Capital Shift



Using the UK's COP26 and G7 presidencies to green the financial system

By Benedict McAleenan and Dr Ben Caldecott Foreword by Anthony Browne MP



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Foreword

Anthony Browne MP

Member of the Treasury Select Committee of the House of Commons, Chair of the APPG on the Environment and former CEO of the British Bankers Association.

Why did the credit and wider financial system only take off in the last 400 years? It's not that money was invented in this period – that has been around for millennia in various forms. Nor was it that the notion of credit only recently appeared – we can see discussions of borrowing and lending in the Bible and before. The fundamental difference, as argued by the Israeli writer Yuval Noah Harari in his book *Sapiens*, is that humanity has experienced a fundamental shift in its belief about the future. In previous eras, humans looked to the good old days for inspiration, to Rome, to Greece, to the mythical beginnings of man. There was a general belief that humanity had erred and long-term decline was inevitable. So why invest in the future if it is going to be worse than the present? Philosophically, there was no value in risk.

That all changed with the dawn of the scientific revolution. Science showed that new ideas and technologies could create a better future, so it was worth risking today's wealth for something better tomorrow. The future was also more predictable through better ways to calculate and price risk. Thus credit and insurance flourished in a more optimistic world. Scientists, inventors and explorers with an inspiring vision of the future looked to finance to help turn those visions into reality. Whereas Christopher Columbus had to beg royalty and aristocrats to fund his transatlantic voyage, banks and insurers made distant seafaring a possibility for thousands more through the nascent financial sector.

This enabling role still sits at the heart of finance today. Contrary to popular perception, the financial system doesn't exist to make fat cats fatter, but to facilitate society in solving its problems and achieving a better world. Without the investment of shareholders in AstraZeneca, or insurers, or banks, the UK's world-leading vaccine programme might still be stuck in one of Oxford University's labs.

Since this is the central role of the financial system – enabling a brighter future by letting people take risks and invent new solutions – then there can be few better challenges for it than climate change. Around the world, societies have woken up to the fact that this disaster is already happening and that we must take urgent action to replace polluting technologies and business models with something new and sustainable. The financial system must help to make that happen.

In this excellent new report from Policy Exchange, the authors make the case for the UK to lead financial reforms that would align the financial system with that sustainable agenda. As they rightly point out, markets are not accurately pricing in systemic financial risks caused by climate change. From mortgages attached to housing on flood plains, to commodities futures exposed to ecological volatility, to pensions invested in fossil fuel companies, environment-related risks stretch into almost every aspect of the system. As Mark Carney put it, "changes in climate policies, new technologies and growing physical risks will prompt reassessments of the values of virtually every financial asset."

This inability to identify and assess environment-related risks properly makes the market less able to distinguish efficiently between investments that are low-risk and can help solve the problem, and those that are making the problem worse. This is not necessarily the fault of financial institutions. In many cases, it is the fault of public and central bank policies.

Take, for example, quantitative easing. Once seen as an exceptional tool for liquidity emergencies, it now looks to be a more permanent feature of central bank interventions. Yet the QE programmes of most central banks do not include an assessment of environment-related risks when buying corporate assets. This serves to entrench existing norms, which makes transition to a more sustainable alternative much harder to achieve. It also dampens risk signals in the market, including those related to the environment.

As the authors point out, there are other systemic failures to recognise environmental risks in finance. Whereas international banking codes require banks to include emerging risks such as cybersecurity in capital adequacy compliance (the 'rainy day funds' designed to prevent banks collapsing), climate change barely features. The evidence base on physical risks is lacking, leading to this report's recommendation for a global project for mapping the physical economy using satellites and AI. There is also a lack of standardisation in risk reporting, so that institutions find it harder to acquire good information about environment-related risks in their lending, insurance contracts or investments. All of this must be addressed and I applaud the authors of this report for offering credible options to do so.

Yet risk is only part of the story. We all know that hedging, regulatory arbitrage, biases and other market behaviours mean that risk can be managed without changing the underlying economic activity. The report argues for mandatory transition plans for the most systemically significant firms. That would help to move the dial at the global level if adopted by the largest economies.

The UK has already led the way on many of these issues. The City of London is the world leader in sustainable finance – the services that will enable society's transition. Last November, the Chancellor announced plans for the UK to implement the recommendations of the Taskforce on Climate-related Financial Disclosures. The Government has committed £10 million to establish a new UK-wide Centre for Greening Finance & Investment, with innovation hubs in Leeds and London. These show global leadership, but even the Prime Minister would admit they are just the tip of the iceberg.

Now, in 2021, we have the diplomatic opportunity to bring the world with us. Through our leadership at the G7, COP26 and in other international work, the UK will help to transform global finance to enable a worldwide shift towards a sustainable economy. This report sets out a comprehensive programme for doing so and I welcome its important addition to a vital debate.

Executive Summary

Introduction

- The UK has a unique opportunity to play a central role in greening the global financial system. As the host of COP26 in late 2021, the president of the G7, and a key participant in both the G20 and the Commonwealth Heads of Government Meeting, the UK will be a central player in the year's diplomatic calendar.
- 2021 also presents the confluence of other relevant factors. In the closing phases of the COVID-19 pandemic, there is a rare opportunity for reform and 'green recovery'. The arrival of the Biden administration, which has prioritised action on climate change, has also added momentum. Finally, several major economies around the world have announced plans for reaching 'net zero' by mid century.
- The UK should leverage its position to push through reforms that radically align the financial system with these goals. The financial system inevitably has a key role to play in the shift to a carbon-neutral and nature-positive economy.
- In making our recommendations, we have pursued three fundamental principles:
 - The financial system exists to provide credit, insurance and related services to support society's wider economic aims.
 - Financial regulation, prudential regulation and monetary interventions should be broadly in line with, not in conflict with, wider government policy.
 - Where there are clear systemic risks, financial regulators should require these to be disclosed and managed down.

Section One: Environmental risks to financial stability

- Climate and wider environmental change present serious risks to financial stability. These risks split into two broad categories:
 - Physical risks, which are the risks posed to assets from a changing environment. These include changes in weather patterns, disruptions to agricultural systems, long-run temperature changes, changing sea levels and desertification.
 - Transition risks, which relate to society's response to environmental change. These include changes to public policy, public attitudes, consumer behaviours, legal precedents and technologies.

- These risks create the prospect of 'stranded assets'. Stranded assets are not able to fulfil their expected economic value and so find themselves abandoned or decommissioned before the end of their expected economic life. This can happen suddenly, perhaps as the result of an unexpected revelation of underlying risks, as happened during the 2008 financial crisis when assets were reassessed and dramatically devalued or written off. It can also happen slowly, for example as insurance risks are progressively reassessed and premiums rise incrementally, devaluing assets in the process.
- The scale of these risks is unknown due to lack of systematic assessment, but studies to date suggest that exposure is 'sizeable but also manageable'. This indicates that integrating environment-related risk assessment, disclosure and redress would allow managers to reduce such risks over time. The market appears to be failing to price such risks appropriately, making legislative and supervisory intervention necessary.

