AIReF), Spain

George Feiger, Pro-Vice-Chancellor and Executive Dean, Aston Business School

Gregorio de Felice, Head of Research and Chief Economist, Intesa Sanpaolo

Allen Ferrell, Greenfield Professor of Securities Law, Harvard Law School

Peter Gomber, Full Professor, Chair of e-Finance, Goethe University Frankfurt

Wilfried Hauck, Managing Director, Statera Financial Management GmbH

Pierre Hillion, The de Picciotto Professor of Alternative Investments, INSEAD

Andrei A. Kirilenko, Reader in Finance, Cambridge Judge Business School, University of Cambridge

Mitchel Lenson, Former Group Chief Information Officer, Deutsche Bank

David T. Llewellyn, Professor Emeritus of Money and Banking, Loughborough University

Donald A. Marchand, Professor Emeritus of Strategy and Information Management, IMD

Colin Mayer, Peter Moores Professor of Management Studies, Oxford University

Pierpaolo Montana, Group Chief Risk Officer, Mediobanca

Roy C. Smith, Emeritus Professor of Management Practice, New York University

John Taysom, Visiting Professor of Computer Science, UCL

D. Sykes Wilford, W. Frank Hipp Distinguished Chair in Business, The Citadel

CONTENTS

INVESTMENTS

8 **SeLFIES: A new pension bond and currency for retirement**

Robert C. Merton, Distinguished Professor of Finance, Nobel Laureate – Economics 1997, MIT Sloan School of Management

Arun S. Muralidhar, Co-founder and Client Portfolio Manager, AlphaEngine Global Investment Solutions LLC

20 **Robo-advice and the future of delegated investment**

Christoph Merkle, Associate Professor, Aarhus University

28 **Wealth management in the age of digital assets: How financial advisors can find opportunities amongst disruption**

James McDonald, Senior Consultant, Capco

Tyler Salathe, Senior Consultant, Capco

34 **The E.U. alternative investment fund industry: Insights from AIFMD reporting**

Antoine Bouveret, Senior Economist, European Securities and Markets Authority

Massimo Ferrari, Economist – Markets and Investors Team, European Securities and Markets Authority

Steffen Kern, Chief Economist and Head of Risk Analysis, European Securities and Markets Authority

44 **Consideration on better tokenization practices and regulations concerning investor protection**

Yuta Takanashi, Senior Fellow, Georgetown University

Shin'ichiro Matsuo, Research Professor, Georgetown University

John Jacobs, Executive Director, Center for Financial Markets & Policy, Georgetown University

Eric Burger, Research Professor, Georgetown University

Clare Sullivan, Visiting Professor, Georgetown Law Center, Georgetown University

James Angel, Associate Professor, Georgetown University

Tatsuya Saito, Assistant Manager, Center of FinTech, Corporate Planning Division, Mitsubishi UFJ Trust and Banking Corporation

Toshiki Hashirisaka, Senior Manager, Center of FinTech, Corporate Planning Division, Mitsubishi UFJ Trust and Banking Corporation

Hirotochi Sato, Vice President, Digital Transformation Division, MUFG Bank, Ltd.

TECHNOLOGY

- 57 Digital disruption – a CEO's survival guide**
Jet Lali, Chief Digital Officer, State Street Global Advisors
- 67 Applying artificial intelligence in finance and asset management: A discussion of status quo and the way forward**
Juergen Rahmel, Chief Digital Officer, HSBC Germany
- 75 Front office efficiency: Improving business development and increasing sales**
Ingo Rauser, Senior Partner, Switzerland, Capco
Tobias Wehrli, Senior Consultant, Switzerland, Capco
- 81 Client preferences for digitization and ecosystems in wealth management**
Teodoro D. Cocca, Professor, Chair for Wealth and Asset Management, University of Linz, and Adjunct Professor, Swiss Finance Institute
- 93 The future of asset management – a technological perspective**
Pascal R. Nägeli, Managing Partner, IAM Innovation Lab AG
- 98 Transforming insurance settlements: Real-time processes through blockchain, Internet of Things, and explainable AI**
Md Mamunur Rashid, Senior Research Fellow, Consumer and Organizational Data Analytics (CODA) Research Centre, King's College London
Stuart J. Barnes, Chair in Marketing, Consumer and Organizational Data Analytics (CODA) Research Centre, King's College London
Md Abdur Rahman, Associate Professor, Department of Cyber Security and Forensic Computing, University of Prince Mughni

