

# Integrating climate transition risk into investment portfolios

## Summary

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

According to MSCI's own measure, 20% of the MSCI All Country World Index faces asset stranding or significant challenges when it comes to the transition to a low carbon economy<sup>1</sup>. 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 foot-printing. This involves identifying the concentrations of carbon across the investment portfolio. However, this approach has suffered from a number of short-comings. For example, it fails to capture information on changes in a company's carbon exposure or strategy. In addition, the dataset suffers from inconsistent company disclosure and in particular low reporting of Scope 3 emissions, namely the indirect emissions that occur in the value chain of the reporting company.

The past few years has therefore witnessed increasing efforts to improve ESG and specifically climate-related disclosures through, among others, the EU Action Plan and the Task Force for 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 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.

In this article, we examine some of the transition risk methodologies available in the marketplace. We provide details as to the approach we are adopting at DWS, namely the DWS climate transition risk rating. This seeks to identify the climate risks and opportunities at a security, sub-sector and sector level basis. This 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.



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## The three channels of climate risk

Physical, liability and transition risk are the three channels of climate risk from an investment perspective<sup>2</sup>. Physical climate impacts can range from water stress and cropland decline to river flooding and heat-waves 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 this year around 1,200 climate change cases had been filed across 30 jurisdictions including Australia, Brazil, Canada, Germany, India, Spain, the UK and the US<sup>3</sup>. However, most climate change litigation has taken place in the United States with over 950 cases filed there so far. 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 alter significantly the operating model of businesses with the potential of driving revaluation events both to the upside and 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 processes required by asset managers and asset owners to integrate transition risk into the investment process, 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.

## Assessing climate transition risk methodologies

Poor disclosure and backward looking data have presented investors with significant challenges as to whether climate transition risk within an investment portfolio context were being achieved with the available ESG datasets. For example, carbon foot-printing, which identified the concentrations of carbon within a portfolio, was useful in identifying systemically important carbon emitters, but is a poor proxy for climate risk in general.

To address the shortcomings of carbon foot-printing, 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 marketplace.

We expect these will continue to evolve. Indeed a significant data resolution is already underway and global efforts to improve disclosure such as through the EU Action Plan and the Task Force on Climate-related Financial Disclosures, will mean further enhancements will occur in terms of incorporating climate risk into the investment process in the months and years ahead. Indeed we have seen significant strides in the area of mapping physical climate risk to listed equity market performance. In future DWS research, we will explain how we are also integrating physical climate risk into our investment process.

For the time being, and when it comes to integrating climate transition risk, there exists a multitude of scoring methodologies available. These include the methodologies 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 these methodologies are outlined below.

### MSCI Low Carbon Transition Score

MSCI's low carbon transition methodology is based on a carbon intensity footprint measure<sup>1</sup>. The key addition from previous methodologies is that avoided emissions are now 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% of the constituents of the MSCI All Country World Index (ACWI) face asset stranding or significant

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transition challenges, most notably in the energy, utilities and materials' sectors<sup>1</sup>.

### ISS-Oekom's Carbon Risk Rating

ISS-Oekom rating system captures not just 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 favouring companies involved in clean tech solutions and penalising those with high GHG emissions along their value chain<sup>4</sup>.

### Sustainalytics's Carbon Pillar Risk rating

Sustainalytics rating methodology covers carbon related risks in the companies' own operations as well as concerning the company's products and services. When it comes to emissions from the company's own operations this refers to its energy use and GHG emissions covering not just scope 1 and 2 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<sup>5</sup>. According to the World Bank, at the moment only 20% of global GHG emissions are covered by a carbon price and less than 5% of those are priced at levels consistent with reaching the temperature goals of the Paris agreement<sup>6</sup>.

