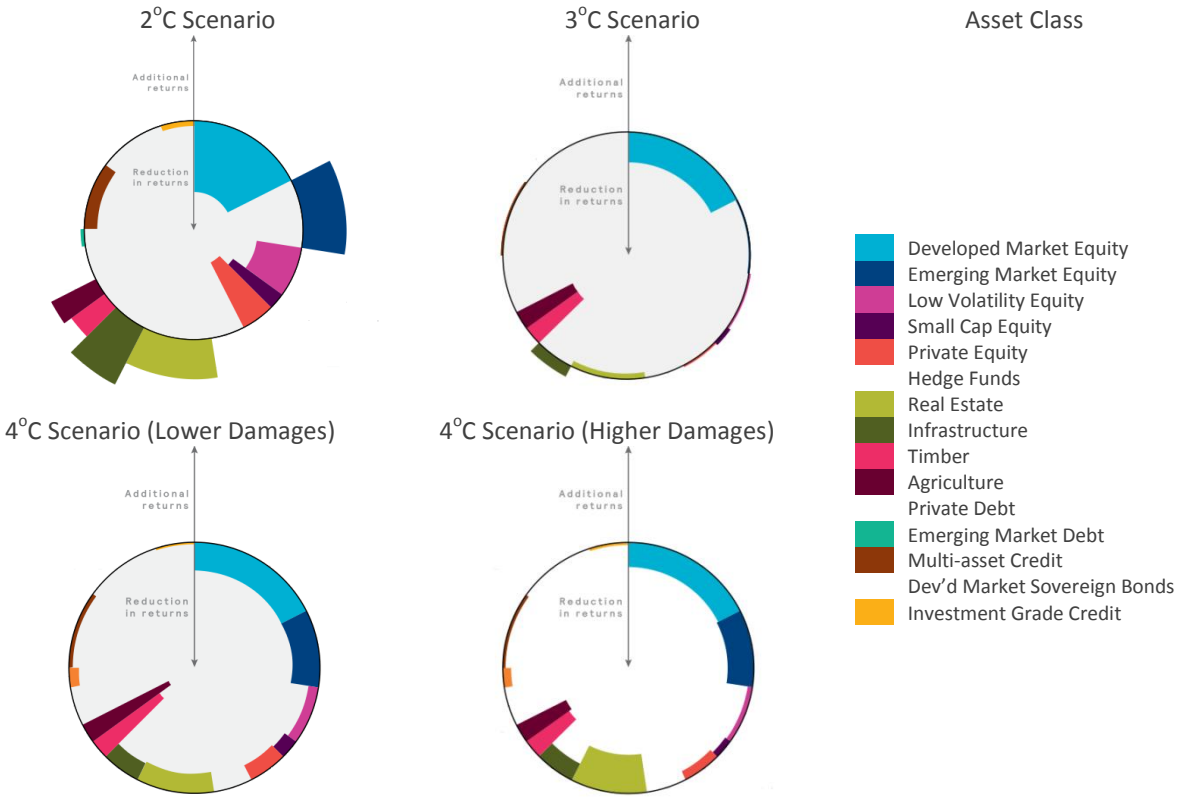
1.5 degrees
Meeting the challenges of the Paris Agreement

Financing 1.5 Degrees

Lucas Kruitwagen | DPhil Candidate, Smith School of Enterprise and the Environment

The 1.5 degrees conference occurred during an ongoing shift in the finance industry's understanding of and response to the challenges of climate change. Investment in renewable energy continues to break records; new climate regulatory environments effect asset values; the groundswell 350.org's fossil fuel divestment campaign erodes the social license to operate of fossil fuel producers; extreme weather events draw increasing attention to climate change risks; new litigation cases are being targeted at companies who have damaged the climate or obstructed climate progress; and the economic benefits of decarbonisation continue to become more clear.

The investment community had an unprecedented presence at COP21 in Paris. Initiatives like the Institutional Investors Group on Climate Change (representing US$13tn in assets-under-management (AUM)), the Investor Network on Climate Risk (US$14tn in AUM), the Investor Group on Climate Change (US$1tn AUM), and the Asia Investor Group on Climate Change are now engaging directly with companies and policy makers on climate change risks and what these mean for investors. French institutional investors to will soon be required to disclose how they are managing climate change risks. The US Securities and Exchange Commission (SEC) has had a guideline for climate disclosure since 2010. The Task Force on Climate-Related Financial Disclosure will release its recommendations to the G20's Financial Stability Board at the end of December 2016. It is now more clear than ever that everyone loses in a 3°C or 4°C world – the only way for investors to protect value is to smoothly transition to a less-than-2°C warming pathway.