ESG

- 115 Human capital and the future of work: Implications for investors and ESG integration**
Sakis Kotsantonis, Co-Founder and Managing Partner, KKS Advisors
George Serafeim, Charles M. Williams Professor of Business Administration, Harvard Business School, and a Co-Founder, KKS Advisors
- 131 Integrating climate transition risk into investment portfolios**
Michael Lewis, Head of ESG Thematic Research, DWS Group GmbH & Co. KGaA
Carsten Keil, Head of ESG Engine & Solutions, DWS Group GmbH & Co. KGaA
- 139 Shaping a sustainable economy: A bird's eye view of the E.U.'s ESG reform project**
Caitlin McErlane, Partner, Financial Services Regulatory, Baker & McKenzie LLP
- 149 ESG and the duties of investment managers examined**
Daniel Nevzat, Manager, Government Relations and Public Policy Practice, Norton Rose Fulbright LLP
Imogen Garner, Partner, Financial Services Group, and Head, Buy-side Regulatory Practice, Norton Rose Fulbright LLP
- 155 Greta's expectations – we must all be stewards now!**
Eoin Murray, Head of Investment, Hermes Investment Management
- 163 Regulatory implications of ESG Investment**
Luke O'Leary, Associate, White & Case LLP
Mindy Hauman, Professional Support Counsel, White & Case LLP
- 171 ESG investing in emerging markets**
Panos Seretis, Head of ESG Research – EMEA, MSCI
Zoltan Nagy, Executive Director, Equity Core Research, MSCI
Ric Marshall, Executive Director, ESG Research team, MSCI
- 180 Regulating ESG investing the E.U. way**
Aron Szapiro, Head of Policy Research, Morningstar
Andy Pettit, Director of Policy Research, EMEA, Morningstar



DEAR READER,

Welcome to edition 51 of the Capco Institute Journal of Financial Transformation.

The global wealth and asset management industry faces clear challenges, and a growing call for innovation and transformation. Increased competition, generational shifts in client demographics, and growing geopolitical uncertainty, mean that the sector needs to focus on the new technologies and practices that will position for success, at speed.

There is no doubt that technology will be at the forefront of a responsive and effective wealth and asset management sector in 2020 and beyond. The shift to digitization, in particular, will see the speeding up of regulatory protocols, customer knowledge building, and the onboarding process, all of which will vastly improve the client experience.

This edition of the Journal will focus closely on such digital disruption and evolving technological innovation. You will also find papers that examine human capital practices and new ways of working, regulatory trends, and what sustainability and responsible investment can look like via environmental, social and corporate governance.

As ever, I hope you find the latest edition of the Capco Journal to be engaging and informative. We have contributions from a range of world-class experts across industry and academia, including renowned Nobel Laureate, Robert C. Merton. We continue to strive to include the very best expertise, independent thinking and strategic insight for a future-focused financial services sector.

Thank you to all our contributors and thank you for reading.

A handwritten signature in black ink, appearing to read 'Lance Levy', with a stylized, flowing script.

Lance Levy, **Capco CEO**

INTEGRATING CLIMATE TRANSITION RISK INTO INVESTMENT PORTFOLIOS

MICHAEL LEWIS | Head of ESG Thematic Research, DWS Group GmbH & Co. KGaA¹

CARSTEN KEIL | Head of ESG Engine & Solutions, DWS Group GmbH & Co. KGaA

ABSTRACT

There have been significant advancements in addressing climate transition risk from an investment portfolio perspective in recent years. This has been warranted given the shortcomings of carbon foot-printing as a proxy for climate risk. The challenge for investors has been to understand the increasing variety of climate transition risk methodologies available in the marketplace, followed by the subsequent incorporation of climate risk into the investment process. By combining the various techniques offered by multiple data providers, DWS aims to capture risk across multiple dimensions that incorporate carbon intensity metrics, carbon pricing scenarios, and climate-related opportunities. This ability to identify climate risks and opportunities at a security, sub-sector, and sector level basis allows us to optimize a portfolio that not only reduces climate transition risk, but also tilts investments towards entities that promote the low carbon transition.

1. INTRODUCTION

Climate change is a significant risk for investors, from the financial losses incurred from extreme weather events, to the asset re-pricing in the transition to a low carbon economy, and the use of law courts as a new instrument to enforce and accelerate climate action. In this article, we illustrate how we are integrating climate transition risk into our investment processes and its implications from an asset allocation perspective.

According to MSCI's own calculations, 20 percent of the MSCI All Country World Index faces asset stranding or significant challenges when it comes to the transition to a low carbon economy.² At the same time, technologies to address climate change present substantial investment opportunities across all sectors and asset classes.

The traditional approach to assessing climate risk within an investment portfolio has been through carbon footprinting,

which involves identifying the concentrations of carbon across the investment portfolio. However, this approach has suffered from a number of shortcomings. For example, it fails to capture information on changes to a company's carbon exposure or strategy. In addition, the dataset suffers from inconsistent company disclosures and, in particular, low reporting of Scope 3 emissions, namely the indirect emissions that occur in the value chain of the reporting company.