Section Two: Monitoring and managing environmentrelated risks

- The Taskforce on Climate-related Financial Disclosures (TCFD) arose from the G20 to produce a framework for companies to disclose climate-related risk exposures. The UK is one of a few nations to mandate its recommendations across the whole economy. We argue that the UK should use its leading position to encourage other major economies to do the same, mandating the TCFD globally.
- There is also a need for a Taskforce on Nature-related Financial Disclosures (TNFD), which will set out how companies should disclose their exposure to issues such as deforestation and habitat loss, pollution and biodiversity decline. These should be developed quickly and mandated alongside the TCFD, reflecting the equivalent and overlapping but distinct threat of ecological disruption.
- Action on these risks should go beyond simply disclosing them. Just as regulators weight capital adequacy requirements (the 'rainy day funds' that banks and others must hold so that they can absorb the shock of failed loans and investments) according to other forms of risk, so should they reflect environment-related risks. This will encourage financial firms to shift capital in portfolios and loanbooks towards assets with lower environment-related risks.
- The Bank of England Prudential Regulation Authority's 'Senior Managers Regime' was introduced in the aftermath of the 2008 financial crisis, in order to make company boards and clearly identified senior managers responsible for the riskiness of their investments. Since 2019, this has been extended to climate-related risks. The Bank of England notes that it has already begun to raise

professional standards. We argue that the UK should promote this as a model that should be adopted globally.

- Asset purchase schemes, also known as quantitative easing, have become a major element in monetary policy in the past decade, despite being considered an 'unconventional' monetary tool. The process involves central banks purchasing the financial assets of particular firms in order to raise liquidity in the economy, which also has the effect of benefitting the firms in question. We argue that such schemes should be adjusted to reflect the higher risks of asset stranding caused by environment-related events. This is in line with central banks' risk-based asset selection, reflects wider economic policy and also echoes the need for changes to capital adequacy requirements.
- Although the concept of market neutrality is often deployed to argue against such action by central banks, we find that it is flexible enough to encompass environment-related risks. Market neutrality is currently not applied uniformly by central banks, which make various policy decisions about asset classes, economic sectors, risk profiles and social impacts within their asset purchase schemes. So long as a broad-based approach can be taken, market neutrality is not significantly at odds with avoiding the assets of firms with exposures to environment-related risks.
- There is also a need to update the ways in which risk data on assets is collected at source. Advances in earth observation from satellites and other sensors combined with AI and data science make it possible to build a clear digital map of the entire physical economy. The UK should champion a new global project, analogous to the Human Genome Project, to map and decode the whole world's assets, allowing investors, insurers, and lenders to monitor the environment-related risks affecting those assets in near real time.

Section Three: Aligning finance and investment with environmental outcomes

- Risk disclosure is not enough to ensure a reallocation of capital and changes in business practices in a way that makes the economy compatible with environmental objectives. For example, companies can hedge against risk and not change their underlying behaviour. Continuing with these behaviours can continue to increase risk for everyone, by contributing to climate and environmental change.
- We argue that all supervised firms should be required to adopt plans for 'Alignment with Environmental Outcomes' (AEO). This means creating transition plans for portfolios, loanbooks and underwritten assets. Such plans should be aligned to key environmental targets, such as keeping to well below 2°C of climate change as per the Paris Agreement, and eradicating activities such as deforestation, moving instead towards 'nature positive by 2030' (i.e. supporting

nature's recovery by 2030).

- Most companies will also need support in delivering this important transition. The financial sector exists in order to enable the rest of the economy to go about its business, which is why societies have been willing to bail out banks and other firms at times of financial crisis. It should also provide this societal service for the transition to net zero and nature positive. 'Transition finance' describes the range of financial products and services needed to do this. Arguably, all finance should become 'transition finance'.
- The development of transition finance products and services will need better KPIs for use internationally. The UK Government, with Italy as G20 president, should take a lead with industry to develop these, including relevant data standards and sources.
- With the development of relevant KPIs and the adoption of transition plans among supervised firms, larger listed and nonlisted firms should also follow suit. The UK should mandate premium listed firms on UK exchanges to adopt such transition plans and make them subject to a distinct shareholder vote at the company's Annual General Meeting.
- Governments at the G7, G20 and COP26 should also agree to make public finance above a certain threshold – from bailouts to export finance and other support mechanisms – conditional on the counterparty having AEO transition plans in place.
- To embed these transition approaches in corporate culture, we propose a new process to develop a new gold standard in corporate governance and stewardship. The Commonwealth is a good setting for building a 'King V' standard of corporate governance, developing the work of South Africa's world-leading King Committee. This would make explicit the need for action on environmental risks at the board and senior management levels. The UK's Stewardship Code which sets norms for ensuring that firms create long-term value for society is also a world-leading standard. The UK should use its influential position internationally to promote it as a model for global adoption and mandation among supervised financial firms.

Section Four: The Case for Principles-Based Regulation

- The UK has been a pioneer in principles-based financial regulation, as opposed to rules-based. Principles-based regulation sets broader expectations about standards of corporate behaviour, rather than specific rules that must not be transgressed. This approach sits naturally with the UK's 'common law' tradition.
- Principles-based regulation is more suited to the development of sustainable finance because it is more adaptable, better at setting cultural standards rather than box-ticking, is less vulnerable to political capture and can be applied internationally.
- The UK should join with other countries that share the common

law approach – including Australia, Canada, the USA and many Commonwealth members – to promote principles-based regulation as the underlying framework for green finance.

Section Five: Strategy and recommendations

- The UK should treat 2021 as a coherent round of diplomatic summits for developing a programme of reforms, culminating at COP26.
- Two partnerships will be particularly central. The first is the USA, which plans to host a climate summit for 'major economies' in Biden's first hundred days. The second is Italy, which is working in partnership with the UK on COP26, but also presiding over the G20 this year. The G20 has a focus on finance and is therefore important in this context.
- There is also an important role for China, as host of the Convention on Biological Diversity's COP15. China should be encouraged to participate in this broader process.

Timeline

Our recommendations (see below for a full list) should be actioned as quickly as possible, but can be phased in over time to ensure their successful adoption by the whole financial system. We suggest a timeline as follows:

	Immediate implementation	Short-term
	(2021-2022)	(2022-2025)
Enhancing environment- related risk management	 Create a Taskforce on Nature-related Financial Disclosures, roll it into the TCFD, mandate it across the economy. Countries around the world should adopt roadmaps for TCFD and TNFD- aligned regimes across their economies. Launch an international coalition to map all physical assets using satellites and associated technologies. Apply lower capital charges for green infrastructure. Develop a roadmap for phasing-in higher capital charges for assets with higher environment-related ricke 	 In 2022, begin phase-in of higher capital charges for assets with higher environment-related risks. Complete phase-in by 2025. From 2022, central banks should include environment-related risks as a filter within their asset purchase schemes. By 2022, all G7 nations should have short-term plans for implementing TCFD/TNFD-compliant regimes. By 2025, G20 nations should have short-term plans for implementing TCFD/TNFD-compliant regimes.
Align finance and investment with environment- related outcomes	 Require supervised firms to produce transition plans aligned with net zero and the 'nature positive by 2030' target. All public finance should require recipients to have 	• Require premium listed firms to produce transition plans aligned with net zero and the 'nature positive by 2030' target, and put these to a shareholder vote on a regular basis.
	 transition plans in place. A new, voluntary gold standard of corporate governance should be complete and available for international adoption by 2023. 	 By 2025, all portfolios and loanbooks should be free of nature- degrading activities such as deforestation.

