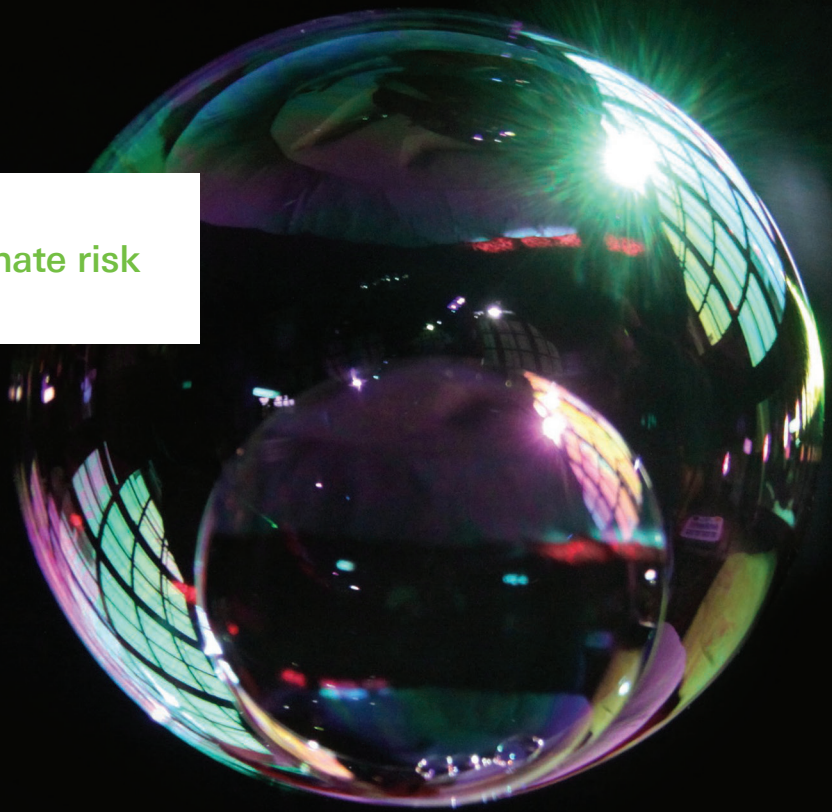


SUSTAINABLE FINANCE REPORT

ISSUE #2

Article 2:

Measures to address climate risk
in investment portfolios



A photograph of a single-story blue building with a grey roof, partially submerged in floodwater. The water is murky brown and reaches up to the windows and doors. In the background, there are several bare, dark trees against a pale, overcast sky. The scene illustrates the impact of climate change on infrastructure and property.

MEASURES TO ADDRESS CLIMATE RISK IN INVESTMENT PORTFOLIOS

Climate change and inter-related environmental issues have consistently been on (and have risen up) the World Economic Forum's Global Risks Report. The response to climate change is also an attractive investment opportunity across all sectors and asset classes. Currently, we believe the response to climate change may be viewed as a massive investment opportunity across all sectors and asset classes.

Executive summary

An important factor driving the interest in sustainable investments and Environment, Social and corporate Governance (ESG) factors more broadly, is the portfolio risks associated with climate change.

In this article we provide an overview of the nature of climate risk, including developments in measuring and managing these risks such as engagement and divestment.

Climate risk has moved to the top of the agenda for policy-makers and regulators, driven by the Bank of England Governor's speech in September 2015 which identified that physical, legal and regulatory risks make climate change a threat to financial stability. As a result, it is becoming ever more important for investors to understand and, where possible, to start managing their climate risks.

Under Germany's G20 Presidency in 2017 one of the key initiatives will be to discuss the recommendations of the Financial Stability Board (FSB) Task Force on Climate-related Financial Disclosure, which include stress-testing if business plans align with the Paris Climate Agreement.

While the low-carbon transition will move at different speeds, we believe that all governments will have to enact more stringent policies in legislation and that the cost of doing so is lower if action is taken sooner.

Despite the uncertainty of the new U.S. government's approach to climate and energy policies, we believe it is investors' fiduciary duty to measure and ultimately reduce climate risks. Given investors' long-term perspective, they should focus beyond political cycles. If some regulators do not support implementation of the FSB Task Force's recommendations, we expect investors could make greater use of proxy voting and engagement to improve corporate disclosure, as well as trying to persuade stock exchanges and accounting standards to eventually require climate risk disclosure.

Physical climate risks already exist and are only likely to grow over time. Despite scientists' sophisticated climate models, physical climate risk data needs to become more available for investors and linked to companies' facilities and supply chains. Improved supply chain risk analysis could be created

by enhancing the FSB Task Force recommendations to require disclosure of '1 in 100' year, '1 in 20' year and annual disaster risk exposure. Improved disclosure of most at risk and important company facilities may also be needed, while maintaining security and confidentiality. Improved disclosures linked to climate models will become increasingly important for many types of investors.

Legal risks include attributing the increased strength of individual extreme weather events to climate change and seeking penalties from the largest carbon emitters. Investors could also become liable for insufficiently managing climate risks. The history and magnitude of asbestos related liabilities is a cautionary case study.

Regarding transition risks, while currently prevailing carbon prices appear low, many observers were surprised that governments managed to reach the Paris Climate Agreement and that it became international law so quickly. Investors should be prepared for rapid policy changes and the possibility of an abrupt re-pricing of asset valuations. Some investors may believe that economic impacts will not appear over the next few years or that they will be able to exit any at-risk holding with sufficient foresight. However, a recent study for a group of major investors shows that markets could abruptly re-price climate risks which could reduce returns over the next five years by 11% to 45%, depending on the portfolio allocation (CISL Nov. 2015).

Measuring portfolio carbon intensity has been a starting point, but, this fails to capture the entire picture. Improved disclosure, robust analysis and new indexes are needed that account for sectoral differences and all climate risks. To truly address climate risks, asset owners and managers need to incorporate climate and other ESG issues into their investment beliefs and processes. Topics for discussion include stress-testing and creating low-carbon investment targets and risk reducing benchmarks.

The fossil fuel divestment campaign has played a key role in putting climate change more firmly on the agenda of investors, governments and carbon intensive companies. More investors are divesting some or all of their fossil fuel assets but many others are more inclined to favour engagement and climate/ESG integration.

In 2016, a number of leading investors became increasingly vocal and active in engaging carbon intensive companies and governments. This led to several European energy and mining company boards' supporting shareholder resolutions that called for improved carbon risk management and stress testing. Investors also played an important role in the adoption of the Paris Agreement. Policy engagement is therefore becoming an increasingly important role for investors.

We are seeing a growing trend towards strong ESG and climate related proxy voting, more proactive engagement with companies and policy makers as well as the consideration of selective divestment (not just with carbon intensive companies) if corporate investees do not sufficiently improve their climate and ESG practices.

U.S. research shows that engagement on climate change, environmental and corporate governance issues can improve companies' performance and reduce volatility (Dimson et al Aug 2015). Engagement with companies and policy-makers can lead to important changes, but there is over-reliance on a few active and vocal investors. Meeting fiduciary duties will require asset owners, asset managers and regulators to live up to their stewardship responsibilities by encouraging companies and governments to shift their strategies to reduce climate and ESG risks and seize opportunities. The EU Shareholder Rights Directive and other regulations are likely to lead to more focus on engagement.

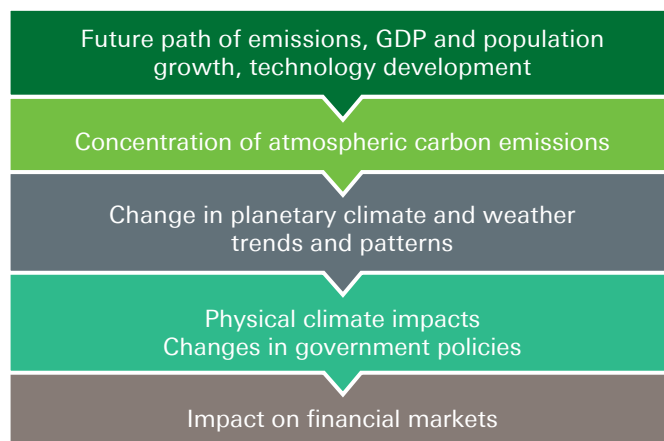
The growing shift to passive and exchange traded funds is a challenge to engagement strategies. Asset owners, managers and regulators are likely to look for ways to expand the level and quality of investee engagement on climate and ESG issues, including in passive funds. Investors are also increasingly seeking out investment opportunities in green revenue streams. It is therefore becoming a necessity for every major asset class to consider climate risk and low-carbon technology investment options.

1 | Explaining climate risks

The link between climate risk and financial stability is becoming an ever more important consideration for long-term investors, companies and governments. The Bank of England has classified climate risk as including physical risks, liability risks and low-carbon transition risks.

To understand climate risks, an appreciation is needed of the connection between carbon emissions and societal impacts, **Figure 1**. Each the the factors shown in Figure 1 is subject to their own particular levels of uncertainty. However, the growing annual flow of carbon emissions increases the stock or concentration of emissions in the atmosphere. This is causing a sustained and unequivocal increase in global temperatures which are causing changes around the world (IPCC 2014).