Median annual return impact over 10 years. Adapted from Mercer LLC (2015) *Investing in a time of climate change*. Presented at the 1.5 Degrees Conference, 21-22 September 2016, Oxford, UK.

The scale of this transition challenge is immense. The International Energy Agency estimates that though 2035 an additional US$5tn must be mobilised towards climate mitigation solutions in order to achieve even a 2°C warming pathway, let alone a 1.5°C pathway. Approximately US$4tn must be directed away from fossil fuel supply toward efficiency and even more must be redirected from fossil-fired power towards low-carbon and renewable electricity. Ceres, a business and investment sustainability non-profit, calls for an additional US$1tn in annual cleantech investment – commiserate with an 80% chance of limiting warming to 2°C and quadruple the cleantech spending in 2012. The barriers to this scale of mobilisation include the distortive economic effects of fossil fuel subsidies, and the maintenance of efficiency and stability through the rapid destruction of some sectors of the economy and the construction of others.

The future warming of the planet is largely dependent on the extent to which the *Global South* follows a low-carbon development path or a high-carbon path – clearly linking climate and development finance. The global south is also acutely more vulnerable to damage from climate change, meaning climate finance must include both finance for mitigation of and adaptation to climate change. New instruments, enhanced measurement and governance, and engagement with public financial institutions is necessary to de-risk investment in climate solutions in the Global South, and to mobilise the private sector to deliver the scale of transition necessary.