Summary of recommendations

- 1. The UK should mandate nature-related financial risk disclosures within its prudential disclosure regime, in the same way it has set out plans to mandate climate-related financial risks.
- 2. The UK should use its presidency of the G7 to spur other major economies to require the use of climate-related and nature-related frameworks for financial risk disclosures, specifically the TCFD and the forthcoming TNFD.
- 3. Central banks and supervisors should introduce higher capital charges for assets at greater risk from climate and nature-related financial risks. This can be phased in over time, allowing the financial system to adapt. Lower capital charges on green infrastructure should be introduced immediately where high-quality, science-based taxonomies exist to identify appropriate assets.
- 4. The UK should work to promote principles-based financial regulation, which is better suited to enabling the successful sustained growth and development of sustainable finance than rules-based approaches.
- 5. The UK should promote the Bank of England's Supervisory Statement, using it as a model to mandate action on environmentrelated risks at the board and management level of supervised firms globally.
- 6. Central banks should design asset purchase schemes to take account of the environment-related risks associated with corporate assets and bond issuers.
- 7. The UK should lead a coalition to create the first comprehensive digital map of all physical assets in the world through the use of earth observation from satellites and other sensors combined with AI, data science, and financial data.
- 8. The UK should require supervised financial firms to design and disclose on a comply or explain basis targets and transition plans that remove environment-related risks and negative environmental externalities from portfolios and loanbooks over time. It should then promote this approach internationally.
- 9. The UK should also require premium listed firms on UK stock exchanges to produce similar transition plans regarding their own commercial interests. Such plans should be put to a distinct shareholder vote at the firm's AGM.
- 10. All public finance, whether bailouts, credit facilities, or export

finance, should be made conditional on sustainability performance linked to achieving key environmental thresholds.

- 11. A new, voluntary gold standard in corporate governance and stewardship can be developed and promoted, including through COP26, the G7, and the Commonwealth. The Commonwealth Heads of Government Meeting takes place in June 2021.
- 12. The UK's green taxonomy should be based on scientific evidence alone, rather than on the EU's model that includes significant industry representation. The UK should also develop a brown taxonomy that defines polluting activities that need to be phased out and by when.

Glossary

Asset purchase schemes	A form of quantitative easing (QE), an unconventional tool in monetary policy that has become common in recent years. Asset purchase schemes involve a central bank purchasing bonds and other assets from governments and companies in order to inject money into the economy, thereby increasing liquidity. QE is known as a modern form of 'printing money'.
Basel I, II & III	A set of banking standards developed by the Basel Committee on Banking Supervision. Basel I (1988) created methodologies for assessing banks' credit risks. Basel II (2004) aimed to make capital allocation more risk-sensitive and enhance market disclosures, as well as reducing regulatory arbitrage (playing one jurisdiction off against another). Basel II was in the process of implementation when the 2008 financial crisis hit.
	Basel III (2010) was developed in the aftermath of the 2008 financial crisis and created stricter rules to remedy the regulatory failures that allowed that crisis to occur. It more than doubled the amount that banks must hold in common equity to fund their risk-weighted assets. It also introduced leverage ratios and liquidity requirements.
Basel Committee on Banking Supervision (BCBS)	A group of central banks and regulatory supervisors from 28 jurisdictions, formed in 1974 to develop cross-border banking regulatory standards. The BCBS is responsible for the Basel I, II and III accords (see above). It is not a treaty-based multilateral organisation but acts as a forum to improve banking regulations.
Capital adequacy ratio (CAR)	The ratio of a bank's capital to its risk. Under the Basel III banking standards, a bank must hold 4.5% of its risk-weighted assets in common equity. This equity provides funding in case of a sudden devaluation of some assets and thereby helps to improve the stability of the bank and the wider banking system. This ratio is also known as capital charges.
Capital charges	See Capital adequacy ratio.

COP26	The 26 th Conference of the Parties (COP), which will be held in Glasgow in November 2021 (having been delayed by a year due to COVID-19). The 'Parties' are the signatories to the United Nations Framework Convention on Climate Change (UNFCCC), which aims to limit global greenhouse gas emissions. The famous Kyoto Protocol and Paris Agreement were both developments of the UNFCCC, agreed at previous 'COPs'.
Market neutrality	A concept that central banks should not distort the market by preferential or policy-based interventions.
Physical risk	Risks to assets from the environment, such as floods, desertification, higher temperatures or changes in weather patterns.
Quantitative Easing	A set of unconventional monetary policy tools used by central banks to increase liquidity in the economy by purchasing bonds and other financial assets. See also <i>asset purchase schemes</i> .
Transition risk	Risks to assets that arise from the societal effects of responding to climate and other environmental change. These might include changes in public policy and legislation, changes in public attitudes and consumer behaviour, changes in legal precedents, or changes in technologies available in the market.

Introduction

In 2021, the UK has a unique opportunity to lead reform of the global financial system and align it with environmental ambitions. It will host both the G7 and the next major quinquennial UN climate conference, the first since the Paris Agreement, COP26. These align with other events – not least the arrival of the Biden administration – that have the potential to supercharge many diplomatic activities. This paper sets out how the UK can seize this opportunity to green the global financial system.

The UK's central diplomatic role will also prove a unique opportunity to build its post-Brexit relationships. Joe Biden has announced a plan for a 'major economies' climate summit in his first 100 days, during which other countries will seek to build relations with the new President. The UK can tie this event to its own summits later in the year, creating significant momentum (Figure 1).

Figure 1: Timeline of the UK's major diplomatic summits in 2021.



As host of COP26 in November, the UK will set the agenda for achieving meaningful next steps for the UN Framework Convention on Climate Change (UNFCCC). The UK is hosting the conference in partnership with Italy, which currently also presides over the G20, a grouping with a particularly financial focus. Italy has pledged to prioritise sustainability during its presidency, which clearly aligns with its role at COP26. By working with Italy and the USA to ensure a coherent diplomatic process across all of these summits, the UK will be able to demonstrate almost unprecedented momentum towards its own 'grand finale' in November.

This is also a key moment for proving the legitimacy and efficacy of the democratic system. Boris Johnson's administration has promoted the concept of a values-based 'Democratic 10' alliance rather than a 'Group of 7', membership of which is mostly based on GDP. To that end, Johnson has invited South Korea, Australia and India to attend the summit this year. This reflects the geopolitical contrast between these 'D10' members and authoritarian nations such as China and Russia, a contrast that has been sharpened by the COVID-19 crisis. Whilst China will be crucial to any action on climate, it has shown little interest in abiding by international norms and has instead declared plans to rewrite key parts of the multilateral system. Many commentators have also questioned the West's ability to respond to major challenges in a coordinated fashion, as it did after the 2008 crash. Taking a firm and visible lead on green financial reform would present a reassertion of the western model, as well as re-establishing its moral authority regarding the climate crisis.

The G7 is small enough to achieve diplomatic consensus, whilst large enough to effect significant change in financial norms far beyond its own members' jurisdictions.