Figure 1: Connection between emissions and impact on financial markets



Source: Deutsche AM analysis, Dec 2016

Without further emission reductions, global average temperatures could rise to more than 4°C above what they were before the industrial revolution. While this may not sound significant, the last time there was a temperature difference this large in human history (4°C colder than today) was twenty thousand years ago when glaciers covered much of North America and northern Europe. The most important parts of human civilization (starting with the domestication of cattle 11,500 years ago) existed in a moderate and relatively stable temperature band. Even if emissions were to cease tomorrow, the climate would continue to change due to the stock of carbon emissions in the atmosphere. An additional risk is that some climate systems and ecosystems could cross tipping points or critical thresholds which could create irreversible changes—though there is debate about whether or when this could happen (IPCC 2014).

We believe that it is exceedingly risky to follow a path that leads to temperatures becoming much higher than those that have prevailed through thousands of years of human history.

Increasing recognition that climate change is a significant threat, helped lead almost every government in the world to reach a new global climate agreement in December 2015 (see **Box I—Paris Climate Agreement**).

The case for action on climate change is broader than just avoiding negative impacts. An estimated USD 90 tn investment in cities, energy and land-use systems is projected to be made over the next 15 years. A prominent group of business and international leaders and top economists have persuasively made the case that it is the nature of these investments that will determine our future growth and prosperity as well as the level of climate change (i.e. low or high carbon energy systems, smart/compact cities or urban sprawl). Many of the policy and institutional reforms needed to revitalise economic growth and improve well-being will also reduce climate risks as well as creating significant benefits such as improved air quality (New Climate Economy 2014).

Box I: What is in the Paris Climate Agreement?

A long term target: “Hold the increase in the global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels” (UNFCCC 2015). Countries agreed “to reach global peaking of greenhouse gas emissions as soon as possible, recognizing that peaking will take longer for developing countries, and to undertake rapid reductions thereafter”. The aim is to achieve in the second half of this century, a “balance” between emissions and emissions absorbed by forests, oceans and injected into geological formations using carbon capture technologies. This is a global carbon neutrality goal.

Scaling up effort in the future: countries agreed to a ‘stock-take’ of progress in 2018 and to commit to set new, more ambitious targets every 5 years starting in 2023.

Nationally set targets: 190 countries covering 98.9% of emissions set their own targets (Nationally Determined Contributions-NDCs)—much more than the 1997 Kyoto agreement which covered 11% of emissions (WRI 2016).

Compliance: the Agreement has no penalties. However, action will be encouraged by international pressure as countries have to disclose their progress and this will be reviewed by experts. Action is also supported by the domestic political processes that led to 190 national targets being set. Growing numbers of national and local governments are realising the risks of not acting and are intending to seize the economic, health, employment and other co-benefits of a low-carbon economy.

Physical risks

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. **Figure 2** presents estimates of the degree to which physical risks can affect the global population and cropland under different climate action scenarios, with no action to address climate change inflicting the greatest potential damage.

Figure 2: Potential physical climate impacts

Physical risks	No action	Paris Pledged policies	Additional policies for 2°C
Water stress Billions of people exposed	1,921	1,700	1,425
Cropland decline Thousand km ²	7,604	5,704	4,508
River flooding Millions of people	145	86	58
Heatwaves Millions of heatwave incidents experienced	12,184	4,506	1,387
Sea level rise Millions of people affected	627	432	280

Source: AVOID2 2015, Strauss et al 2015

At a macro-economic level, the Economist Intelligence Unit and Vivid Economics (2014) estimated that the current value at risk from climate change without sufficient action is USD 4.2 tn. This is roughly the total value of the world’s publicly listed oil and gas companies or the entire GDP of Japan.

The most scientifically reviewed report in history, the Inter-governmental Panel on Climate Change (IPCC 2014) concluded in part that “climate change is projected to increase displacement of people...[and] can indirectly increase risks of violent conflicts in the form of civil war and inter-group violence by amplifying well-documented drivers of these conflicts such as poverty and economic shocks”. A global temperature increase of 4°C or more could “create severe and widespread impacts on unique and threatened ecosystems, substantial species extinction, large risks to global and regional food security”. The difference between a 1.5°C warmer world and 2°C warmer is significant, **Figure 3**. The IPCC will publish a report in 2018 on the implications of the 1.5°C target.

Figure 3: Impact of 1.5°C vs. 2°C warming in 2100 relative to 2000

	1.5°C warmer	2°C warmer
Freshwater availability in the Mediterranean	↓ 9%	↓ 17%
Heavy rainfall intensity	↑ 5%	↑ 7%
Wheat production	↓ 9%	↓ 16%
Maize production	↓ 3%	↓ 6%
Soy production	↑ 6%	↑ 7%
Sea level rise	137 million people at risk	280 million people at risk
Coral reefs at risk of bleaching	90% at risk	98% at risk

Source: Schleussner et al April 2016, Strauss et al 2015

There is a very narrow window for staying within the 1.5°C target. If emissions stay at their current level, in 5 years humanity will have used up the carbon budget associated with having a 66% chance of keeping global warming within 1.5°C or 9 years if we accept a 50% chance (Carbon Brief May 2016). If emissions are reduced, then the possibility of staying within this target improves.

Essentially climate change is shifting the probability distribution of the earth’s weather patterns so that tail risks become larger. We are “loading the climate’s dice”.

We next review how the insurance industry and wider financial sector could improve its resilience to physical risk.

Starting in the 1980s, a growing number of large natural catastrophes created a crisis for the re/insurance industry. Insurance company insolvencies and the withdrawal of

private capital in the early 1990s led to natural disaster insurance and re-insurance becoming unavailable, severely restricted or excessively expensive (Douglas 2014).

Over the next decade, the re/insurance sector worked to address the crisis by transforming how natural disaster risks are managed. The insurance industry’s problems were solved by a combination of improvements in scientific data and analytical capacity, smart investors who demanded that underwriters improve how they evaluate and price disaster risks and insurance regulators who required insurance companies to have sufficient capital to deal with the worst combination of extreme events across the world that might occur once in every 200 years. Now, the insurance industry is able to handle ever larger insurance claims. Over USD 120 bn of claims were made in 2011, the worst year of natural disasters on record.

The ability of the insurance sector to improve and manage extreme physical catastrophes is encouraging. However, a large proportion of the world does not have any access to insurance. As well, the financial sector outside of the insurance industry does not account for natural disaster risks: it is not factored into valuations, creditors do not assess risk in loan books and even in risky locations the real estate market largely ignores disaster risk.

Rowan Douglas, the Chief Executive of the Capital, Science and Policy practice of the advisory and insurance broking and solutions company Willis Towers Watson, is leading an effort to integrate physical climate risks into the financial system. He helped create the “1 in 100” initiative which is encouraging regulators and investors to encourage and/or require listed companies to disclose their maximum probable annual losses for a 1 in 100 year disaster, a 1 in 20 year disaster and their average annual disaster losses. Disclosure of these basic metrics helped the insurance industry to recover after the crisis of the 1990s.

We believe the ‘1 in 100’ initiative’s aims could allow investors and banks to incorporate companies’ physical climate vulnerability into investment/financing decisions. At present it is difficult to obtain information on how companies (particularly their supply chains) are at risk of natural disasters. Therefore we hope governments and climate scientists will improve disclosure and data availability for investors. Policies could also help companies assess and disclose their risks. For instance, the UK Climate Change Act requires public and private sector critical infrastructure providers (such as transport and utility companies) to assess and report on physical climate risks (CCC 2016). Disclosure could be factored into financial decisions.

Liability risks

Liability risks could arise as those who have or will suffer losses or damages due to climate change could seek compensation from those they hold responsible—i.e. the largest carbon emitters and potentially financial sector actors who have facilitated “polluters” business activities.

Investors and other financial institutions could also face legal liability risks. Mercer (Nov 2015) concluded that Australian pension fund trustees could be exposed to potential liability for failing to take account of climate risks. Two UK barristers have published an opinion that pension fund trustees could be exposed to legal challenge for failing to consider climate risks (ClientEarth Nov 2016). This makes it prudent for trustees to consider and manage climate risks as part of their investment process.

Governor Mark Carney’s September 2015 speech cited the potential for insurance companies to be impacted by “uncertain and non-linear, long-tail risks”. Carney noted that asbestos claims in the U.S. cost insurers USD 85 bn or three times the losses of Super-storm Sandy in October 2012. Such risks will increasingly impact insurers’ asset values.

“Loss and damage” is an element of the international climate policy discussions as some countries (particularly low-lying island states that could disappear due to sea-level rise) are seeking compensation from developed countries and potentially from large corporate emitters, including through the courts (UNFCCC 2013).

Scientific advances appear to be increasing the liability risk as the field of ‘attribution’ is demonstrating how climate change can be attributed to making an individual extreme weather event more frequent or severe. One law firm asserted (BNA 2016) that *it is only a question of when a next wave of climate-based civil action and litigation will occur and that improvements in attribution science will change the legal landscape.*

As the regulator of the UK insurance industry, the Prudential Regulatory Authority (PRA Sept 2015) published an assessment of the insurance industry’s exposure to climate risks. Regarding liability risks, the PRA concluded that *“past experience in areas such as asbestos and pollution indicates that although initially it may be difficult to get traction in the courts, a growing scientific consensus combined with increasing litigation eventually leads to substantial claims...legal action ‘failure to mitigate’ [i.e. to reduce emissions] may succeed in a developing country with possibly more activist courts within the next decade, particularly as evidence relating to both the foreseeable nature of risks and attribution of climate change to carbon-intensive activities continues to strengthen”*. Legal claims related to a company’s ‘failure to adapt’ or ‘failure to disclose’ could succeed under existing laws.