As a result, the past few years has witnessed increasing efforts to improve ESG (environmental, social, and governance) and specifically climate-related disclosures through, among others, the E.U. Action Plan and the Task Force on Climate-related Financial Disclosures. As the market awaits a long overdue improvement in ESG, and specifically climate-related disclosures, attention has turned to alternative, and more sophisticated, approaches to measure and manage both physical and transition climate risk within an investment portfolio. Not surprisingly, there is a rapidly developing

¹ Forecasts are based on assumptions, estimates, views, and hypothetical models, or analyses, which might prove inaccurate or incorrect. November 2019 — For Qualified Investors (Art. 10 Para. 3 of the Swiss Federal Collective Investment Schemes Act (CISA). For Professional Clients (MIFID Directive 2014/65/EU Annex II) only. For Institutional investors only. Further distribution of this material is strictly prohibited. Australia: For Professional Investors only

² MSCI, 2019, "Low carbon transition categories and scores," March

ecosystem of data providers, asset owner initiatives, and online platforms available to financial institutions that provide varying techniques that aim to integrate these risks into the investment process.

To understand this landscape, we examine some of the transition risk methodologies available in the marketplace and provide details of the approach we are adopting at DWS, namely the DWS climate transition risk rating, which seeks to identify the climate risks and opportunities at a security, sub-sector and sector level basis. Our methodology then allows us, among other things, to optimize a portfolio that not only reduces climate transition risk, but also tilts investments towards entities that promote the low carbon transition.

2. THE THREE CHANNELS OF CLIMATE RISK

Physical, liability, and transition risks are the three channels of climate risk from an investment perspective.³

Physical climate impacts can range from water stress and cropland decline to river flooding and heatwaves, with potential disruptive effects on property and trade flows.

Liability risks relate to those individuals or entities who have, or will suffer losses or damages due to climate change and who seek compensation from those they hold responsible. Typically, these are the world's largest carbon emitters and potentially financial sector actors who have facilitated "polluters" in their business activities.

Clyde & Co., the international law firm, found that as of 2019 around 1,200 climate change cases had been filed across 30 jurisdictions, including Australia, Brazil, Canada, Germany, India, Spain, the U.K., and the U.S.,⁴ with the latter representing a majority of cases, with over 950 cases filed. This includes nine cities and counties from New York to San Francisco suing major fossil fuel companies and seeking compensation for climate change damage such as pollution and rising sea levels.

Finally, transition risks relate to the increasing scope of climate change regulation, technological change, and shifts in consumer preferences. These have the power to significantly alter the operating models of businesses, with the potential to drive revaluation events both to the upside and the downside.

For example, companies not managing climate risks with sufficient strength (downside revaluation risk) or companies seizing the opportunities presented by the transition to a low carbon economy (upside revaluation potential).

In this article, we examine the steps required by asset managers and asset owners to integrate transition risk into their investment processes, which are becoming part of the fiduciary duty requirements for institutional investors. In future articles, we will outline how we are integrating physical climate risk into the investment process.

3. ASSESSING CLIMATE TRANSITION RISK METHODOLOGIES

Poor disclosures and backward-looking data have made it hard for investors to determine whether integrating climate transition risk within an investment portfolio context was being achieved with the available ESG datasets. For example, while carbon footprinting, which identified the concentrations of carbon within a portfolio, was useful in identifying systemically important carbon emitters, it was a poor proxy for climate risk in general.

To address the shortcomings of carbon footprinting, more sophisticated approaches to address climate risk have emerged. For example, when it comes to integrating climate transition risk, multiple data providers and numerous transition risk assessment methodologies have come to the market.

We expect these will continue to evolve. Indeed, a significant data revolution is already underway and global efforts to improve disclosures, such as through the E.U. Action Plan and the Task Force on Climate-related Financial Disclosures, should result in improvements in how climate risk is incorporated into the investment process. An area where we have already seen significant improvements in is that of mapping physical climate risk to listed equity market performance.

In terms of integrating climate transition risk, there are currently a multitude of scoring methodologies, including those from MSCI, ISS-Oekom, Sustainalytics, S&P Trucost, the Paris Agreement Capital Transition Assessment, the Transition Pathway Initiative, and Moody's. Each have their own distinct characteristics and a brief overview of each are outlined below.

³ Prudential Regulatory Authority, 2015, "The impact of climate change on the UK insurance sector," Bank of England, September

⁴ Clyde and Co., 2019 "Climate change – the evolving landscape of litigation," March

MSCI low carbon transition score: MSCI's low carbon transition methodology is based on a carbon intensity footprint measure.⁵ The key addition from previous methodologies is that avoided emissions are now also considered. This means that MSCI approximates the emissions not generated when a company's products are used instead of products from industry peers, such as electric cars versus cars with internal combustion engines. MSCI finds that 20 percent of the constituents of the MSCI All Country World Index (ACWI) face asset stranding or significant transition challenges, most notably in the energy, utilities, and materials sectors.

ISS-Oekom's carbon risk rating: The ISS-Oekom rating system captures not only the current carbon-related performance of the company and its ability to seize climate-related opportunities, but it also incorporates the company's industry specific characteristics favoring companies involved in clean tech solutions and penalizing those with high GHG (greenhouse gas) emissions along their value chain.⁶

Sustainalytics's carbon pillar risk rating: Sustainalytics rating methodology covers carbon related risks in the companies' own operations as well as those concerning the company's products and services. When it comes to emissions from the company's own operations, it refers to its energy use and GHG emissions covering not just scope 1 (direct emissions produced by the burning of fuels of the emitter) and 2 (indirect emissions generated by the electricity consumed and purchased by the emitter), but also parts of scope 3, such as transport and logistics. In terms of the company's products and services, it refers to the energy efficiency and/or GHG emissions of its services and products during the usage phase.