As a long-term leader in green finance, the UK is ideally placed to drive forward the green finance agenda in these fora. Its Chancellor has already announced a plan to mandate the recommendations of the Taskforce on Climate-related Financial Disclosures (TCFD) and it has a world-leading prudential system in its Senior Managers Regime and Stewardship Code. It also has a unique offer in the form of its principles-based regulatory approach, rooted in its system of common law, which is arguably bettersuited to green finance than rules-based, civil law alternatives such as that of the EU. The UK should be a standard bearer for these models on the global stage. Many members of the Commonwealth share the UK's common law system and provide a ready network for propagating a system of principles-based green finance regulation. The Commonwealth Heads of Government Meeting (CHOGM) in June therefore provides another opportunity for developing this agenda.

There is a strong precedent for the UK to lead on financial reform in response to global crises. During and immediately after the Great Financial Crash, the UK took a central role. As is discussed below, it is time to do so again – not only due to the health crisis at hand, but also the environmental crisis that has already begun.

The threat to financial stability

In 2008, a set of previously unknown risks were discovered to be endemic throughout the global financial sector. It was realised that highly opaque (and therefore mispriced) financial products had contaminated the international financial system with the risk of defaults from sub-prime home loans in the USA. Unfortunately, this realisation happened only after the defaults had begun.

The discovery created an immediate and long-lasting period of uncertainty as banks reappraised their balance sheets, during which credit markets froze. Several major banks, mortgage lenders, insurers and other institutions foundered and many were bailed out at significant cost to taxpayers. The sudden loss of confidence in credit markets undermined the 'real economy' and created the worst economic recession since the Great Depression. Tens of millions of jobs across the world were lost and labour markets still bear scars from those events. Political reverberations have continued in the form of a general unease about the state of capitalism, helping the rise of populist, far-left and far-right movements.

Had those endemic risks been identified earlier, then a great deal of economic and political damage might have been avoided. Through better risk identification, such products can be more accurately priced. Banks and other financial institutions can manage their loan books and investment portfolios to minimise and manage risk. Central banks and prudential regulators can also operate more efficiently and effectively with better visibility of systemic risks, thereby acting to avoid a repeat of 2008 and the ensuing recession. Regulations, such as capital adequacy, can be used to ensure that firms and their managers are equipped to absorb downside risk, rather than socialising it, as was the case in 2008.

Since the 2008 crisis, actions have been taken to introduce many of these measures. The UK has been a key proponent and pioneer of these reforms, supporting more stringent capital charges, structural reforms and coordination. The Basel III banking accords in particular have set new requirements for assessing, managing and reporting risk exposure in supervised firms. The last time the UK hosted the G7, in 2013, the UK Chancellor George Osborne placed banking reform at the heart of the agenda. Although there have been many critics of the banking reforms delivered since 2008, there is no doubt that political will demanded a new approach to such systemic risks within the financial system.

However, there is currently another set of underlying risks that is not being factored into the global financial system but which could create multiple localised or system-wide shocks. The risks presented by climate change and environmental degradation are both physical and sociopolitical. They therefore have enormous potential to undermine current valuations across almost every asset class. Mark Carney, the former Governor of the Bank of England, has warned that "changes in climate policies, new technologies and growing physical risks will prompt reassessments of the values of virtually every financial asset."¹ Lael Brainard, a member of the US Federal Reserve's Board of Governors, has said that climate change could affect inflation, interest rates, productivity and long-run economic growth.²

The Federal Reserve itself has now formally recognised the threat of environment-related risks to financial stability, warning that they could create sudden repricing of assets, among other impacts. Figure 2 is taken from the Federal Reserve's Financial Stability Report from November 2020 and illustrates the possible transmission routes transferring climate-related risks to the financial system. The report stated that the Federal Reserve is in the early stages of researching these risks and how the financial system should mitigate and manage them. It stopped short of mandating financial institutions to disclose and manage climate-related risks, but said that it would be helpful if they did so, "thereby reducing the probability of sudden changes in asset prices." It also expects banks to "to have systems in place that appropriately identify, measure, control, and monitor all of their material risks, which for many banks are likely to extend to climate risks."³

- 1. Mark Carney (Oct 2019), "Speech: TCFD: strengthening the foundations of sustainable finance", Bank of England. Link
- Lael Brainard (Nov 2019), "Speech: Why Climate Change Matters for Monetary Policy and Financial Stability", United States Federal Reserve. <u>Link</u>
- Federal Reserve Board staff (Nov 2020), "Financial Stability Report", Federal Reserve of the United States. <u>Link</u>.

Figure 2: Possible Transmission from Climate-related risks to Financial System Vulnerabilities⁴



A report from the US Commodities Futures Trading Commission (CFTC) is even more unequivocal. It states that "Climate change poses a major risk to the stability of the U.S. financial system and to its ability to sustain the American economy." It recommends a range of actions, including the adoption of climate-related financial disclosures at the regulatory level throughout US financial markets and that the US should join international groups and networks that are developing standards to do so.⁵

In November 2020, the UK's Treasury published *A* Roadmap Towards Mandatory Climate Disclosures, in which it notes:

"High-quality disclosures about how organisations and assets will be impacted by - and impact - environmental change will improve transparency, encouraging better informed pricing and capital allocation. This in turn should drive investment in more sustainable projects and activities."⁶

The Roadmap commits the UK – and by extension the significant volume of international financial activity in the City of London – to mandatory disclosures by 2025, adopting the recommendations of the Taskforce on Climate-related Financial Disclosures (TCFD). This builds on an already world-leading example set by the Bank of England in its Senior Managers Regime, which places climate-related risks firmly within the duties of the boards and senior management of supervised firms.

This paper sets out how the UK can use a unique confluence of opportunities in 2021 to continue this leadership in greening the financial system. In exploring the issues and in making our recommendations for reform, we have applied three central principles:

1. The financial system exists to provide credit, insurance and related services to support society's wider economic aims.

Without financial services, the economy would grind to a halt. This is the fundamental reason for society's willingness to bail out banks

- Federal Reserve Board staff (Nov 2020), "Financial Stability Report", Federal Reserve of the United States. <u>Link</u>.
- Climate-Related Market Risk Subcommittee (2020) "Managing Climate Risk in the U.S. Financial System", U.S. Commodity Futures Trading Commission, Market Risk Advisory Committee. Link.
- 6. HM Treasury (Nov 2020), "A Roadmap Towards Mandatory Climate Disclosures". <u>Link</u>.

and other institutions from time to time, most notably after the 2008 Great Financial Crash. However, this creates a duty among the financial community to operate in a manner that maintains stability. It also creates an implicit obligation that the financial system should support broader societal objectives, such as the move to zero carbon emissions and nature's recovery.

2. Financial regulation, prudential regulation and monetary interventions should be broadly in line with, not in conflict with, wider government policy.

This principle follows from the first. If the financial system exists in order to support and enable wider economic activities, then it follows that the supervision of the financial system should be broadly in line with government policies shaping the rest of the economy. For example, the energy sector has been required by public policy to transition from activities that increase emissions to those that do not, and the financial system should not frustrate that transition. In fact, it has a key role to play in facilitating it.

A clear example is in the interventions of central banks in markets through asset purchase schemes, which we explore in Section Two. Such schemes have had the effect of entrenching commercial activities that are high emissions, whereas the wider economic policy of most governments is to encourage a move away from these activities. Fiscal policies such as renewable energy subsidies are directly contradicted by monetary policies.

This principle is loosely applied and still allows for both the independence of central banks (assuming banks operate under a reasonable charter or constitution that prioritises market stability), which therefore also allows counter-cyclical policies.