A harbinger of what could be a new wave of climate litigation is a successful lawsuit in 2015 in the Netherlands which requires the government to increase the stringency of their climate policies. The courts decided that Holland must cut their emissions by at least 25% compared to 1990 levels within five years (their policy was for a 14-17% reduction). The decision is being appealed but similar litigation appears to be underway in other countries (Urgenda 2015).

Transition risks

Transition risks relate to the increasing scope of climate change regulation, the associated costs this will create, whether companies are adequately managing climate risks and the potential reappraisal of asset market valuations if companies are not managing climate risks with sufficient strength.

For instance, an increasing number of companies are implementing internal carbon pricing and emission reduction targets into their business strategies. CDP found that 85% of companies have an emission reduction target but only 14% of companies have a 2030+ target. By December 2016, more than 200 major companies have a ‘science-based’ target (based on making a fair contribution to the emission reduction ambition of the Paris Agreement).

A report supported by a group of investors aimed to estimate the potential impact in 5 years’ time from a shift in investor’s sentiment regarding the recognition of future climate risks. *Across a range of typical pension fund and insurance company asset allocations, a shift in market sentiment could lead to economic shocks, causing losses in the short and long-term (CISL 2015 - more detail on this study is provided in Section 2 of this article).*

The transition risks to the fossil fuel industry have been highlighted by work conducted by Carbon Tracker. Their findings (which draw on IPCC reports) explained to the investment and business community that the world has a defined carbon budget if the rise in global temperatures is to be limited to no more than 2°C above pre-industrial levels. Carbon Tracker (2014) reported that 99% of fossil fuel companies recognise climate risks, but, only 7% adequately integrate this risk into their project and capital expenditure assessments.

The FSB Task Force has included analysis of the implications of the carbon budget for company and financial sector disclosure. The IEA and Carbon Tracker analysis suggests that the carbon budget would only allow the burning of between one fifth and one third of the world’s proven oil, gas and coal reserves. As a result, the remaining share of fossil fuel reserves would need to be classified as unrecoverable and hence stranded.

A re-pricing of fossil fuel assets if classified as stranded poses risks to investment returns. Consequently many investors are attempting to assess the sensitivity of their investment portfolios to such risks. However, in a twenty page shareholder letter, Shell (May 2014) argued that it “does not believe that any of its proven reserves will become ‘stranded’ as a result of current or reasonably foreseeable future legislation concerning carbon”.

In 2016 in response to shareholder requests, Shell published its 2°C scenario. Their view on the most important near-term change is to shift away from coal power, and that there is increased public and private investment in carbon capture technologies. Some countries could also set carbon taxes on imports or exports (border carbon taxes). Shell states that the transition will incur a range of increased costs for some industries, displacement of investment and jobs from some areas, diminished returns as some investments, particularly unabated hydrocarbon infrastructure, become redundant.

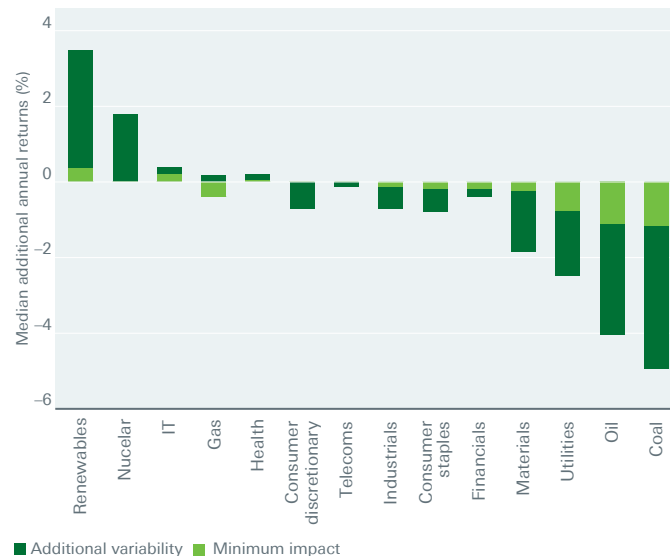
Shell stated “we believe our portfolio is resilient under a wide range of outlooks...we have new immediate plans to move to a net-zero emissions portfolio over our investment horizon of 10-20 years. Net zero emissions...must be driven by society, governments and industry through an effective overall policy framework...we believe the Paris Agreement is a start towards creating such a framework and we look forward to playing a role as society embarks on this very important journey.”

However, Carbon Tracker (May 2016) published a report arguing that the oil majors could be worth USD 140 bn more by reducing their investment in high cost, high carbon oil projects by aligning their investment plans with a 2°C scenario.

These reports confirm the importance of careful analyses of transition risks (Section 2), using this analysis in company engagement activities and engagement with policy-makers (Section 5).

A study conducted by Mercer in 2015 examined the risk to investment returns from various climate change scenarios by sector and from a portfolio asset allocation perspective. One of the key findings, outlined in Figure 5, estimated the likely sector winners and losers from a returns perspective out to 2050. Not surprisingly, the fossil fuel and utilities sectors are most at risk from both a regulatory and technological perspective. Meanwhile the renewables sector has the greatest positive sensitivity due to climate change policies creating new business opportunities.

Figure 5: Climate impact on returns by industry to 2050

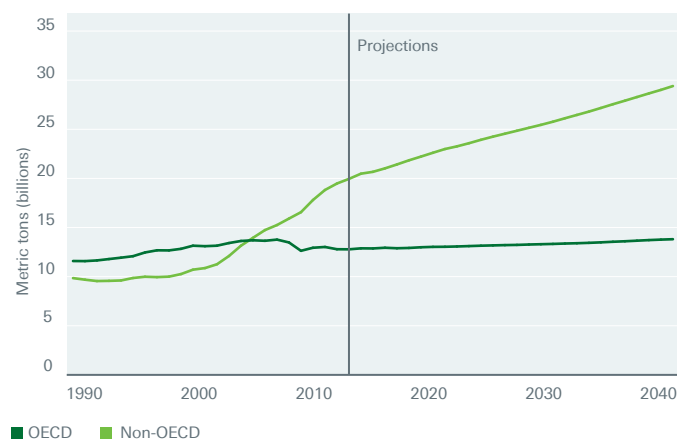


Source: Mercer, June 2015

GHG sources & trends

A useful step in assessing transition related risks, is to understand the sources and trends of greenhouse gas emissions. In 2005, greenhouse gas emissions (GHG) by region were evenly split between OECD and non-OECD countries. However, as rising incomes trigger a surge in energy demand across non-OECD countries, as non-OECD countries have increased their exports of manufactured products and as OECD countries switch to lower emission fuel sources and improve their energy efficiency, non-OECD countries will represent a growing share of global GHG emissions. Indeed estimates by the U.S. Energy Information Administration (May 2016—which reflect the impact of current but not planned/potential government policies) estimate that by 2040 non-OECD countries could account for 68% of energy related carbon emissions, Figure 6.

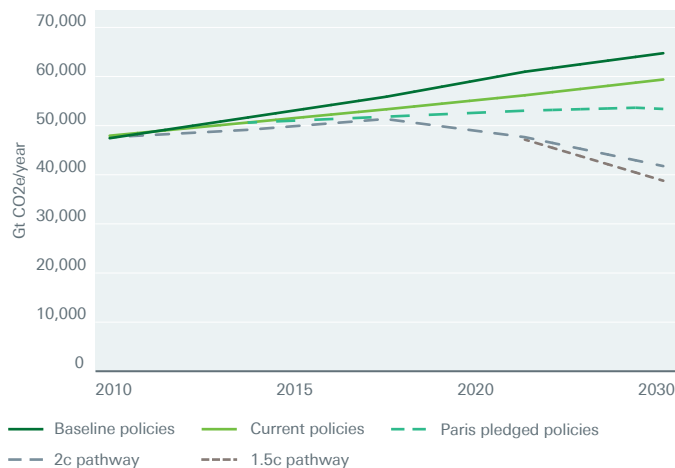
Figure 6: OECD and non-OECD energy related carbon dioxide emissions, 1990-2040 (metric tons in billions)



Source: U.S. DOE/EIA, International Energy Outlook 2016 (May 2016)

The Paris Climate Agreement in December 2015 included almost every single country submitting emission reduction pledges (known as Nationally Determined Contributions NDC). The latest estimates show that if implemented, these policies would reduce emissions. However, as shown in Figure 7, there remains a significant gap to the reductions required to meet the Paris Agreement's goals.

Figure 7: Latest UN Environment emission forecasts

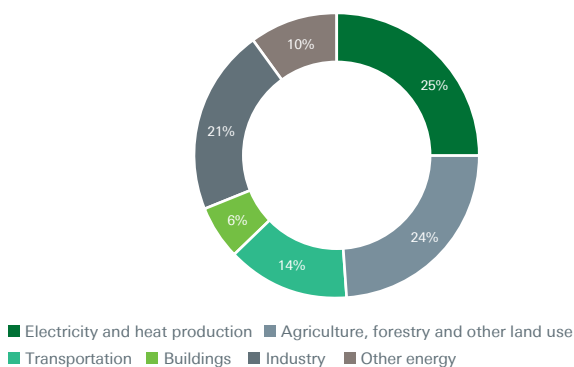


Source: UNEP (2016). The Emissions Gap Report

PwC (2016) estimates that the average annual reduction in carbon intensity must fall by 6.5% (emissions compared to economic growth). In 2015 global carbon intensity fell 2.8% (GDP growth of 3.1% but emissions only increased by 0.2%) which is above the 1.3% average decarbonisation from 2000-2014. This indicates that stronger policies are needed to increase the rate of decarbonisation.