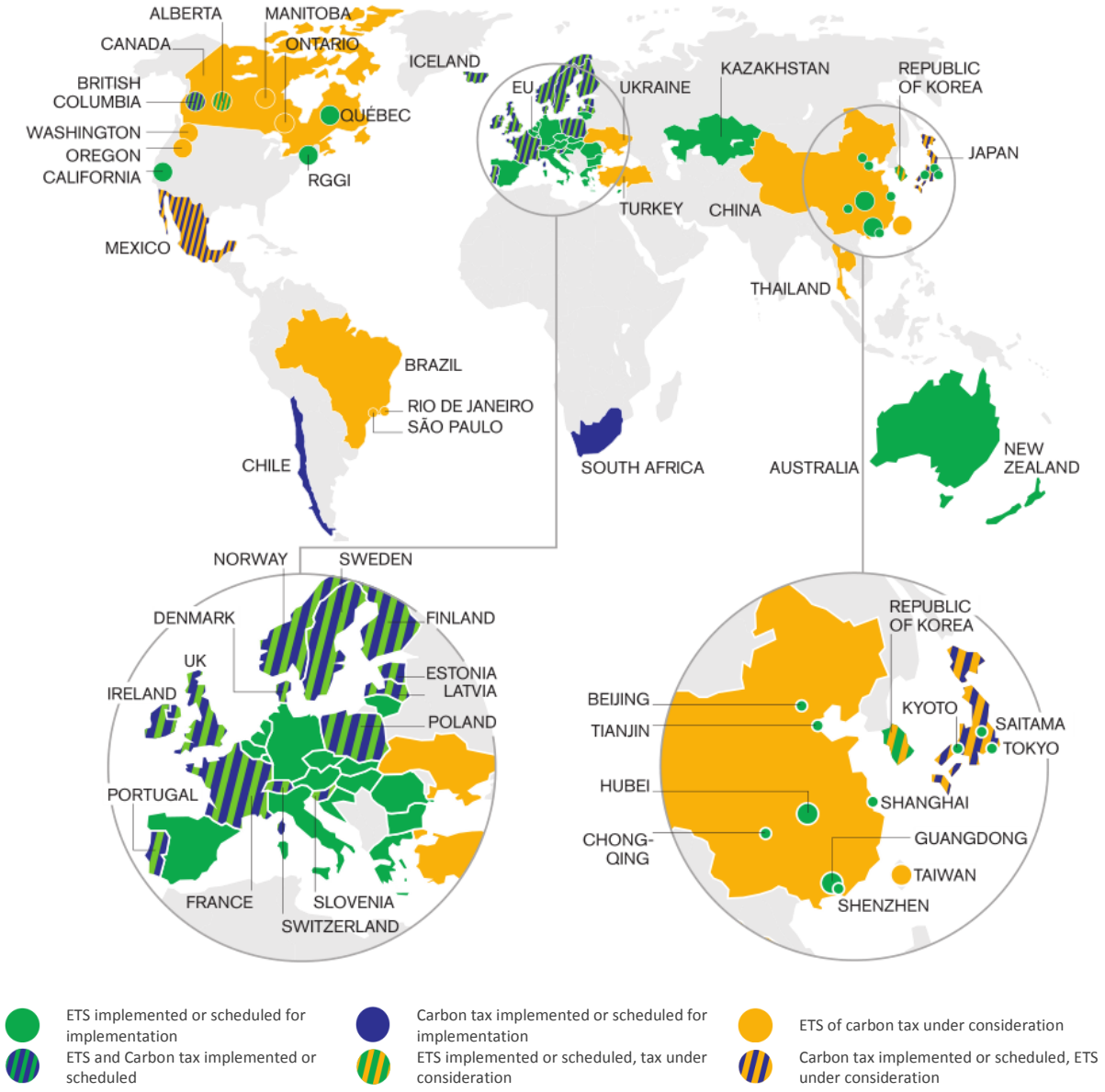
Redirecting Capital

To achieve a 1.5°C warming pathway, governments, companies, and capital markets must immediately redirect capital away from fossil-fuel extractive and greenhouse-gas emitting activities. It may already be too late to achieve a 1.5°C warming pathway without stranding existing real-economy assets (like producing oil and gas fields or power stations) - let alone paper assets like oil and gas proven reserves. Peter Wheeler of the Nature Conservancy suggested that the economy needs a "shove … as hard and as early as possible" in order to reduce the costs of achieving a 1.5°C warming pathway.

Fossil fuel subsidies have distortive economic effects on the ability and interest of financial actors to shift capital away from fossil fuel extraction value chains. Not only subsidised 'at the pump', fossil fuel value chains are also subsidised in production and in financing via export credit agencies and development banks. Estimates in fossil fuel subsidies range from the approximate $500bn of the IEA to the over $5.3tn of the International Monetary Fund – which includes the environmental and health externalities of carbon and conventional pollution.

Appropriate incentives must be aligned in order to smoothly transition capital away from climate-destroying industries to climate-benign and climate-positive industries. The scale of transition necessary is massive; the four largest energy companies alone (ExxonMobil, Chevron, Shell, and BP) represent approximately 4% of the combined market capitalisation of the New York Stock Exchange and the London Stock Exchange. These venerable giants have deeply entrenched political interests, through both their lobbying efforts and the substantial licence, royalty, and tax revenue they provide to governments. Many countries in the Global South are considering fossil fuel extraction as a development pathway – incentives to restrict or prevent fossil fuel extraction must be commiserate with the amount of growth such projects would provide.

Incentivising the transition to a net-zero-carbon economy will likely include capturing the environmental externality of carbon pollution. The most direct way to capture the environmental externality of carbon pollution is by imposing a price on carbon, either by a tax or quota in the form of an emissions trading scheme. Carbon pricing is now found on every continent and has raised over US$20bn in revenue, either to be redistributed or directed towards renewable energy or cleantech subsidies. By 2017, carbon pricing is expected to cover approximately 13% of global emissions, up from less than 1% prior to 2005. By redirecting capital away from climate-destroying sectors and by providing the correct incentives for carbon-free investment, the stage will be set to unlock private sector finance at the scale required to achieve a 1.5°C pathway.