S&P Trucost's carbon earnings at risk: The carbon earnings at risk methodology identifies current and future carbon price scenarios in 130 regions to identify sectors, companies, or business segments at risk in the event companies have to pay a future price for their greenhouse gas emissions.⁷ According to the World Bank, only 20 percent of global GHG emissions are currently covered by a carbon price and less than 5 percent of those are priced at levels consistent with reaching the temperature goals of the Paris agreement.⁸ However, an increasing number of jurisdictions are implementing carbon

pricing schemes, 57 compared to 51 for 2018. As a result, a growing number of companies are also assessing carbon pricing from a risk management perspective. According to CDP, as of 2017 over 1,300 companies, including 100 Fortune Global 500 companies, have disclosed and are using an internal carbon pricing mechanism, or plan to implement internal carbon pricing within two years.⁹ These companies are using this information to assess investment decisions and manage their long-term climate risks.

Paris Agreement Capital Transition Assessment (PACTA):

The 2 Degrees Investment Initiative developed this methodology to address the limitations of relying on corporate disclosures of ESG/climate data. Despite the increasing attention from regulators, investors, and companies on climate change, the proportion of companies disclosing their carbon emissions is still surprisingly low. PACTA provides an alternative approach by assessing companies' current installed assets and capex plans for key carbon intensive sectors. This methodology has been used by financial regulators, such as the California Insurance Commission, which has prompted many more financial institutions to consider climate risk exposure and management.

Transition Pathway Initiative (TPI): The TPI is an asset-owner backed research initiative by the London School of Economics and FTSE Russell. This methodology evaluates and tracks the quality of companies' carbon management and how future carbon performance compares to national targets/pledges and the Paris climate agreement ambitions. In its September 2019 report, TPI found that of the top 109 energy companies only two oil and gas companies are aligned with the emission reduction pledges made by national governments in the Paris Agreement.¹⁰

Moody's carbon transition assessment (CTAs): This approach assesses the carbon transition risk to non-financial companies from evolving policy, legal, technological, and market changes. It then considers how these trends are evolving in specific geographies and sectors and hence the implications for individual companies. The CTAs are forward looking as they not only examine the current positioning of the company, but also their plans to mitigate climate risks.¹¹

⁵ See supra note 2

⁶ ISS-Oekom, 2019, "Climate risk rating – methodology"

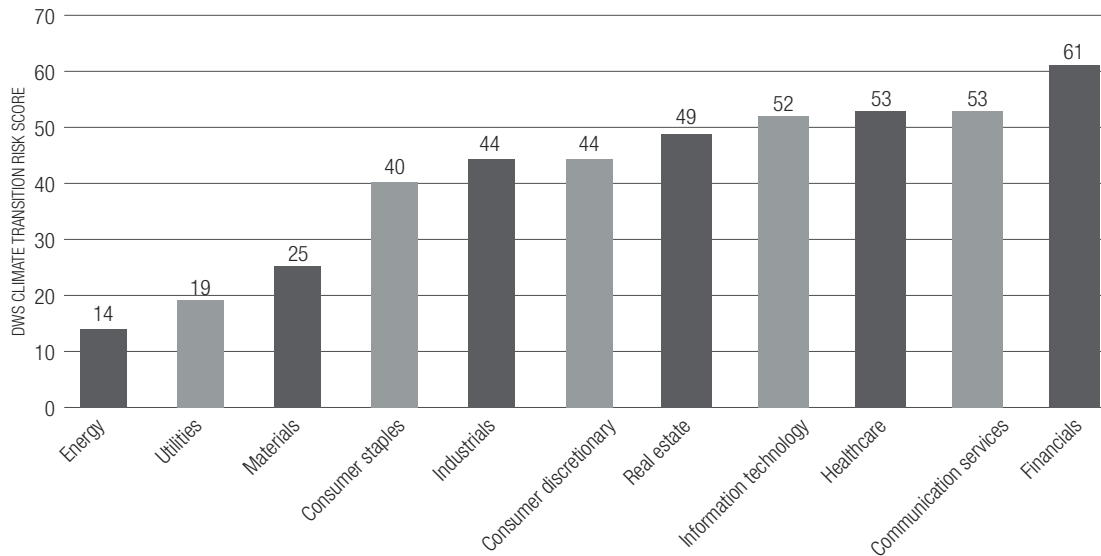
⁷ S&P Trucost, 2018, "Integrating future carbon price risk into portfolio analysis"