Figure 8 provides a clue to the likely sensitivities of various sectors of the economy to legislation that is set to curb greenhouse gas emissions still further.

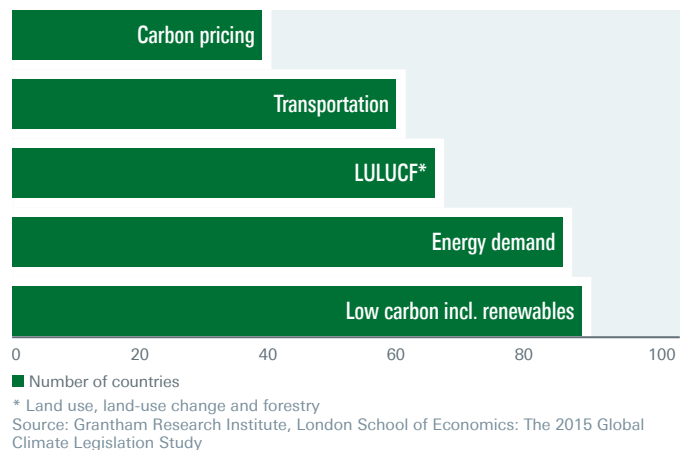
Figure 8: Global GHG emissions by economic sector



Source: IPCC (2014) Fifth Assessment Report

Indeed according to the 2015 Global Climate Legislation Study the number of climate laws passed globally has doubled every five years since 1997, and that this legislation is affecting wide areas of the global economy. Not surprisingly, legislation is typically focused on the energy sector and specifically policies that curb energy demand or push through carbon pricing policies as well as promote low carbon energy sources such as renewables, as shown in Figure 9. Greater transparency is therefore needed regarding how a company's global operations may be subject to different jurisdictions climate policies which may be changing at different speeds.

Figure 9: Number of countries that have carbon emission laws and policies by sector and theme



■ Number of countries

* Land use, land-use change and forestry

Source: Grantham Research Institute, London School of Economics: The 2015 Global Climate Legislation Study

Forty countries and more than 20 cities, states and provinces have carbon pricing policies. These policies currently cover 13% of global carbon emissions but more than 100 governments (representing 58% of global emissions) aim to use carbon pricing in some way as part of their contribution to the Paris Agreement. In April 2016, a group of political leaders challenged the world to expand carbon pricing to cover 25% of global emissions by 2020 and 50% within the next decade. The group included the heads of state of Canada, Chile, Ethiopia, France, Germany, Mexico, the Governor of California, the Mayor of Rio de Janeiro, the World Bank, the International Monetary Fund and the Organisation for Economic Cooperation and Development (OECD). Assessing the impact of such potential policies will become increasingly important for companies and investors.

Thus, it is encouraging to see that over 1,200 companies currently use or plan to use an internal carbon price over the next two years (World Bank Oct 2016). Companies are using an internal carbon price to guide and test business and investment plans, including as part of financial tests of an investment decision. The use of internal carbon pricing is a good signal of companies having a relatively advanced internal climate risk management as they are anticipating eventual government policies. Investors can encourage more companies to use internal carbon pricing through engagement, as discussed in Section 6.

2 | Measuring and managing climate risks

To date, the approach taken by a number of investors to assess climate risks has been to start by identifying the most carbon intensive companies in their portfolio. In this section we discuss how carbon footprinting should only be a starting point. It is also important to incorporate climate risks into investment beliefs and processes.

The University of Cambridge, in cooperation with a group of asset owners and managers, published one of the first assessments of short-term climate risks—whether the market starts to price in climate risks. This study estimates the potential financial impacts of a shift in investor and consumer beliefs' market sentiment about climate change impacts. **Figure 10** shows modeling results for the impact of three market sentiment scenarios on four portfolios with different asset allocations. See CISL Nov. 2015 for full assumptions. The report adds weight to the conclusion that climate risks are not just long-term. **Short term losses could be 23–40% in a world without strong climate policies and 10–11% in a climate policy action scenario.**

Figure 10: Portfolio performance measured by 5% Value at Risk by type of portfolio and climate scenario

Short term impact (<5 years)

Portfolio structure	Baseline scenario	2 Degree scenario	No mitigation scenario
High Fixed Income	0	–10%	–23%
Conservative	1%	–11%	–36%
Balanced	1%	–11%	–40%
Aggressive	1%	–11%	–45%

Long-term impacts (>5 years)

Portfolio structure	Baseline scenario	2 Degree scenario	No mitigation scenario
High Fixed Income	4%	–3%	–4%
Conservative	12%	9%	–26%
Balanced	16%	17%	–30%
Aggressive	21%	25%	–45%

Source: CISL, Nov. 2015

There is no assurance that any assumptions or forecasts will come to pass. Past performance may not be indicative of future results. The example shown is for illustrative purposes and does not represent any particular investment.

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Investment beliefs and Strategic Asset Allocation

Truly managing climate risks requires an in-depth approach.

In April 2015, the Global Investor Coalition on Climate Change (Apr 2015) published a guide for asset owners to use in developing a policy. The guide suggests steps and provides examples to undertake a strategic review to spread understanding of climate risks and opportunities, engage with asset owner members (if relevant), define investment beliefs regarding climate risk, consider investment constraints, develop a policy and set targets.

Strategic asset allocation (SAA) also needs to be reviewed regarding climate risks. This can include reviewing assumptions, measuring exposure to risks and low-carbon opportunities, seeking to reduce risk and improve opportunity exposure within the existing SAA and setting targets to evolve the SAA.

To help guide the creation of climate related investment beliefs, we believe that investors should think about and be prepared for three broad types of scenarios:

- Steady, if slow progress towards the 2°C target
- Slow climate policy action, followed by rapid catch-up measures, leading to higher transition risks
- Too little—too late, leading to higher physical risks

The FSB Task Force (see Box II) recommendations included a technical supplement on the use of climate scenarios. While the Task Force recommended that work was needed to further improve the availability of scenarios, the Task Force's summary of scenarios is a good overview. Investor and business useable climate scenarios will become increasingly important.

It is notable that Moody's (June 2016) announced that they will analyse the credit implications of the Paris Agreement and transition risk. Moody's identified 13 industries most exposed to transition risk. Coal, coal infrastructure and unregulated power utilities are already being affected and other sectors will be affected in the next three to five years.

While there are many levels of uncertainty in how climate risks will impact investors, this does not justify delays in efforts to develop climate risk management policies and practices. We view the Global Investor Coalition guide as a good starting point.

Carbon foot-printing

Carbon foot-printing is a starting point to provide a very initial assessment as to the relative vulnerability of specific sectors to carbon regulations, such as carbon taxes and emission standards, particularly when compared to an equity benchmark index. If measured accurately, carbon foot-printing can

at least help investors identify the potential scale and concentration of transition risks.

KeplerCheuvreux (2015) in cooperation with the IIGCC, the 2Degrees Investing Initiative and Deloitte published a user guide designed to help connect carbon footprint analysis with investment objectives such as minimising risk and meeting climate targets. The 'Carbon Compass' reviews all available carbon foot-printing methodologies.

Within Deutsche Asset Management, our ESG Engine combines all major data providers' climate and other sustainability data which can be used to estimate a portfolio's carbon footprint. For more details please see the article on this topic in our first Sustainable Finance Report published last year.

However, one of the challenges is the reliability of emissions data. According to FTSE Russell (2016), 60% of companies in the FTSE All World Index disclose at least a portion of their emissions, but there are significant regional differences in how companies report their direct (Scope 1) carbon emissions, emissions from external energy providers (Scope 2) and

an even smaller proportion report emissions associated with their suppliers and customers (Scope 3). As a result, many companies' emissions are estimated by different data providers using different methods. Carbon emissions are also a backward looking measure and are only a rough proxy for physical, legal, transition climate related risks and has almost no correlation with companies developing green business opportunities (2 Degrees Investing Nov 2015).

In the U.S., the California Public Employees Retirement System (CalPERS 2015, p.13) scrutinised its entire global equity portfolio. Despite the issues with carbon foot-printing, one of the most interesting findings of their work was the significant degree of carbon emissions' concentration within its portfolio, such that of the 10,000 companies in CalPERS's portfolio, just 80 are responsible for 50% of their portfolio's emissions.

Figure 11, shows different carbon disclosure options currently in the market for investors to potentially use. Clearly this does not cover physical risk and still needs improvement regarding the coverage of transition risk. Figure 11 supports the FSB Task Force's aim to improve disclosure.