3. Where there are clear systemic risks, financial regulators should require these to be disclosed and managed down.

The centrality, complexity, rapidity and interrelated nature of the financial system, together with its commoditisation of risk, mean that it is particularly susceptible to systemic risks. These are distinct from micro-level risks that affect only a particular company, which are part and parcel of doing business. Micro-level risks are a matter for the shareholders and staff of that company. Macro-level, systemic risks can threaten the whole market and thereby the whole economy if not managed prudently. Some macro-risks originate within the system (such as the vulnerability of LIBOR to manipulation), whereas others are extrinsic.

An overlap between the two risk types is where risks are unknown and 'baked into' products and services sold by a company without due disclosure, meaning that customers are left unaware of their own exposures. These can propagate throughout the market and their undisclosed nature leaves the market prone to panic. This was seen in the 'credit crunch' of 2008-2009, when lenders stopped the flow of credit to the wider economy out of fear for their own balance sheets. Where very large financial companies – those that are 'too big to fail' – find themselves exposed, then that company's risk also becomes a systemic one.

We therefore apply the principle that systemic risks must be identified and disclosure should be required by financial regulators. As will become clear, environment-related risks are systemic in that they apply across borders and asset classes, thereby creating risks not just for individual firms but the whole market.

Section One: The Challenge

What are the financial risks of environmental change?

The concept of assets becoming devalued or impaired as a result of changing physical conditions or societal pressures is not new nor exclusive to environmental issues. It occurs when an asset suffers an unanticipated or premature write-down, devaluation or conversion to a liability.⁷ Such assets are described as 'stranded', although stranded assets should be viewed on a spectrum of severity. Some assets may simply experience partial devaluation, others may be completely abandoned or decommissioned before the end of their expected economic life. This can be considered part of the 'creative destruction' that precedes economic innovation but it is destruction nonetheless. For example, after the dawn of personal computing, typewriters and their associated supply chains became stranded assets.

However, there is evidence to suggest that environmental change is an increasing cause of asset stranding and could reach systemically significant levels, applying as it does across all sectors, asset classes and geographies. For example, one area experiencing greater liability is the level of insurance losses relating to natural disasters, which rose from \$10 billion to \$50 billion in the decade to 2015.⁸ It is becoming exceptionally difficult to diversify away from climate change. This may arise from the global and overlapping nature of environmental disruption and the societal response to it.

Environmental risk falls into two broad categories

1. Physical risk

Physical risks to assets arise from the real-world effects of climate and other environmental change. For example, sea levels are rising at a rate of around 3.4mm per year, which represents an escalation compared to the average for the 20th century (1.4mm per year). The USA's official projections for mean sea level rises by 2100 are between 0.2m and 2.0m.⁹ This creates threats to coastal and estuarial communities, whether economically advanced hubs such as New York or highly populated developing economies such as Bangladesh. This impacts mortgage lenders' mortgage book values, among many other economic implications. It creates liabilities for shipping infrastructure which raises the costs of trade, such as building better/higher sea walls and paying higher insurance premiums against tidal surges. Lloyd's of London estimates that higher sea levels raised insurance losses from Superstorm Sandy in 2012 by 30% in New York alone.¹⁰

- 7. Caldecott, Howarth et al. (2013), "Stranded Asserts in Agriculture: Protecting Value from Environment-Related Risks", Smith School of Enterprise and the Environment. Link.
- Bank of England Prudential Regulation Authority (Sep 2015), "The impact of climate change on the UK insurance sector". Data drawn from Munich Re, NatCatSERVICE (2015). The data do not account for reporting bias.
- 9. NOAA (Jan 2017), "Global and Regional Sea Level Rise Scenarios for the United States". <u>Link</u>
- 10. Bank of England Prudential Regulation Authority (Sep 2015), "The impact of climate change on the UK insurance sector".

The opening of shipping routes in the Arctic Circle might also devalue existing shipping routes, such as Egypt's Suez Canal, which will face competition for trans-Eurasian trade.

Sea level rises are just one, relatively predictable phenomenon. Regional changes in precipitation or average temperatures are less so and can have significant impacts on agricultural systems, inter alia. Agricultural commodities markets are perhaps better placed than most for environmental change, as they have long histories of hedging within future contracts. However, agricultural sectors across the board are facing new pressures that force adaptations and/or disruption, all of which can affect cashflow. The risks described above are generally chronic in nature, but climate change and environmental decline also raise the risk of acute shocks from wildfires to tidal surges and even a growing pandemic risk.¹¹

Physical risks can be translated into the financial system under three broad headings: operational and portfolio risk. Operational risks are those affecting the financial system's ability to operate. Physical impacts on financial hubs such as New York or London stock exchanges would be the obvious example. Operational risk is included in the Basel III accords and the Basel IV update will increase capital ratios covering operational risks, including, explicitly, environmental impairment.

Portfolio risks are themselves split into two broad categories: insured and uninsured. Data from Munich RE indicates that only 23% of losses from the largest natural disasters from 1990 to 2016 were covered by insurance policies and 51% of losses as a result of weather events had been.¹² The insurance industry acts to spread risks across time and people. Insurance companies carry the risks of large pay-outs in the event of acute natural disasters and there is a risk of 'fire sales' of assets by insurance companies in distress as a result of such events. More endemic is the risk of insurance companies raising premiums and/or refusing to cover particular risks, creating larger pools of uninsurable assets. Uninsurable assets have become a challenge in the UK, where Flood Re has been established to cover homes on flood plains in a limited way. Florida's Citizens Property Insurance Corp aims to tackle a similar problem after the 1992 Hurricane Andrew affected insurance markets. As with the COVID-19 pandemic, governments will likely be forced to take more active roles as the 'insurer of last resort'.

As climate change and environmental disruption lead to a larger pool of uninsured assets, the emphasis will shift to asset owners. Before natural disasters occur, uninsurable assets will attract less credit. After they occur, clean-up will be harder to finance, which creates challenges for economic recovery too. Research suggests that it is uninsured losses that drive the negative impact on GDP after such a natural disaster.¹³ If risks are shown in property prices before a disaster, the impact tends to be lower, yet there is evidence that disasters are not appropriately priced in, with only temporary effects on prices even after a flood has occurred, which suggests an inefficient property market, poor incentives to avoid high-risk floodrelated activity, and/or an over-reliance on insurance markets.¹⁴

- 11. B.McAleenan and W.Nicolle (May 2020), "Outbreaks and Spillovers: How the UK and international community can lower the risks of zoonotic diseases", Policy Exchange. Link
- 12. S. Batten et al. in Caldecott et al. (2018), "Stranded Assets and the Environment: Risk, Resilience and Opportunity", Routledge.
- Von Peter et al. (2012), "Unmitigated Disasters? New Evidence on the Macroeconomic Cost of Natural Catastrophes", BIS Working Papers No.394.
- 14. J. Lamond (2009), "Flooding and Property Values", University of Wolverhampton. Link

A rise in uninsurable assets will also affect the wider economy by shifting risk to banks, as lenders and investors. If a bank's loan book or investment portfolio is affected by an environmental event, it may restrict lending in order to maintain regulatory capital ratios, as per the requirements of the Basel accords. This restriction will affect assets whether impacted by the original environmental event or not. It will create sub-optimal lending and affect economic growth. Banks might also respond to systemic events by resorting to safer assets, particularly cash and sovereign bonds, which will further affect financial stability.