⁸ World Bank Group, 2019, "State and trends of carbon pricing 2019," June

⁹ CDP, 2017, "Putting a price on carbon," October

¹⁰ Transition Pathway Initiative, 2019, "Management quality and carbon performance of energy companies," September

¹¹ Moody's, 2019, "Framework to assess carbon transition risk for corporate sectors," September

Figure 1: Median climate transition risk score by sector

Source: DWS Investment GmbH (October 2019)

4. THE DWS APPROACH TO ESG INTEGRATION AND CLIMATE TRANSITION RISK

The cornerstone of our ESG integration efforts in public markets is the DWS ESG Engine. This uses data from three generalist providers – MSCI, ISS, and Sustainalytics – and supplements these inputs with further information from five other specialized providers, S&P Trucost, ISS-Ethix, RepRisk, Morningstar ESG, and Arabesque S-Ray. This means that the ESG Engine has access to in excess of 35 million data points for over 10,000 companies. This enables us, as a first step, to rank the ESG quality, from A to F, of corporate and sovereign issuers from the developed and developing world in both listed equity and fixed income markets.

When it comes to ranking issuers specifically on climate transition risk, DWS has designed and implemented its own proprietary climate transition risk rating via the ESG Engine. It seeks to identify the risks and opportunities associated with a transition to a low carbon economy. In a similar way to how we assess the ESG quality of corporates and sovereigns, the DWS A to F climate transition rating system enables us to identify, among other things, climate transition leaders and laggards.

Initially, we began by amalgamating the latest generation climate risk measures of MSCI, ISS-Oekom, and Sustainalytics. In the fourth quarter of 2019, we added S&P Trucost's carbon value-at-risk methodology to our ranking assessment, with an overview of the results outlined below. This made it possible

for our transition risk methodology to incorporate not just carbon intensity metrics and climate investment solutions but also to assess the potential implications of more stringent carbon price schemes across sectors and geographies.

The DWS Climate Transition Risk scoring ranges from 0 (absolute climate transition risk laggard) to 100 (absolute climate transition risk leader), which is then translated into our traditional A to F letter rating system.

Those that fall within our A to C ratings, constituents with a score in excess of 50, we label as leaders. These have either low or perfectly managed risks, deliver climate solutions, and benefit from opportunities in the transition to a low carbon economy. Those that fall within our D to F ratings, constituents with a score of less than 50, are labeled laggards and have elevated risks. E and F constitute the true laggards, which an ESG investor or climate transition risk averse investor should seek to avoid. This approach allows us to identify on a sector, sub-sector, and individual security level basis the extent of the climate transition risk and opportunity.

We find that the high and excessive transition risk companies, that is issuers with a DWS Climate Transition Risk rating of E and F, are mostly operating in the energy, utilities, and materials sectors. For example, in the case of the energy sector, the median climate transition risk score is 14, and consequently very close to what we define as an absolute laggard. On the other hand, our findings reveal that those

companies with limited climate transition risk exposure are those in the financials, communication services, healthcare, and IT sectors (Figure 1).

How climate transition risk affects financial performance is at the heart of this mapping exercise. For example, within materials, the availability of key inputs in the mining sector, such as water and energy, will likely physically and financially constrain the establishment of new operations or make existing operations uneconomical.

Meanwhile, new business opportunities should arise as demand will likely increase for materials used in existing and future low-carbon energy and industrial technologies. Examples include copper, which is important for electrification and improving energy efficiency. Similarly, substituting steel with aluminium can help reduce emissions within the transportation sector, although the energy intensive nature of aluminium smelting also needs to be taken into consideration.

In certain countries, the transportation sector has overtaken the power sector as the most carbon intensive industry. Governments, particularly those in Europe, are responding with new stringent fuel economy and emissions regulations encompassing CO₂, NO_x, and particulate matter. This may result in car manufacturers not only incurring penalties due to missed emission reduction targets, but also force them to invest in new product strategies.

As a result, regulation and technologies are potentially combining to drive out diesel engines, and eventually all internal combustion engines, and enable the electric vehicle and e-mobility sectors to become key growth markets for carmakers.

While the oil sector widely dismissed the threat of electric vehicles, arguing as late as in 2017 that they were a drop in the ocean of cars, leading car companies are already shifting their strategy. According to Reuters, the world's leading automotive companies had committed U.S.\$90 billion to electric vehicle strategies by January 2018.¹² According to BNEF, incremental sales of EVs may be higher than that of internal combustion engines by 2020, and by 2023 internal combustion engine sales should already be falling.¹³

When it comes to the fossil fuel sector, investors may be financially impacted even before companies see the peak in

fossil fuel demand. This is what happened in the coal and European electricity sector transitions. The share prices of major U.S. coal producers is a case in point. Leading U.S. coal producers saw their share price peak around 2011 at the point when rapid coal demand growth slowed. By 2014, global coal demand stagnated, and the largest coal producer filed for bankruptcy.¹⁴

Similarly, fossil fuels in electricity generation peaked across the OECD in 2007, at a time when solar PV and wind were just 1 percent of the electricity mix.¹⁵ Shortly before then, the share price of leading German power utilities also peaked. Since then, over U.S.\$150 billion of assets have been written down, and the European power sector's capitalization has fallen significantly.