Figure 11: Comparison portfolio of carbon disclosure options

	Metric	Available	Asset class	Pro	Con
Climate goal alignment	Forecast capital plans	✓	Listed Equity Corp bonds	Actual data Open source	Only a few sectors
	Voluntary corporate targets			More sectors than capital plans	Only companies with targets
	Extrapolate past trends				Past trends are a poor proxy
Transition risk	Top down analysis	✓	Cross-asset	Comprehensive	Black box method from 1-2 providers
	Sector level analysis	✓		Simple Can be done in-house	Doesn't capture intra-sector trends
	Security level analysis	Knowledgeable analysts	Listed Equity Corp bonds	More granular, maybe more accurate	Bespoke
Proxy climate metrics	Carbon footprint	✓	All sectors and asset classes		Does not cover all climate risks, needs some estimates (black-box models)
	Avoided emissions	✓	Listed equity Project finance	Can measure using GHGs	
	Green or brown share of power generation, vehicles etc	✓	Listed Equity Corp bonds	Cross sector average	Only some sectors

Source: 2 Degrees Investing, 2015. The example shown is for illustrative purposes and does not represent any particular investment.

80% of European companies disclose their carbon emissions compared to 60% of North American firms and 50% in Asia. In 2015-16, disclosure rates improved 11% in Asia but only 2% in North America.



The lack of reliable and publicly available data helps to explain the decision by the Financial Stability Board to establish the Task Force on Climate-related Financial Disclosure in November 2015.

The recommendations from the Task Force (see Box II) have been published and are in public consultation until February 2017. Later in 2017, the G20 will advise on how market players and governments should implement the recommendations. Initially this will be voluntary but **we expect climate risk disclosure will become mandatory for companies and the financial sector over time.** Naturally, enhanced climate disclosure and reporting would help in terms of managing climate risks.

Since carbon emissions and intensity in a portfolio are highly concentrated, then steps to monitor, engage and possibly reduce that carbon risk can also be focused on a relatively small number of constituents. However, given the limitations of carbon intensity as a proxy for climate risks, we view the work of the Task Force for Climate-related Financial Disclosure as critical to enhancing the measurement of carbon risk.

We would also expect improved reporting and disclosure will assist in the objectives of the Montreal Carbon Pledge. This commits signatories to measure and publicly disclose the carbon footprint of their investment portfolios on an annual basis. Since its launch in September 2014, there are now over 120 signatories to the Montreal Carbon Pledge with over USD 10 tn assets under management.

Box II—Recommendations of the Task Force on Climate-related Financial Disclosure (TCFD)

Chaired by Michael Bloomberg, this industry led Task Force was announced at the Paris Climate Summit in December 2015 by Financial Stability Board Chairman and Bank of England Governor Mark Carney at the request of the G20. The Task Force is comprised of banks, corporates, investors, accounting firms and rating agencies. The Task Force has focused on what constitutes effective financial disclosures. Its aims were to develop consistent, comparable, reliable and clear disclosures around the carbon intensity of different assets (TCFD Dec 2016).

The Task Force stated that “many organisations incorrectly perceive the implications of climate change to be long term and, therefore, not necessarily relevant to decisions today”.

The Task Force report was published in December 2016 and will be subject to a two month consultation before being discussed by the G20. The Task Force recommends that climate-related financial disclosures be made in mainstream financial filing and that this should include a review by a company’s chief financial officer and audit committee. The core elements of climate-related financial disclosures are:

- **Governance:** Disclose the organisation’s internal governance of climate related risks and opportunities
- **Strategy:** Disclose the potential impacts on the business, its strategy and financial planning

- **Risk management:** Disclose how the organisation identifies, assesses and manages climate related risks
- **Metrics and targets:** Disclose the metrics and targets used to assess and manage relevant climate-related risks and business opportunities

The Task Force also recommends companies and the financial sector undertake and disclose the impact of climate scenarios such as the potential implications of policies aligned with a 2°C goal. Their report includes supplemental guidance for financial and specific non-financial sectors.

The Task Force concludes that improved climate-related financial disclosures will support more appropriate pricing of risks and capital allocation. Just as improved financial disclosure helped 20th century markets to grow, climate disclosure can transform 21st century markets.

Key areas for further work include:

- Encourage standard setting organisations to align and support adoption
- Further research to understand how climate risks translate into potential financial impacts
- Develop methods for allocating emissions to asset classes other than equities
- Improve data quality, enhance risk measurement methods
- Further develop and make public transition scenario tools and data

To encourage implementation of the recommendations of the FSB Task Force on Climate related Financial Disclosure, the asset managers Aviva and Legal and General have stated that they will vote against the annual accounts of carbon intensive companies if they do not work to improve their disclosure in line with the FSB Task Force recommendations.

We believe that an ongoing process is needed involving a wide group of public and private sector stakeholders to discuss, monitor and continuously improve climate disclosure. This should include policy-makers, regulators, central banks, international organisations, plus the finance sector and key corporate sectors.

If an investor has tried to measure the carbon intensity and/or broader climate risks of a portfolio, next steps can include deciding how to reduce holdings of most at risk assets, whether to consider divestment, how to re-invest in companies with less climate risks and those who are leaders in low-carbon technology solutions (Section 4 of this article) and how to engage with companies to encourage improved climate risk management (Section 5 of this article).

If an investor is reducing portfolio climate risks, then they can consider making a public declaration by signing up to the Portfolio Decarbonisation Coalition (PDC) which commits signatories to reduce the carbon intensity of their investment portfolios. Membership of the PDC has reached 27 asset owners and managers who aim to reduce the carbon intensity of around USD 600 billion of assets. In addition to portfolio decarbonisation a signatory to the PDC also pledges that 5% of their portfolio will be dedicated to climate solutions.

Assessing climate risk materiality

In 2010, the U.S. Securities and Exchange Commission published guidance that when climate-related risks are material, companies must disclose relevant information as part of their 'Regulation S-K' disclosures. However, 40% of disclosures used 'boiler-plate' statements and only 17% use metrics (SASB Oct 2016). This makes it very difficult to compare companies' performance.

In address this problem, the Sustainability Accounting Standards Board (SASB) assessed the materiality of climate risks for companies across the entire U.S. economy. Physical, legal and transition risks were assessed based on if they could lead to financial impacts on revenue, cash flow and operations, asset values or financing. SASB found that 72 of 79 industries (93% of the U.S. equity market) could be affected in some way, indicating that these risks cannot be diversified away. SASB developed a Climate Risk Materiality Map, an extract of which is shown in Figure 12.

The climate risk framework allows investors to identify the way in which climate risk could impact corporate financial value in industry specific ways. SASB's work was an input to the FSB Task Force on Climate related Financial Disclosure. The Task Force identified a number of sectors (energy, transport, materials/building and agriculture/food/forest products) that would benefit from sector-specific guidance.

Figure 12: Extract of Climate Risk Materiality Map

Sector	Physical risk	Legal risk	Transition risk
Pharmaceuticals	✓		✓
Commercial banks			✓
Semiconductors	✓	✓	✓
Iron & Steel	✓	✓	✓
Automobiles		✓	✓
Chemicals	✓	✓	✓
Appliance manufacturing		✓	
Real estate	✓	✓	✓

Sources: SASB Oct 2016

SASB is also currently consulting (until Q2 2017) on provisional sustainability accounting standards across 79 industries. While this initiative has started in the U.S., SASB's comprehensive approach (and leadership from its Chair Michael Bloomberg and Vice Chair Mary Schapiro, former Chair of the Securities and Exchange Commission) makes it a global best practice. We expect sector experts will engage with SASB to provide feedback on whether they have captured the most material ESG risks and appropriate indicators. We believe SASB recommendations are therefore a key input for different disclosure initiatives.

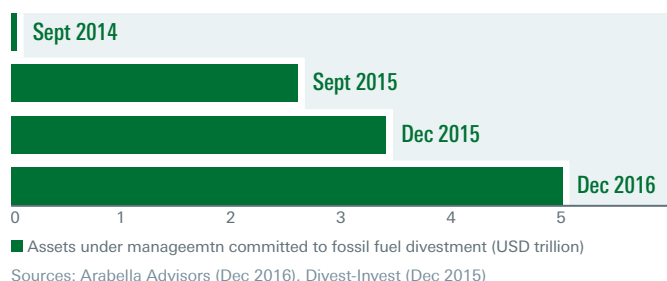
3 | Divesting of climate risks

Divestment typically refers to the withdrawing or withholding of financial capital from a specific industry (tobacco), sector (energy) or country (Sudan). The factors most often cited to justify divestment out of fossil fuels include:

- Fossil fuel holdings are unacceptable as investors are benefiting from an industry that is accelerating the hazardous effects of climate change
- Divestment out of fossil fuels is believed to be a prudent investment decision from a fiduciary perspective as it ensures investment portfolios do not succumb to stranded asset risk
- Divestment allows investment portfolios to focus on companies and sectors with green revenues streams, which help reduce greenhouse gas emissions and promote the transition to a low carbon economy
- Divestment aims to promote climate friendly legislation, such as the removal of fossil fuel subsidies and/or the introduction of carbon taxes in an effort to curb fossil fuel consumption

Starting with U.S. universities and colleges, the past few years has seen significant growth in the total assets of institutions that are committed to divest, Figure 13, though this does not measure the assets that have actually been divested.

Figure 13: Tracking fossil fuel divestment



So far, 79% of those divesting are from local government, philanthropic, faith-based, health and educational institutions, plus commitments from nearly sixty thousand individuals including some notable high net-worth investors.

Notable private sector investors who have announced partial or full divestment include the insurance/asset management companies Aegon, Allianz, Aviva, Axa, the AP4 pension fund, Norges Investment Management and the Dutch pension fund PFZW.