Case study: Vineyards as stranded assets

As weather patterns change, the agricultural economies that have become developed in areas due to stable local climates will change too.

Production from traditional winemaking regions in the Mediterranean provides a vivid example. Nearly 14% of the regions agricultural output by gross production value comes from grapes. Grapevines are highly sensitive to fluctuations in temperature and precipitation, as well as vulnerable to water stress. There is debate about how the climate in the region will change, and what the impact of this will be on the viability of viticulture. At the extreme end of existing predictions, one study estimates that the viable area of viticulture could shrink by 70%.¹⁵

This does not mean winemaking-related assets will be stranded overnight. Producers are already adapting to environmental stresses through choosing more adaptable grape varieties, such as those that require less water, as well as changing their business models, like shifting production cycles to earlier in the year.¹⁶ Several French winemakers have bought land in Kent and Sussex, exploiting its geological similarities to France and its increasingly thriving wine producers.

2. Transition risk

Transition risk refers to societies' responses to climate change through shifting consumer attitudes and political activism, legislative, fiscal and regulatory responses, technology changes and litigation risk.

The Schumpeterian economist Carlota Perez identified the phenomenon of 'Techno-Economic Paradigms' in which multiple technological innovations overlap to create a momentum of their own, resulting in a technological revolution. Perez gives the example of the first industrial revolution in the late 18th and early 19th centuries. Clearly, the valuation of a large swathe of assets was radically different before and after the industrial revolution.

The adoption of carbon pricing is an obvious example of a transition risk, as it acts as a tax on higher-emitting technologies and thereby lowering their projected cashflows, which impacts their ability to monetise such cashflows and undermines asset values. Carbon prices are usually designed to increase over time, with the intention of changing economic behaviours. Political risk can come in blunter forms too, such as the UK government's recent announcement that new petrol and diesel cars will

E. Wolkovich et al. (Jan 2018), "From Pinot to Xinomavro in the world's future wine-growing regions", Nature Climate Change. <u>Link</u>.

J.Woetzel et al. (Sep 2020), "McKinsey on Climate Change / A Mediterranean basin without a Mediterranean climate?", McKinsey & Company. Link.

be banned from 2030. No legislation is currently in place to deliver the ban, but there are clear implications for the existing supply chains of UK car manufacturers and dealers. Perhaps more significant are China's recent adjustments to its Belt and Road Initiative, including the retrenchment of its policy banks to focus on domestic activities,¹⁷ as well as tentative steps to 'green' their investment policies.¹⁸ The programme, which has played a major role in infrastructure development in the Indo-Pacific region, has been rightly blamed for supporting fossil fuel energy projects in order to boost Chinese coal exports. The Chinese shift, combined with more local environmental policies and sharpened by the COVID-19 crisis, has created a collapse in Asian demand for coal of around 80%.¹⁹

Another noteworthy risk is that of litigation. As legal requirements change and as evidence builds to support new statutory interpretations, stakeholders are increasingly acting to hold investment firms to account via the courts. In 2019, the NGO ClientEarth successfully sued the Polish power company Enea to prevent the building of a 1GW coal power station, Ostrołęka C. It did so by purchasing €30 in Enea shares and then suing as a shareholder, arguing that coal plant had a high risk of stranding due to prevailing regulatory trends and so represented poor shareholder value. In 2020, Rest, an Australian pension fund, came to a settlement with one of its policy holders over climate-related financial risk. Upon settlement with Mark McVeigh, the fund stated that:

"Climate change could lead to catastrophic economic and social consequences and is an important concern of Rest's members. The superannuation industry is a cornerstone of the Australian economy—an economy that is exposed to the financial, physical and transition impacts associated with climate change.

"Climate change is a material, direct and current financial risk to the superannuation fund across many risk categories, including investment, market, reputational, strategic, governance and third-party risks. Accordingly, Rest, as a superannuation trustee, considers that it is important to actively identify and manage these issues."²⁰

The settlement appears to be consistent with an opinion published by two Australian barristers that a "profound and accelerating shift" is underway in that country's regulatory systems and wider societal attitudes, which was "increasing, probably exponentially," the risk that individual directors might be found to have been negligent for not mitigating climate-related risks.²¹ That same risk to companies and their directors – including those investing in such companies – is also rising in countries around the world.

A final noteworthy example, partly due to its high profile and partly due to the unique example of converging physical and transition risks, is that of the Californian power company Pacific Gas & Electric (PG&E). This company filed for bankruptcy protection in 2019 having been found liable for the State's devastating wildfires in 2018. The risk of such wildfires is raised by climate change, which creates drier forests and can raise mortality among trees, resulting in more deadwood on the forest

- 17. J. Kynge and J. Wheatley (Dec 2020), "China pulls back from the world: rethinking Xi's 'project of the century'", Financial Times. Link.
- C Sheppard (Dec 2020), "Belt and Road pollution blacklist discourages fossil fuel investments", Financial Times. <u>Link</u>.
- 19. E. White (Dec 2020), "Asia's developing economies shun coal", Financial Times. Link.
- 20. Rest (Nov 2020), "Rest reaches settlement with Mark McVeigh". Link
- 21. N.Hutley and S.Hartford-Davis (Mar 2019), "Climate Change and Directors' Duties: Supplementary Memorandum of Opinion", The Centre for Policy Development. Link

floor. Therefore PG&E was found liable for losses that occurred directly in connection with the effects of climate change.

Coal as a stranded asset

Coal-fired power generation was responsible for around 30% of global energy-related emissions in 2018. Its use continues to grow in many countries due to its abundance and affordability, fuelling economic growth in energy-hungry emerging economies, particularly India and China. This is in contrast to many developed economies that are increasingly moving away from coal having depended on it for their own economic revolutions. As a result of this divestment, global emissions from coal fell 1.8% between 2018 and 2019.

The stranding of coal-related assets can happen due to multiple reasons, often acting in concert:

- Governments may withdraw policy support for coal, such as to reduce national emissions. For example, the UK Government has banned unabated coal for power generation from 2025 and a 'Powering Past Coal' Coalition of nations seeks to further this agenda.
- Rising costs of compliance with climate and non-climate regulations. Coal contributes significantly to air pollution in some countries, and more governments are introducing legislation to curb its contributions to this, increasing compliance costs for coal assets. Carbon Tracker estimates that 40% of China's coal power stations are currently making a negative return and BloombergNEF suggests that the LCOE (the marginal return) of new coal plant in China is beaten by solar farms, due to the costs of meeting current and future air pollution regulations as well as expected rises in carbon prices. In Europe, coal use has declined rapidly due to the carbon price imposed through the EU's Emissions Trading Scheme (ETS).
- The relative costs of coal can increase. The tumbling costs of renewables make coal's business case less viable. For instance, coal use is expected to fall by 7% in 2020, largely due to economic slow-downs caused by responses to COVID-19, as the use of renewables in electricity generation is expected to grow by 7%.