From a sector perspective, we identified energy, materials, and utilities as those facing the highest climate transition risk. We then investigated climate risks by sub-sector and individual security, such that for utilities, for example, we find that independent power companies within the MSCI ACWI are populated with the largest share of excessive transition risk entities. Within materials, it is construction and then metals and mining where climate transition risks are most prevalent. For industrials, securities in the marine and airline sectors are most exposed.

In terms of coverage, the DWS climate transition risk rating can be evaluated for approximately 13,000 issuing entities. Of the entire population, we find that issuers with high transition risk (E rating) and excessive transition risk (F rating) represent between 10 and 20 percent of the population.

5. THE INEVITABLE POLICY RESPONSE

Revaluation events in response to technological change, climate-focused regulations, or changing consumer preferences are already happening and may become more widespread and significant in the years ahead. Indeed, with an increasing number of actors demanding action to address the climate crisis, it seems inevitable that even more robust climate policies and regulations will emerge over the next few years. This will, therefore, expose investors to additional financial risk. In response, the Principles for Responsible Investment alongside Vivid Economics and Energy Transition Advisors (ETA) have launched the Inevitable Policy Response (IPR).

¹² Leinert, P., 2018, "Global carmakers to invest at least \$90 billion in electric vehicles," Reuters, January 15, <https://reut.rs/2VE5A4z>

¹³ Bloomberg NEF, 2019 "Electric vehicle outlook 2019," May

¹⁴ For details on this and the European electricity companies discussed, see Carbon Tracker (September 2018). According to their estimates, fossil fuels will peak in the 2020s as renewables look set to supply all growth in energy demand

¹⁵ BP Statistical Review of World Energy (1965-2018)

The IPR assesses when policymakers will most likely act (by 2023-2025), how they will act (carbon pricing, banning the sale of emission emitting cars, phasing out coal use, and energy efficiency measures), who will be hit (from the costs to the economy, the sectors, regions, and asset classes most exposed), and who are likely to be the most valuable companies in the transition to a low carbon economy. We expect this will also become an important tool for climate risk and opportunity integration.

6. CLIMATE TRANSITION RISK AND THE DWS ASSET ALLOCATION PROCESS

In order to enhance our asset allocation process and given ongoing asset re-pricing risks, we not only look to incorporate less climate risk, but also to capture the low carbon investment opportunities. Indeed, by identifying the climate risk leaders and laggards not just at a sector level, but also on a sub-sector and security level basis, we are able to invest in sectors that may not look appealing on a headline climate transition risk basis, but thanks to gaining exposure to specific sub-sectors and individual securities we can capture lower climate risk or even a measurable investment opportunity.

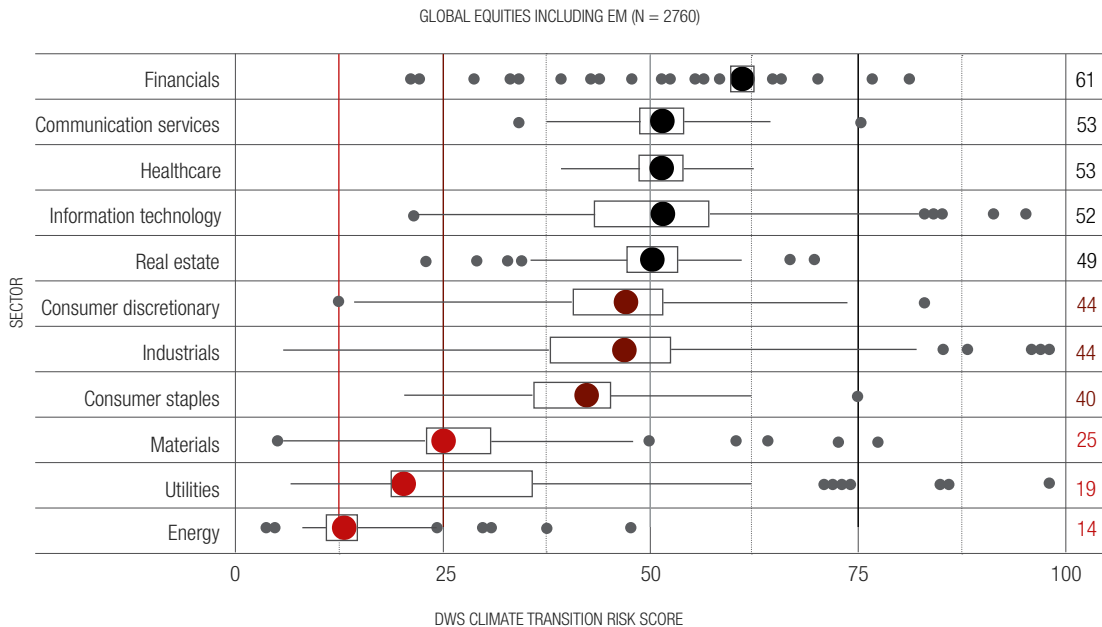
We find that investment opportunities are particularly concentrated in the information technology, utilities, and industrials' sectors, even though at a headline sector level some of them represent high transition risk plays.