Naturally many divestment programmes lead to replacement investment strategies. The typical beneficiaries of the fossil fuel divestment switch are renewable energy, energy efficiency, sustainable agriculture and other low carbon investment solutions.

However, for other investors, full divestment out of the fossil fuel sector is not considered a viable investment strategy. In many instances the removal of certain stocks not only leads

to a reduction in risk adjusted returns, but, it can also lead to less efficient portfolio diversification. Therefore, investor strategies should also be able to select and prioritise companies that are best prepared and positioned to manage and profit from the low-carbon transition.

Critics of the fossil fuel divestment campaign also cite the fact that 70% of fossil fuel reserves are held by sovereign states, most notably in the Middle East and consequently stranded asset risk is more heavily skewed to these entities.

These factors may therefore have contributed to divestment programmes that are less aggressive in scope. Rather than the complete elimination of all fossil fuel companies, divestment can be confined to companies developing high-cost, high-carbon reserves, such as in the coal and oil sands sectors or to companies who are not managing climate risk sufficiently strongly.

Since some investors question what divestment in publicly listed fossil fuel companies will achieve, engagement rather than outright divestment can be viewed as a more constructive approach.

In certain countries, divestment is moving center stage as a result of regulation. In 2015, California's state legislature passed a coal divestment bill that required CalPERS and CalSTRS to divest out of their holdings in companies that earn at least half of their revenues from coal mining. New York, Massachusetts and other U.S. states are examining similar divestment bills. Public pension funds are therefore joining alongside institutional and individual investors in the fossil fuel divestment campaign.

Oxford University researchers examining fossil fuel and other divestment campaigns concluded that direct impacts are likely to be limited: share prices are unlikely to suffer precipitous declines and holdings will likely be taken up by neutral investors. If divestment is to have any impact on company valuation, changes are needed in market norms and by constraining debt markets (Smith School, Oct 2013).

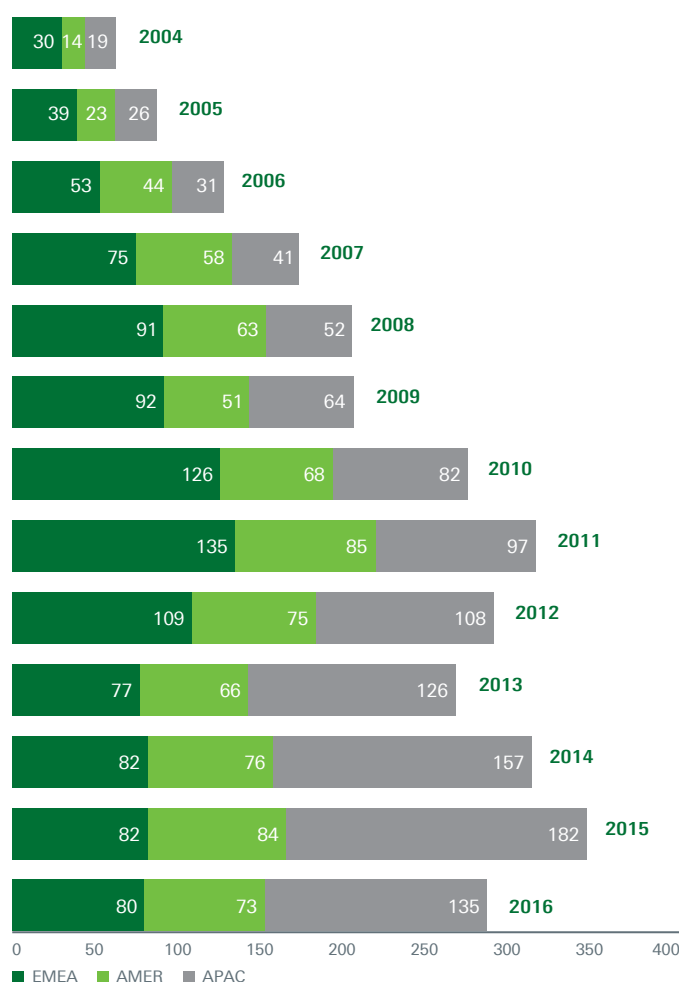
We believe that investor support for implementation of the FSB Task Force recommendations and for stronger climate policies are likely to be the best ways to lead to changes in market norms, the pricing of carbon intensive companies share and bond prices and a reduction in climate risks. However, the divestment movement has and will continue to play a key role in this overall process, even if fewer investors divest than what advocates may hope.

4 | Investing in solutions

While divestment removes any exposure to fossil fuels and investor engagement seeks medium-term risk reduction and improved returns, exploiting opportunities in green revenue streams is also important.

According to IEA estimates, to have an 80% chance of limiting the rise in global temperatures to no more than 2°C above pre-industrial levels will require clean energy investment reaching USD 500 bn per annum by 2020 and investment of more than USD 1 tn per annum by 2030. Clean energy investment hit a record high in 2015 of USD 359 bn, before falling to USD 288 bn in 2016, **Figure 14**. Half of the investment reduction is due to falling equipment prices meaning that more renewable energy capacity is actually installed. China and Japan did reduce the number of large-scale renewable projects, though offshore wind investment grew 40% last year. China remains the largest renewable energy market (which we discussed in the first edition of our Sustainable Finance Report), followed by the U.S. (which we discuss in article #4 in this report).

Figure 14: Total annual clean energy investment



Examples of asset owner low carbon commitments include the Dutch health care pension fund PFZW and the Swedish National Pension Fund AP4. For PFZW, it has committed to halve its portfolio carbon footprint by 2020. This will involve divesting completely from coal-related companies by 2020 and reducing investment in fossil fuel companies by 30%. In addition and as part of its investment replacement strategy, PFZW will quadruple its investments in sustainability



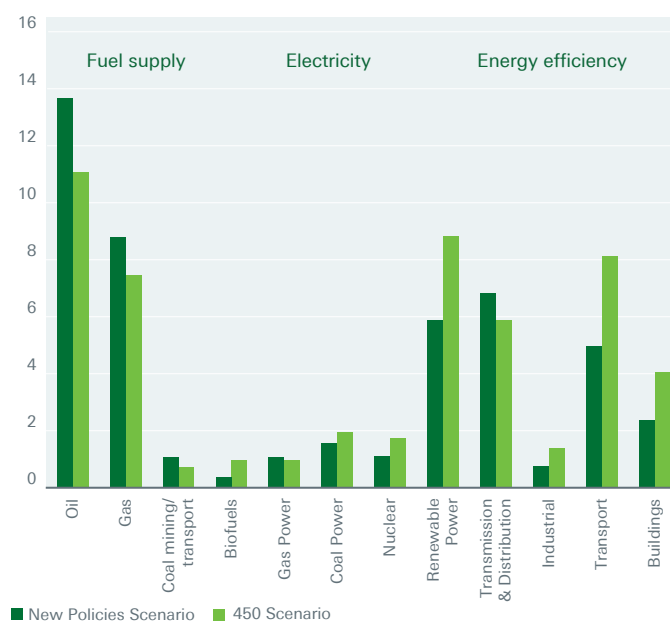
investment such that it will eventually represent 12% of assets over the same time frame. This follows comparable clean energy commitments by other asset owners such as APG of the Netherlands, Aviva in the UK and Axa in France.

In terms of technology, over the past few years solar and wind have consistently captured over 70% of all renewables investment. However, significantly larger investment inflows into the clean energy sector are required to meet climate goals. We expect investment opportunities will be particularly focused towards renewable energy, clean transportation and energy efficiency. Figure 15 shows the IEA's forecast for how energy investment may change comparing their 2014 New Policies Scenario (which refers to the impact of current and announced but not implemented policies) and the 450 scenario (which refers to the atmospheric concentration of carbon emissions generally associated with a 2°C future).

Fossil fuel related investment represents 54% of total energy sector investment in the New Policy Scenario but falls to 42% in the 450 scenario.

While coal power investment is 25% higher in the IEA's 450 scenario, the total power generation capacity that could be added is similar. The higher investment is due to the higher cost of more efficient coal power technologies and carbon capture and storage (i.e. capturing carbon emissions from power plants or factories and injecting emissions to be stored long-term in geological formations).

Figure 15: Cumulative investment in energy supply and energy efficiency by scenario, 2014-2035 (USD tn)



Source: IEA (2014)

Almost every asset class in the public and private markets has the opportunity and the necessity to contribute the capital necessary for low carbon technology solutions. **Figure 16** displays current and future options for climate related investment in different asset classes.

While climate change is relevant to all asset classes, the Principles for Responsible Investment's (PRI) 2015 industry assessment found that climate change is only mentioned

by 10% of signatories as an issue affecting investment performance/selection for listed equity, 12% for fixed income, 18% for private equity, 27% for real estate and 48% for infrastructure (PRI 2015). We expect that the 2016 assessment will show higher results, particularly due to the Paris Climate Agreement becoming international law, the FSB Task Force (see Box I and II), and more asset owner requests/requirements.