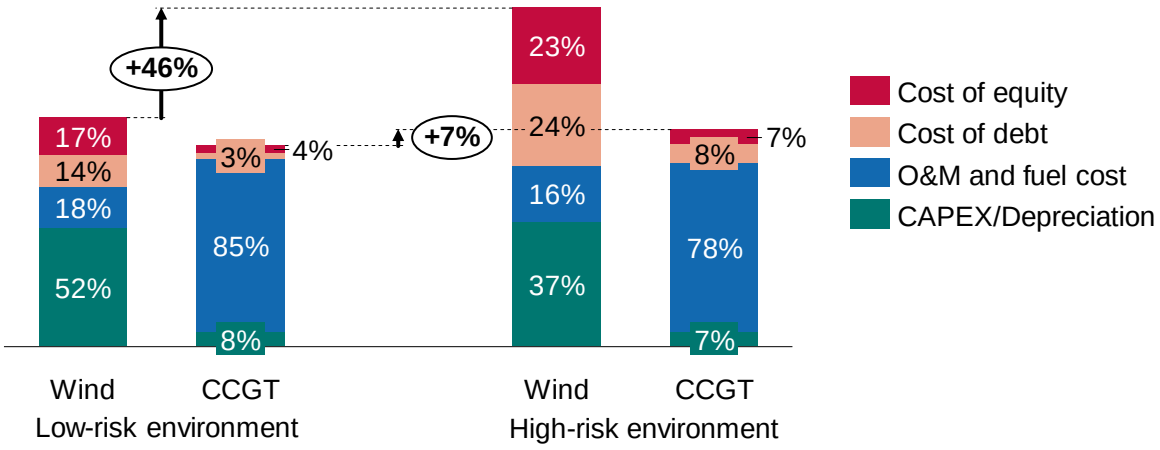
Adapted from World Bank Group & Ecofys (2016) *Carbon Pricing Watch 2016.* Presented at Presented at the 1.5 Degrees Conference, 21-22 September 2016, Oxford, UK.

Unlocking Scale

Delivering the US$1tn annual investment needed to fund the transition to 2°C or less will require the full mobilisation of the private sector – including corporates and capital markets. A 1.5°C pathway, even more than a 2°C pathway, involves substantial flows of capital from the Global North to the Global South, where the additional finance is required to avoid high-carbon development pathways. Private sector climate finance has encountered barriers similar to those in development finance, namely that political risk and insufficient impact measurement prevent investment at a meaningful scale. New finance instruments and key public actors have the ability to alleviate these barriers – the race is on to efficiently deliver capital at the pace necessary to reach a 1.5°C pathway.

In financing new electricity generating capacity in the Global South, renewables have a large disadvantage. Relative to fossil-fuel fired generation, renewables have higher capital costs but much

lower operating costs. The overall project costs are therefore highly sensitive to the discount rate applied when financing the upfront costs. Many countries in the Global South are often assessed to carry substantial political risk – that is, risk that political decisions or events could adversely affect the profitability of an investment. This increased risk can increase the lifetime costs of a project by as much as 50% and has a much more adverse effect on financing renewables than fossil-fired power.



Graphic from Schmidt, T. S. (2014) 'Low-carbon investment risks and de-risking', *Nature Climate Change,* 4(4):237-239. Presented at the 1.5 Degrees Conference, 21-22 September 2016, Oxford, UK.

State investment banks have a critical role to play in de-risking private sector investments in climate solutions in the Global South. As first-movers, state investment banks are critical actors in driving 'learning by doing', bringing down both capital costs and risk premiums. The early projects by these banks build human capacity and standard deal structures in both the implementing organisations in the Global South and in finance centres in the Global North. As large influential agents, state investment banks can engage with policy makers to mitigate political risk directly, or might offer political risk insurance products to the private sector. Ultimately, state or green investment banks unlock co-finance by the private sector multiple times their own investment, and should continue to seek strategic opportunities to magnify their influence further.

Investors require measurement, reporting, and verification of their climate finance investments in order to certify their climate impact and to efficiently manage risk in their portfolios. Measurement and verification of the impact of individual investments is time consuming and expensive, adding prohibitive costs to the investment value chain and preventing climate finance from providing competitive returns to investors.

New investment products hold potential to streamline measurement, reporting, and verification processes, allowing capital to be efficiently deployed at scale in climate solutions. Green bond issuances have grown from US$3bn in 2012 to US$42bn in 2015 and may double again in 2016. Green bonds provide debt financing for 'green' projects – projects which meet a set of standards consistent with the changes necessary to achieve 2°C and 1.5°C warming and which have clear frameworks for measurement and verification. These bonds are easily incorporated into the portfolios and practises of mainstream investors, potentially unlocking the global US$100tn pool of private fixed-income capital. YieldCos and other pooled vehicles may have may have a similar standardising and aggregating impact in unlocking 'green' equity finance.

Only hours after the conclusion of the 1.5 degrees conference in Oxford, Mark Carney, Governor of the Bank of England speaking in Berlin, called green finance 'a major opportunity… to promote financial stability … and increase the prospects for an environmentally sustainable recovery in global growth'. While the scale of capital is demanding and the barriers to shifting deployment are substantial, the financial system is showing progress in transitioning to a 2°C warming pathway. Whether the progress will be sufficient to stretch to a 1.5°C warming pathway remains to be seen.