Scale of risks to the financial system

What is the scale of such risks to the financial system? Answers to this question vary significantly and most estimates have looked at specific asset classes or geographies. However, the lack of a proper risk assessment system for environment-related risks means that most efforts are unsatisfactory. Fig. 3 shows some recent estimates of financial asset classes, with the broadest, from LSE's Grantham Institute, projecting up to \$25 trillion in stranded financial assets globally. A 2015 assessment by the Economist Intelligence Unit estimated Value at Risk to the global stock of manageable assets to be between \$4.2 trillion and \$43 trillion through to 2100.²²

 Economist Intelligence Unit (2015), "The cost of inaction: Recognising the value at risk from climate change". Link The notion of 'unburnable carbon', the quantity of fossil fuels which cannot be burned if the world is to meet its climate change targets, is an area of stranded assets research that has received significant attention. Fig. 4 shows the range of estimated reserves which must remain in the ground if we are to meet the Paris Agreement's target of 'well below' 2°C of global warming by 2100.



Figure 3: Magnitudes of Asset Stranding - Financial Assets



Figure 4: Magnitudes of Asset Stranding – Fossil Fuel Reserves.²³

Assessments have also been made for some individual jurisdictions. A 2018 'stress test' run by the Dutch central bank explored transition risk exposure for the Dutch financial system. It found that 13% of banks' assets (mainly corporate loans) were in high-carbon industries, whereas insurers and pension funds were 5% and 8% exposed respectively. The report concluded that these levels were "sizeable, but also manageable" if

23. International Renewable Energy Agency (IRENA) (2017), "Stranded assets and renewables: how the energy transition affects the value of energy reserves, buildings and capital stock", adapted based on Figure 4, P18. Link. the right risk assessments were applied by industry and the right policies were developed by regulators. However, it also noted that such stress tests are a developing area of research and that direct asset exposures were not the only factor to consider. Instead, wider economic impacts of the kind described above, such as greater pools of uninsured assets, should be part of future research.²⁴

However, the Netherlands are not highly dependent on natural resources for their national wealth. For some nations, a drop in fossil fuel exports could lead to profound effects on the balance of trade, causing currency devaluations and thereby implications for monetary policy. Others, such as Qatar, Saudi Arabia or Russia, may also face a fiscal challenge, as sovereign wealth funds or state-owned companies provide sizeable contributions to state funding. The Latin American sovereign debt crisis, which caused 'La Década Perdida' ('The Lost Decade') in the 1980s, began when Mexico borrowed against future oil revenues, which then collapsed with the price of oil. A similar wave among other oil-rich countries, caused by dependence on oil revenues that are eroding due to international climate policies, is not unimaginable.

Researchers assessing the scale of this challenge are faced with a lack of consistency across different disclosure models. In addition to the interconnectedness of the risks, there is also a layering of opacity. For example, an individual may hold a pension plan with a superannuation fund that is invested in an insurance company, which underwrites a bank that has bought a collateralised debt obligation backed by a pool of several thousand mortgages issued to companies operating in different geographies and sectors. Therefore the pension plan holder is indirectly exposed to the risk faced by thousands of companies, possibly on the other side of the world. Ordinarily, this could be counted as part of the beneficial distribution of risk across many stakeholders. A similar assumption was also made before the 2008 crash, with a failure to realise the extent of exposures and the wide spread of vulnerability across the US housing market, resulting in a market-wide shock that tipped many homeowners into default, seriously affecting many financial institutions. Such market-wide shocks are potentially posed by climate change.

While the difficulty in quantifying the extent of potential losses is hard to overstate given the 'Green Swan' nature of the issue, some estimates are emerging. For example, using agent-based climate-macroeconomic model calibrated on stylised facts, future scenarios and climate impact functions affecting labour and capital, Lamperti and others find that climate change could increase the frequency of banking crises by anywhere between 26 to 248 per cent. The authors further find that rescuing insolvent banks will cause an additional fiscal burden of approximately 5–15 per cent of gross domestic product per year and increase the ratio of public debt to gross domestic product by a factor of 2.²⁵

To understand these exposures properly, disclosures need to be made from the most granular level practicable. These disclosures should also be made in a standardised format, with similar expectations about metrics,

R.Vermeulen et al. (2018), "An energy transition risk stress test for the financial system of the Netherlands", De Nederlandsche Bank. Link

F. Lamperti et al (Nov 2019), "The public costs of climate-induced financial instability", Nature Climate Change. <u>Link.</u>

methodologies and management responses. Doing so will allow them to be communicated more easily up the investment chain and across borders.

An inefficient market

Ultimately, we do not know the full scale of exposure in global financial markets, because there is no systemic or standardised approach to measuring such risks. Whereas environmental risks are factored into the operational side of banking rules such as Basel III, they are not included properly within portfolio risks. This lack of information creates an inefficient market as well as the potential for system-wide instability. Indeed, there is strong evidence that public policies, including those of central banks, are acting to undermine market signals. Public policies arguably also led to the 2008 financial crash by dampening such signals and directing the market in a particular direction.

As George Akerlof argued in his famous paper, The Market for 'Lemons', information asymmetry results in poorer asset quality across the market.²⁶ In the case of climate-related risks, lack of proper assessment is likely to be driving higher risks. Until now, there has been minimal demand-side pressure to change this. As awareness and regulatory pressures affect the market, buyer exposure grows and this creates downwards pressure on the price of assets at risk of stranding. A more accurate and thereby efficient market would arise from more systemic risk assessment, supporting the supply of green assets (or 'peaches' as Akerlof put it) through fairer valuations as well as market stability through shock avoidance.

Markets do not seem to be good at valuing environmental risks. The example of almost 'flood-immune' property prices demonstrates this in the UK, whereas the devastating economic impacts of COVID-19, despite warnings and precedents,²⁷ provide evidence on a global level (or at least the Western-hemisphere, given that Asian countries have coped quite well). It would be logical to assume that they will be even worse at anticipating the effects of an unprecedented, less-stable climate.

Work by the behavioural economists Kahneman and Tversky suggests that this failure of risk assessment is compounded by the 'Sunk Cost Fallacy', which encourages investors to stick to current investment strategies and 'sunk costs', even when it is economically illogical to do so.²⁸

The same bias in favour of the status quo is on display in institutional investment, which dominates capital markets. In the infrastructure sector, institutional investors are far more likely to invest in completed or operational projects and far less likely to be involved in project development or to assume construction risks.²⁹ This is a market bias that favours established infrastructure (very often associated with high climate and environmental risks) over nascent infrastructure (including a new generation of 'clean' technologies and energy projects). The vast resources of capital managed by pension funds, for example, are much less accessible to fund the energy transition because they are being sunk into increasingly stranded assets.

An additional factor may also be at play in undermining market

- 26. G.Akerlof (1970), "The Market for 'Lemons': Quality Uncertainty and the Market Mechanism", The Quarterly Journal of Economics. Link
- 27. V. Cheng et al. (2007), "Severe Acute Respiratory Syndrome Coronavirus as an Agent of Emerging and Re-emerging Infection", Clinical Microbiology Reviews.

Y. Fan et al. (2019), "Bat Coronaviruses in China", University of Chinese Academy of Sciences.

J. Cui et al. (2018), "Origin and evolution of pathogenic coronaviruses", Nature Reviews Microbiology.

T. Inglesby and A. Adalja (2019), "Characteristics of Microbes Most Likely to Cause Pandemics and Global Catastrophes", Global Catastrophic Biological Risks.