Figure 16: Asset class climate related investment options

Asset class	Opportunities
Equities	<p>Create low climate risk benchmarks for passive funds and to evaluate active funds</p> <p>Ensure climate is a core part of ESG integration efforts in all active funds</p> <p>Thematic funds: 3% of listed equities have exposure to low carbon technologies but the supply chains for these companies may include 27% of the market (Goldman Sachs Nov 2016)</p> <p>FTSE Russell (June 2016) estimates that 2,400 of 13,400 public companies have green technology revenue equal to USD 2.9 tn, nearly the same size as the market capitalisation of emerging markets companies</p>
Bonds	<p>Climate aligned bonds from corporates and supranational agencies grew from USD 174 bn in 2012 to USD 694 bn in 2015 (labelled green bonds are a subset: USD 77 bn in 2016) CBI (2016)</p> <p>Standard and Poor's concluded that climate change is a global mega-trend for sovereign bonds risk (S&P Nov 2015)</p> <p>Integrate climate risk assessment in all actively managed fixed income funds: starting in 2013, S&P (Oct 2015) found 299 cases where environmental and climate risks resulted in or contributed to a rating revision. In 56 cases, this had a direct and material impact –80% of rating changes were negative</p> <p>Create low climate risk benchmarks for passive corporate bond funds</p> <p>Mortgage backed securities (MBS): Banks and regulators could require the incorporation of energy cost, energy efficiency and green building value into mortgage underwriting and portfolio stress tests to create the potential for green mortgage bonds</p> <p>Policy and market innovation should expand on the USD 1.5 bn+ of asset backed building retrofit green bonds issued (Renovate America Nov 2016)</p>
Infrastructure	<p>Target low-carbon technologies within general infrastructure funds</p> <p>Target urban infrastructure technologies to support smart/compact city growth</p> <p>Consider using the Standard for Sustainable and Resilient Infrastructure (SuRe) to measure and monitor assets' resilience to climate risks (GIB, July 2016)</p>
Real estate	<p>Improve the energy efficiency of buildings (see article #6 in this report)</p> <p>Improve physical climate risk analysis of real estate</p>
Private equity	<p>Opportunities to support the expansion of new technologies, such as in the U.S. or in China</p> <p>Investors can use the private equity climate guide to ask general partners about their climate risk and opportunity identification, regulatory assessment, management and reporting (IIGCC 2016)</p> <p>General partners can use the guide to ask their current and potential investees similar questions</p>
Private debt	<p>Particularly for some emerging markets and/or new sectors/technologies, using public capital to reduce private investor risk is an important way to deploy capital where needed and create new sources of yield for investors that also contribute to sustainability and climate goals</p>

Source: Deutsche AM analysis 2016, Climate Bonds 2016, FTSE Russell June 2016, GIB 2016, IIGCC 2016, S&P May 2014
The example shown is for illustrative purposes and does not represent any particular investment.

5 | Engaging investees and governments

Another route to affect change within companies is through engagement, which is defined as investors seeking to bring about change in ESG issues through dialogue with companies and markets.

Engagement primarily includes written correspondence and investor-company meetings but can escalate to statements to the press and at annual general meetings, shareholder resolutions, voting against approval of a company's annual accounts and even divestment. Investor engagement can cover a wide range of topics from business strategy, performance, risk, capital structure and ESG issues including climate change.

In September 2013, 75 investors with USD 3.5 tn in assets launched the Carbon Asset Risk initiative to ask 45 of the largest fossil fuel companies to disclose the magnitude and improve their management of carbon risks. Since then, the management of six major European oil companies supported shareholder resolutions for the companies to undertake climate stress tests (leading to votes of 98%+ in favour) and wrote a joint letter to the UN calling for a global price on carbon (Ceres 2015). Similar shareholder resolutions received 38% at ExxonMobil and 41% at Chevron (Ceres May 2016).

While more major investors are likely to support similar resolutions in 2017, the appointment of ExxonMobil's CEO as U.S. Secretary of State and the new U.S. government's approach to climate and energy policies will likely affect whether major U.S. investors also support these resolutions. U.S. investors who supported the resolutions at European oil companies have been criticised for not supporting nearly identical resolutions in the U.S., just because management did not support the resolution.

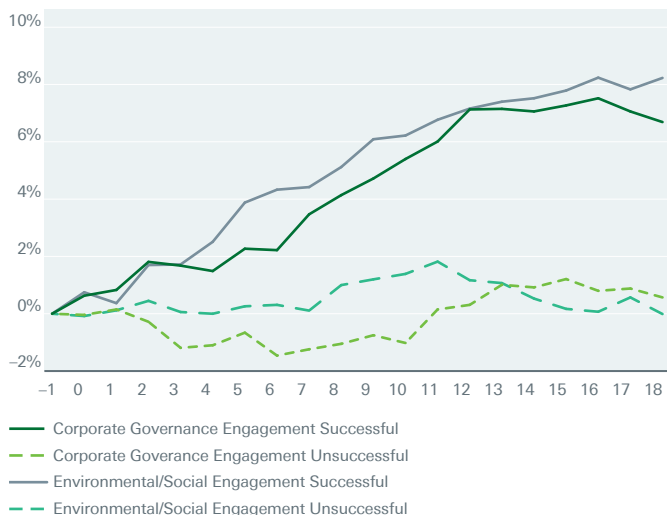
Investor groups have published a series of 'Investor Expectations' for sectors including oil and gas, electric utilities, automotive and the mining industry. These reports provide a guide for investors to have a constructive engagement with company boards to encourage stronger sustainable business strategies. The guides address company governance, operational efficiency, strategy implementation, preparation for physical climate risks, public policy, transparency and disclosure.

Research (Dimson, Karakas and Li, Aug 2015, p.3–4) has found that engagement can have positive financial benefits. Figure 17, show a positive return for companies which made changes following an investor engagement with them on environmental and corporate governance issues. The academics studied 613 U.S. companies engaged by a U.S. asset manager between 1999 and 2009. While it took 2–3

engagements of 1–1.5 years each for a 'success', the time and effort appears to be worthwhile. The companies engaged were large, mature and before engagement had poor performance both financially and reputationally.

Based on a historical analytical comparison to similar firms, the academics found that the year following a successful engagement, the performance of the company improved 7.1% (cumulative abnormal return). The performance improvement was even higher when the investor engagement focused on corporate governance (8.6% cumulative abnormal return) and for climate change (10.3% cumulative abnormal return).

Figure 17: Investment returns from engagement



Source: Dimson, Karakas and Li, Aug 2015

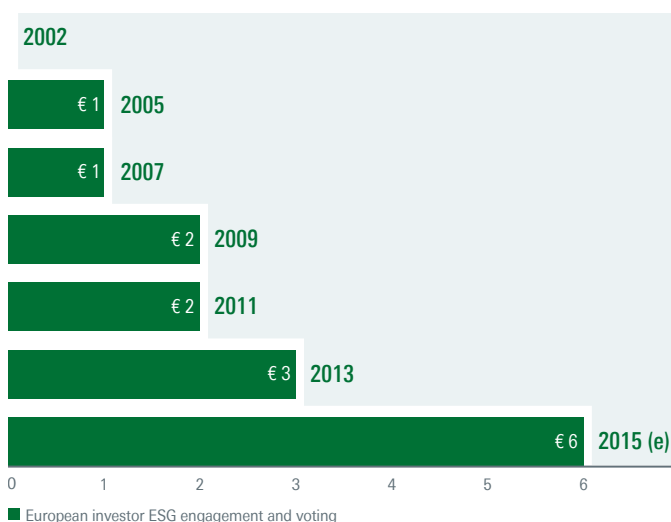
Following a successful engagement, the firms' performance improved, it attracted a wider investor base and had lower stock volatility. For environmental/social engagements, the return on assets and ratio of sales to employees improved significantly, indicating that engagement can improve customer and employee loyalty. Dimson, Karakas and Li (Aug 2015) conclude that "Active ownership attenuates managerial myopia and hence helps to minimize inter-temporal losses of profits and negative externalities".

This finding corresponds with CDP which found that companies in the S&P500 that are actively managing climate risks had an 18% higher return on investment and 67% higher return than companies who did not disclose their emissions.

Companies with stronger climate risk management had 50% lower volatility over the previous ten years and grew dividends 21% more than low scoring peers (CDP 2014).

On other ESG issues, growing numbers of investors are undertaking engagement activities, **Figure 18**. In addition, a number of industry stewardship codes have been created (see article #1 in this report) to encourage engagement. The PRI (2015) also found that asset owners are increasingly engaging directly as well as via their asset managers.

Figure 18: European ESG engagement



Source: Sustainalytics and Cass Business School June 2016

Despite the growth of investor engagement and the positive benefits that engagement can create, the quantity and quality of investor engagement with companies is likely lower than ideal. As well, PRI (2015) found that climate was only mentioned as a focus for 17% of signatories' ESG engagement activities last year. We expect that this figure will be higher for 2016, but this is only within those investors who do undertake broad engagement activities.

The Kay Review of UK Equity Markets and Long-Term Decision-Making (2012) concluded that stewardship or engagement is a core function of equity markets. Kay stated that the focus should be quality not number of engagements. However, the fragmentation of equity markets has reduced the incentives for engagement. Asset manager competition of trying to outperform based on anticipating changes in market prices and keeping fees low, reduces the incentive to undertake engagement. Engagement activities that improve company performance benefits the entire market, which creates under-investment in engagement.