Figure 2 provides a more in-depth examination of where climate risk and opportunities reside by sector. For example, the boxplots identify the 25th and 75th percentile of the sector distribution according to its climate transition risk score. The whiskers examine the extremities or tail of the distribution. It also includes the outliers that exist across many sectors including where risk scores are in excess of 50 and 75 and which classify inside our A-C rating. This is the segment of the universe we identify as offering climate investment solutions. We find that these are most prevalent in the information technology, industrials, and utilities sectors.

Within IT, investment opportunities are specifically concentrated in the hardware and communications sectors. In industrials, it is in the electrical equipment and building producing sub-sectors. In utilities, it is among the water utility entities and within a subset of the independent power companies focused on renewable parks.

From a sector allocation perspective, a model portfolio not only needs to be optimized to avoid carbon transition risk, but it also needs to be tilted towards sectors that promote the low carbon transition. In a typical model portfolio, this is likely to mean reduced allocations to energy, materials, and utilities alongside increased allocations to IT, communication services, and healthcare.

Figure 2: Identifying climate transition investment opportunities by sector



Source: DWS Investment GmbH (October 2019)

7. CLIMATE TRANSITION RISK, STRESS TESTING, AND REGULATORY REQUIREMENTS

Climate change has moved to the top of the political agenda across multiple jurisdictions. This is clearly illustrated by the ambitions of the E.U. Sustainable Finance Action Plan and the work of the Network for Greening the Financial System (NGFS), which is examining, among other things, how to mitigate the financial stability risks when it comes to climate change. Comments from the newly elected heads of the IMF, the European Commission, and the European Central Bank indicate that the momentum in this area is only likely to accelerate.¹⁶

For investors, and particularly those operating in Europe, it is becoming a regulatory requirement to integrate ESG and specifically climate risk into the investment process. In addition, from 2020, PRI signatories will be required to report under the framework of the Task Force on Climate-related Financial Disclosures (TCFD).¹⁷

This will have significant reach given the growing PRI signatory base. As of January 2020, the number of asset owner and asset manager PRI signatories had hit just over 2,500, with

the U.S., U.K., France, Australia, Canada, and the Netherlands constituting almost 60 percent of total signatories.¹⁸

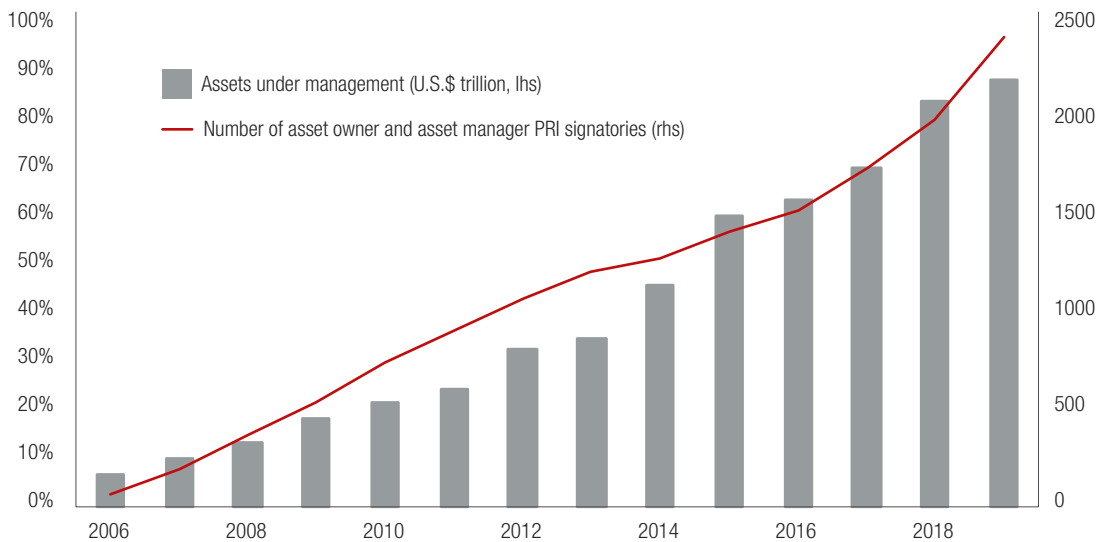
Local regulators and supervisors around the world are also responding, from the large insurance regulators in the U.S. including climate risk assessment in their regulatory reviews,¹⁹ to the announcement in September 2019 by the Malaysian central bank that it will require local financial institutions to report on their exposure to climate risks.²⁰

We expect that efforts in Europe may become a template for other regions in the world. Indeed, the launch of the International Platform on Sustainable Finance by the E.U. in October 2019 will allow organizations and networks from around the world to share, exchange, and potentially align initiatives on sustainable finance.