However, an increasing number of jurisdictions are implementing carbon pricing schemes, 57 compared to 51 last year. As a result, a growing number of companies are also assessing carbon pricing from a risk management perspective. According to CDP, over 1,300 companies, including 100 Fortune Global 500 companies who have disclosed and are using an internal carbon pricing mechanism, or plan to implement internal carbon pricing within two years (2017 data)<sup>7</sup>. These are being used by these companies 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 disclosure of ESG/climate data. Despite the growing focus by 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 with financial regulators such as the California Insurance Commission, which has therefore 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 with 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 ambition. In its latest findings published in September 2019, TPI finds 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<sup>8</sup>.

### Moody's carbon transition assessment (CTAs)

This approach assess the carbon transition risk to non-financial companies from evolving policy, legal, technological and market changes. It then considers of 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<sup>9</sup>.

### 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 three specialised providers, S&P Trucost, ISS Ethix and RepRisk. This means the ESG Engine has access to more than 35 million data points for over 10,000 companies. This enable us, as a first step, to rank the ESG quality, from A to F, of

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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. This 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 then enabled 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.

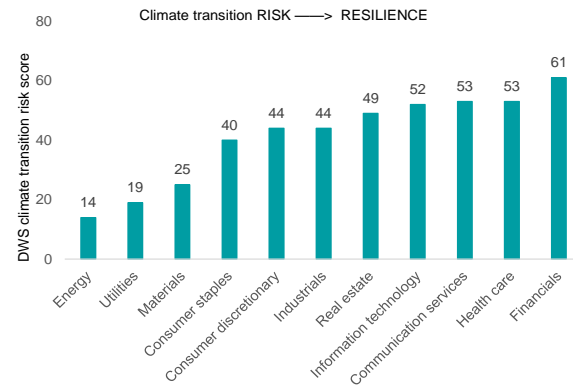
The DWS Climate Transition Risk scoring ranges from 0 (absolute climate transition risk laggard) to 100 (absolute climate transition risk leader) which is then translated into our traditional A to F letter rating system.

A-C (which identifies constituents with a score in excess of 50) we label as leaders and have either low or perfectly managed risks and those delivering climate solutions and benefiting from opportunities in the transition to a low carbon economy. D to F (which identifies constituents with a score of less than 50) are labelled laggards and those with elevated risk. E and F constitute the true laggards, which an ESG investors or climate transition risk averse investor should seek to avoid. This approach then enables us to identify at 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 for the sector is 14, and consequently very close to what we define

as an absolute laggard. Meanwhile our findings reveal that those companies with limited climate transition risk exposure are those in the financials, communication services, health care and IT sectors, Figure 1.

**FIGURE 1: MEDIAN CLIMATE TRANSITION RISK SCORE BY SECTOR**



Source: DWS Investment GmbH (October 2019)

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 for 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, and particularly those in Europe, are responding with new stringent fuel economy and emissions regulations encompassing CO<sub>2</sub>, NO<sub>x</sub> and Particulate Matter. This may see car manufacturers not only incur penalties due

to missed emission reduction targets, but, also force companies 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 US\$90bn to electric vehicle strategies by January 2018<sup>10</sup>. 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<sup>11</sup>.

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. For example, the share prices of major US coal producers is a case in point. Leading ones 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 one filed for bankruptcy<sup>12</sup>.

Similarly, fossil fuels in electricity generation peaked across the OECD in 2007 at a time when solar PV and wind were just 1% of the electricity mix<sup>13</sup>. Shortly before then, the share price of leading German power utilities also peaked. Since then, US\$150bn+ of assets have been written down, and the European power sector's capitalisation has fallen significantly.

From a sector perspective, we identified energy, materials, real estate and utilities with the highest degree of 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) exist for between 10-20% of the population.

## 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).

The IPR assesses when policy-makers will most likely act (by 2023-2025), how they will act (carbon pricing, banning the sale of emission emitting cars, phasing out coal use, energy efficiency measures) and 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.