The UK Law Commission (2014), which advises the UK parliament on question of law, concluded that there was not a duty on pension trustees or other investors to undertake stewardship activities (though the UK Pensions and Lifetime Savings Association had suggested that it should be). Asset managers should 'comply or explain' their approach to the Stewardship Code. Requiring engagement would require a change in law.

Assumptions estimates and opinions contained in this document constitute our judgment as of the date of this document and are subject to change without notice. There is no assurance that any assumptions or forecasts will come to pass.

The EU Shareholder Rights Directive became law in late 2016 and member states will have to implement its provisions in national law. Amongst its aims are to increase the level and quality of engagement of asset owners and managers with their investee companies. Essentially the Directive requires investors and asset managers to disclose (or explain why they do not) information on their engagement policy, how engagement is carried out and integrated in their investment strategy, how potential conflicts of interest are handled and the exercising of proxy voting rights (EC 2016).

As countries look to implement this Directive as well as the FSB Task Force recommendations and climate policies more broadly, best practice sharing between investors, regulators and companies is needed.

The PRI's annual evaluation of signatories does include a section on engagement and proxy voting. Signatories are evaluated by the PRI on the objectives of their engagement activities, the number and intensity of companies engaged by the investor and collectively with other investors, the percentage of votes cast and whether companies were informed of the rationale for abstaining/voting against management.

We also expect asset owners to put more weight on engagement when deciding to award investment mandates. Given the positive benefits of engagement, incorporating engagement requirements in investment mandates would be in asset owners' own interests. However, balancing how this is paid for may need discussion between asset owners and managers, particularly for passive strategies.

Mercer (Feb 2015) established an ESG rating for passively managed funds but did not award a top score in their evaluation of five of the world's largest passive fund managers. Mercer evaluated how well passive fund managers undertook proxy voting, engagement, industry collaboration and ESG reporting.

A Mercer researcher stated "Passive investors have a clear financial interest in the long-term welfare of companies they invest in, but they are unable to take direct action through buying and selling stocks as active managers do. As they can't walk away from companies that underperform, engagement with companies should be a core function for investment firms that manage passive strategies". ESG and climate focused benchmarks can be created that would exclude companies or allow companies to rejoin an index if they improved their ESG and climate related policies and practices.

While passively managed strategies have grown rapidly, ESG engagement is not a common practice. We expect this will change as leading asset owners look to secure the benefits of engagement and as asset managers aim to differentiate their offering.

Policy engagement

Investors played an important role in encouraging governments to reach and then ratify the Paris Climate Agreement.

A survey of PRI (2015) signatories found that 76% believed the PRI have a role in influencing policy to support long-term sustainable investment practices. However, of 814 PRI signatories only 332 (41%) indicated that they—individually or in collaboration with others—had conducted dialogue with public policy makers or regulators in 2014. While 63% of PRI asset owner signatories engaged policy makers in 2015 (a slight increase from 2014), only 50% of asset managers engaged policy makers in 2015 (which was a slight decrease from 2014). More PRI signatories in the UK and Australia undertook climate policy engagement in 2015 than in other regions.

The PRI (2014) published a report on the case for institutional investors to undertake public policy engagement, case studies and lessons learned and practical recommendations for investors and policy-makers to better account for ESG factors in public policymaking.

In the forward to the report, Lord Adair Turner (former head of the UK financial regulator and the UK's official climate change policy advisory committee) stated:

"Individual and voluntary action alone cannot deliver a financial system appropriately focused on long-term objectives. Public policy is also needed. Without public standards on disclosure of risk, less responsible companies and investing institutions may enjoy short-term advantages. Without a clear commitment to robust carbon pricing, the incentives to develop clean energy and improve energy efficiency will still be too weak. Financial institutions which want to adopt long-term horizons and to act responsibly in investors and society's long term interest, cannot therefore avoid engagement in the public policy debates which will shape the context in which they operate."

One of the Principles for Responsible Investment is that signatories commit to identify and remove "obstacles to a sustainable financial system that lie within market practices, structures and regulation". Despite this requirement, investors may be sceptical about whether public policy engagement makes a difference, a lack of understanding of how to influence policy processes or be concerned about the costs and time-frames involved.

The PRI report addresses each of these concerns by examining how investors played key roles in creating changes in corporate and investor ESG disclosure in France, the EU's insurance sector regulations, Japan's Stewardship Code, South Africa's Code for Responsible Investing, and U.S. SEC guidance on corporate climate change disclosure.

One of the main ways investors have been active in the area of climate policy is through the four regional groups of the Global Investor Coalition on Climate:

- Institutional Investors Group on Climate Change (IIGCC—Europe)

- Investor Network on Climate Risk (INCR—North America)
- Investors Group on Climate Change (IGCC—Australia and New Zealand)
- Asia Investors Group on Climate Change (AIGCC)

Collectively these groups have more than 250 investors with assets of over USD 24 tn. While their membership has been growing over the past several years, PRI signatories have USD 59 tn in assets. This indicates that many more investors do not act cooperatively on climate policy by, for instance, meeting with and writing letters to policy makers.

6 | Conclusion

The physical, regulatory and transition risks associated with climate change are capturing increasing attention among policymakers, regulators and investors. We view the work of the FSB's Task Force on Climate-related Financial Disclosure as critical in delivering enhanced climate risk data. The Task Force's work, if widely adopted, will enable investors not only to measure more accurately the degree of climate associated risk in their portfolios, but it will also facilitate the debate as to whether and how investors want to address these risks. Indeed the climate risk debate is intensifying as investors consider the various merits of fossil fuel divestment, investor engagement and/or climate investment solutions. Despite certainties, climate change is a material risk that investors can and should begin managing with a variety of tools and approaches.

Indeed we find an increasing number of asset owners adopting low carbon commitments. This involves not only reducing or excluding completely holdings in the fossil fuel sector, but, also raising allocations to green investments such as clean energy and green infrastructure. We expect these activities will continue not least given the relentless march of legislation in this area and the associated portfolio risks this entails.

One of the aims of engagement with fossil fuel companies is to deliver more transparency in their investment decisions. Shareholders can assist management in assessing how certain activities will impact the climate, such as high-cost high-carbon capital expenditures. Consequently more scrutiny can be placed on such carbon intensive projects. Engagement can also be justified on the expectation of extracting superior returns.

Investors are becoming increasingly engaged in policy initiatives and governments are appropriately giving their suggestions more weight due to their long-term ESG and financial perspectives. This trend is likely to be encouraged by forward looking asset owners rewarding asset managers who undertake policy engagement, regulators encouraging or allowing asset owners and managers to engage on policy issues and by investors looking to differentiate themselves, gain advance knowledge of new policies and to improve the market for ESG and low climate risk investment solutions.

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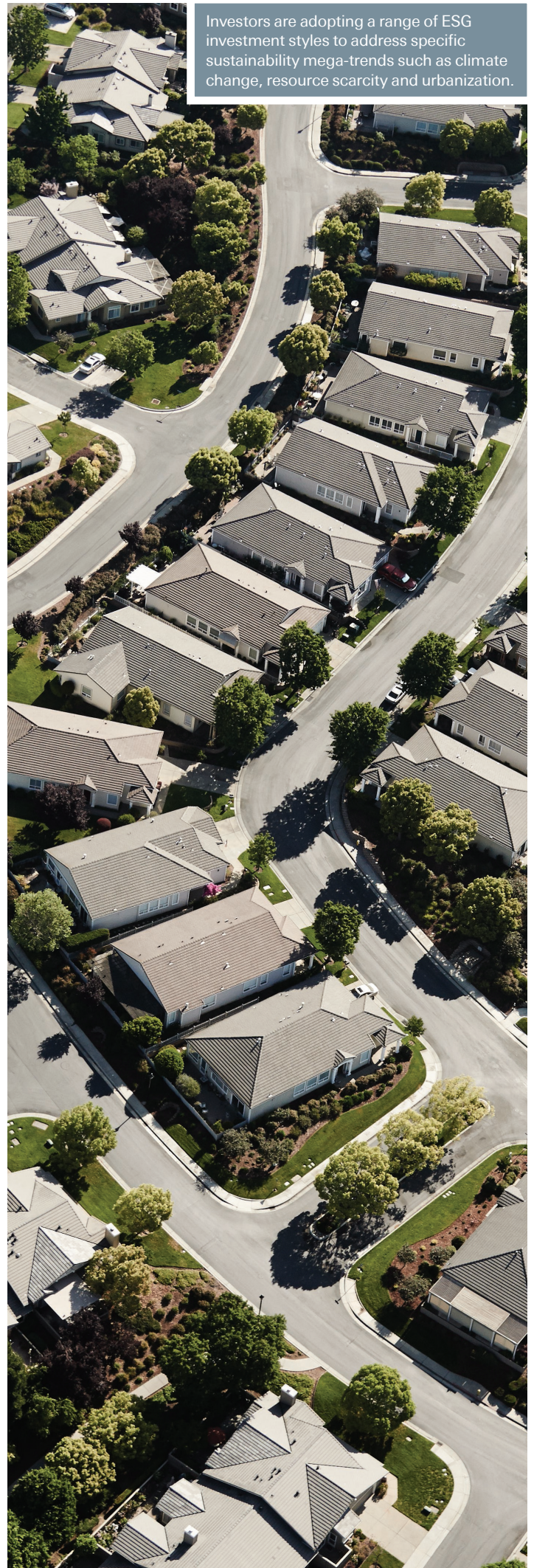
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