8. DWS CLIMATE RISK SCREENING AND MANDATES

Combining multiple data sources is the key capability of DWS's ESG Engine, our proprietary software which integrates eight data sources into our investment systems and processes. Our Climate Transition Risk rating methodology is now part of our

Figure 3: PRI signatories by number and assets under management



Source: PRI signatory database (data as of April each year)

¹⁶ Krogstrup, S., and W. Oman, 2019, "Macroeconomic and financial policies for climate change mitigation: a review of the literature," IMF working paper 19/185; EU Commission, 2019, "Political guidelines for the Next European Commission 2019-2024."

¹⁷ PRI, 2019, "TCFD-based reporting to become mandatory for PRI signatories in 2020" <https://bit.ly/36ON9XS>

¹⁸ PRI signatory database, 2020, <https://bit.ly/31mzMnN>

¹⁹ NAIC Climate Risk Disclosure Survey, California Department of Insurance

²⁰ Bank Negara Malaysia, 2019, "Governor's keynote speech at the regional conference on climate change," September

ESG screening, with this methodology also being available for mandates. It, therefore, extends and complements the existing capabilities of the ESG Engine, which includes norms-based screens, sector exclusions, best-in-class, and screening according to the United Nations' Sustainable Development Goals, among others.

As such, this means that the DWS climate risk screening will be applied to all our ESG funds, whereby excessive climate transition risk is avoided (F) and higher levels of risk (E) and unknown risks are limited (to 5 percent each).

This will have important implications. Our work shows – for a wide capital weighted global universe including emerging markets – that excluding the highest risk band (F) reduces the carbon footprint to 90 percent, and yet keeps 99 percent of the assets since high climate transition risk is correlated with high carbon intensity. Limiting high transition risk (E) to 5 percent of the portfolio reduces the footprint to 63 percent and keeps 94 percent of the assets, and eliminating it all together reduces the footprint to 32 percent and keeps 89 percent of the assets.

When it comes to setting standards for our own ESG labeled funds, this process will set an even higher bar since we will continue to screen to ensure a minimum ESG quality, but we will now include climate transition risk as well. This means that while an issuer might qualify as a climate transition leader, if it violates another ESG aspect, such as being in breach of U.N. Global Compact, it would be disqualified from all DWS ESG labeled funds.

9. CONCLUSION

There have been significant advancements in addressing climate transition risk from an investment portfolio perspective in recent years. This has been warranted given the shortcomings of carbon footprinting as a proxy for climate risk.

“

In order to enhance our asset allocation process and given ongoing asset re-pricing risks, we not only look to incorporate less climate risk, but also to capture the low carbon investment opportunities.

”

The challenge for investors has been to understand the increasing variety of climate transition risk methodologies available in the marketplace, followed by the subsequent incorporation of climate risk into the investment process.

By combining the various techniques offered by multiple data providers, we aim to capture risk across multiple dimensions that incorporate carbon intensity metrics, carbon pricing scenarios, and climate-related opportunities. This ability to identify climate risks and opportunities at a security, sub-sector, and sector level basis allows us to optimize a portfolio that not only reduces climate transition risk, but also tilts investments towards entities that promote the low carbon transition.

© 2020 The Capital Markets Company (UK) Limited. All rights reserved.

This document was produced for information purposes only and is for the exclusive use of the recipient.

This publication has been prepared for general guidance purposes, and is indicative and subject to change. It does not constitute professional advice. You should not act upon the information contained in this publication without obtaining specific professional advice. No representation or warranty (whether express or implied) is given as to the accuracy or completeness of the information contained in this publication and The Capital Markets Company BVBA and its affiliated companies globally (collectively "Capco") does not, to the extent permissible by law, assume any liability or duty of care for any consequences of the acts or omissions of those relying on information contained in this publication, or for any decision taken based upon it.

ABOUT CAPCO

Capco is a global technology and management consultancy dedicated to the financial services industry. Our professionals combine innovative thinking with unrivalled industry knowledge to offer our clients consulting expertise, complex technology and package integration, transformation delivery, and managed services, to move their organizations forward.

Through our collaborative and efficient approach, we help our clients successfully innovate, increase revenue, manage risk and regulatory change, reduce costs, and enhance controls. We specialize primarily in banking, capital markets, wealth and asset management and insurance. We also have an energy consulting practice in the US. We serve our clients from offices in leading financial centers across the Americas, Europe, and Asia Pacific.

WORLDWIDE OFFICES

APAC

Bangalore
Bangkok
Hong Kong
Kuala Lumpur
Pune
Singapore

EUROPE

Bratislava
Brussels
Dusseldorf
Edinburgh
Frankfurt
Geneva
London
Paris
Vienna
Warsaw
Zurich

NORTH AMERICA

Charlotte
Chicago
Dallas
Houston
New York
Orlando
Toronto
Tysons Corner
Washington, DC

SOUTH AMERICA

São Paulo

WWW.CAPCO.COM



CAPCO