## Climate transition risk and the DWS asset allocation process

In order to enhance our asset allocation process and given ongoing asset re-pricing risk, 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

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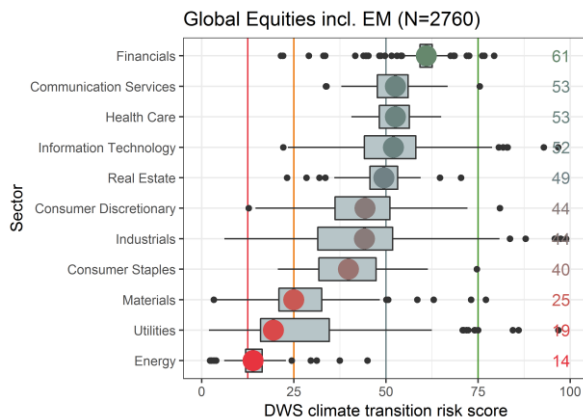
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industrials' sectors even though at a headline sector level some of them represent high transition risk plays.

Figure 2 provides a more in-depth examination of where climate risk and opportunities reside by sector. For example, the boxplots identify the 25<sup>th</sup> and 75<sup>th</sup> 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.

**FIGURE 2: IDENTIFYING CLIMATE TRANSITION INVESTMENT OPPORTUNITIES BY SECTOR**



Source: DWS Investment GmbH (October 2019)

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 while 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 optimised 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, utilities and real estate and increased allocations to IT, communication services and health care.

## 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 EU 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. Recent 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<sup>14</sup>.

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 next year, PRI signatories will be required to report under the framework of the Task Force on Climate-related Financial Disclosures (TCFD).<sup>15</sup>

This will have significant reach given the growing PRI signatory base. As of October 2019, the number of asset owner and asset manager PRI signatories had hit roughly 2,350 with the US, UK, France, Australia, Canada and the Netherlands constituting almost 60% of total signatories<sup>16</sup>.

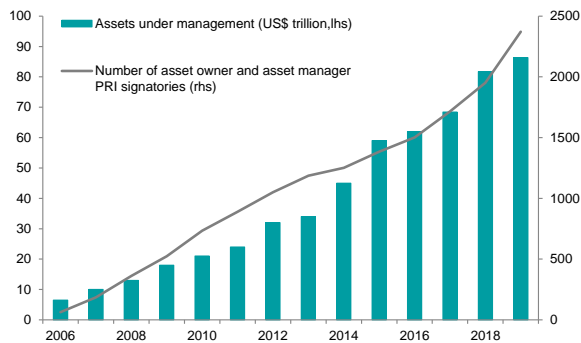
Local regulators and supervisors around the world are also responding, from the large insurance regulators in the US including climate risk assessment in their regulatory reviews<sup>17</sup> to the announcement in September 2019 by the Malaysian central bank that it will require local financial institutions to report on their exposure to climate risks<sup>18</sup>.

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 EU in October 2019 will allow organisations and networks from around the world to share, exchange and potentially align initiatives on sustainable finance.

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**FIGURE 3: PRI SIGNATORIES BY NUMBER AND ASSETS UNDER MANAGEMENT**

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

## DWS climate risk screening and mandates

Combining multiple data sources is the key capability of DWS's ESG Engine, our proprietary software which integrates six data sources into our investment systems and processes. Our Climate Transition Risk rating methodology is now part of our ESG screening with this methodology is also available for mandates. This therefore extends and complements the existing capabilities within the ESG Engine that 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 risk is limited (to 5% 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% yet keeps 99% of the assets since high climate transition risk is correlated with high carbon intensity. Limiting high transition risk ((E) to 5% of the portfolio reduces the footprint to 63% and keeps 94% of the assets and eliminating it all together reduces the footprinting to 32% and keeps 89% of the assets.

When it comes to setting standards for our own ESG labelled 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 and vice versa. This means that while an issuer might qualify as a climate transition leader, if it violates another ESG aspect, such as it is in breach of UN Global Compact, then this would disqualify it from all DWS ESG labelled funds.

## 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 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 we aim to capture risk across multiple dimensions that capture 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.

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