National Intelligence Council (2008), "Global Trends 2025: A World Transformed", Link

28. D. Kahneman (2011), "Thinking, Fast and Slow", Penguin.

29. T. Murley (ed.) (2016), "Institutional Investment Database", HgCapital signals about climate risk. The West has seen the long-term persistence of exceptionally low interest rates (reaching 0.1% in the UK and the Bank of England examining the possibility of negative rates), quantitative easing and now crisis-response liquidity measures. As well as supporting a record bull market in the USA, this liquidity has allowed 'zombie' businesses to survive that would otherwise pose too high a credit risk.³⁰ Zombie businesses are those whose profits fail to or barely cover interest payments. At a time of crisis when credit spreads would be expected to widen and bankrupt such businesses, they have instead narrowed. That is, risk is being mispriced as a result of a massive injection of liquidity, both this year and in the period since 2008. One result has been the notable recovery of stock markets despite the economic impacts of COVID-19 being in their infancy. As one commentator notes in the Financial Times:

"An uncertain economic outlook \dots is but one of the key Covid-19 legacies that markets have set aside due to sky-high faith in central banks' ability to shield asset prices from unfavourable influences \dots

"Nothing is more reassuring to an investor than the knowledge that central banks, with much deeper pockets, will buy the securities they own — particularly when these buyers are willing to do so at any price and have unlimited patient capital."³¹

By dampening the price signal, long-term excess liquidity may also be dampening the market's sensitivity to growing signals relating to stranded assets and environmental risk. This results in misallocation of capital with no oversight or remedial mechanisms in the case of environmental risks.

The assumption of an efficient market that already accurately assesses climate change and environmental risks is false. A better system is needed and is beginning to reach widespread acceptability. We will explore the essential elements of this in the next section.

W. Lightfoot (Nov 2020), "Monetary response to the coronavirus crisis", Policy Exchange. <u>Link</u>

M. El-Erian (Dec 2020), "The risks that investors should prepare for in 2021", Financial Times. <u>Link</u>.
Section Two: Enhancing environment-related risk measurement and management

As we have seen in the introduction, over the last decade the idea that environment-related risks can strand assets in different sectors of the global economy has become much more widely accepted.³² Climate-related physical and transition risks have been viewed as first among the broader range of environment-related risks. The threat of climate-related risks stranding assets has spurred work by financial supervisors and central banks, who have announced new supervisory expectations and stress tests to help improve the solvency of individual financial institutions, as well as the resilience of the financial system as a whole.³³

Many of the most significant policy and supervisory developments in relation to the management of climate-related risks have been pioneered by the UK. This includes the Bank of England's Supervisory Statement in April 2019,³⁴ the Biennial Exploratory Scenario focused on climate change in 2019,³⁵ and the introduction of mandatory climate-related financial disclosures in November 2020.³⁶

This section sets out areas in which the UK should seek to build further international consensus in order to drive adoption and change across the G7 and beyond. We start with climate-related risk disclosure, building on recent UK announcements, before turning to a broader range of environmental risks, particularly those related to nature, and then highlight opportunities to shift financial regulation and fundamentally alter the availability of information across the financial system to manage these risks.

Drive towards the TCFD becoming mandatory globally

At the UNFCCC COP21 in Paris in December 2015 the FSB announced the creation of a market-led Task Force on Climate-related Financial Disclosures (TCFD) chaired by Michael Bloomberg.

The TCFD was established to develop voluntary, consistent climaterelated financial risk disclosures for use by companies (including financial institutions) in providing information to investors, lenders, insurers, and other stakeholders, as well as help companies understand what financial markets want from disclosure in order to measure and respond to climate change risks, and encourage firms to align their disclosures with investors' needs.³⁷

- B. Caldecott (2018), "Stranded Assets and the Environment: Risk, Resilience and Opportunity", Routledge. Link.
- Network for Greening the Financial System (NGFS)(2019), "Executive summary: A call for action". Link.
- Bank of England (Apr 2019), "Enhancing banks' and insurers' approaches to managing the financial risks from climate change". <u>Link</u>.
- 35. Bank of England (Dec 2019), "The 2021 biennial exploratory scenario on the financial risks from climate change", <u>Link</u>.
- HM Treasury (Nov 2020), "A Roadmap towards mandatory climate-related disclosures". <u>Link</u>.
- Financial Stability Board (2015), "Proposal for a disclosure task force on climate-related risks". Link.

The TCFD included representatives from over 30 different financial institutions. It was a market-led process that involved significant and sustained engagement with a wide a range of practitioners internationally. The TCFD adoption pathway is straightforward and not overly prescriptive. There is also an emphasis on learning by doing and a recognition that disclosures will necessarily evolve and improve as firms develop more sophisticated views and adopt newer approaches for assessing climate-related risk exposures.

The TCFD presented its 'Final Report' in 2017, with an annex on implementation. It has since published progress and integration reports. The recommendations were designed to include four 'key features':

- Adoptable by all organisations
- Included in financial filings
- Designed to solicit decision-useful, forward-looking information on financial assets
- Strong focus on risks and opportunities related to transition to lower-carbon economy.

The recommendations fall into four categories:

Governance	Strategy	Risk Management	Metrics and Targets
Disclose the organization's governance around climate- related risks and opportunities.	Disclose the actual and potential impacts of climate- related risks and opportunities on the organization's businesses, strategy, and financial planning where such information is material.	Disclose how the organization identifies, assesses, and manages climate-related risks.	Disclose the metrics and targets used to assess and manage relevant climate- related risks and opportunities where such information is material.

Recommended Disclosures	Recommended Disclosures	Recommended Disclosures	Recommended Disclosures
Describe the board's oversight of climate- related risks and opportunities.	Describe the climate-related risks and opportunities the organization has identified over the short, medium and long term.	Describe the organization's processes for identifying and assessing climate- related risks.	Disclose the metrics used by the organization to assess climate- related risks and opportunities in line with its strategy and risk management process.
Describe management's role in assessing and managing climate- related risks and opportunities.	Describe the impact of climate- related risks and opportunities on the organization's businesses, strategy, and financial planning.	Describe the organization's processes for managing climate- related risks.	Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas) GHG) emissions, and the related risks.
	Describe the resilience of the organization's strategy, taking into consideration different climate- related scenarios, including a 2°C or lower scenario.	Describe how processes for identifying, assessing, and managing climate- related risks are integrated into the organization's overall risk management.	Describe the targets used by the organization to manage climate- related risks and opportunities and performance against targets.

While the focus has been on voluntary adoption of the TCFD, it has also been clear that over time the TCFD is likely to become mandatory in many jurisdictions. The Bank of England said in its first Supervisory Statement on climate change that, "Firms should look to evolve their [climate-related risk] disclosures to make these as insightful as possible, and in particular should ensure they reflect the firms' evolving understanding of the financial risks from climate change. Firms should recognise the increasing possibility that disclosure will be mandated in more jurisdictions, and prepare accordingly.³⁸

In September 2020, New Zealand announced that it would make the

 Bank of England (2019), "Supervisory Statement SS3/19: Enhancing banks' and insures' approaches to managing the financial risks from climate change", P7. Link. TCFD mandatory and in November 2020 the UK confirmed that it would become the first major economy to do so. Under the UK's plan, mandation is to spread from the largest supervised firms (such as pension schemes, banks and building societies) to smaller firms registered in the UK and others regulated by UK authorities (Fig 5).



Figure 5: UK's proposed roadmap towards mandatory TCFDaligned disclosures³⁹

The UK should encourage other major economies to deliver TCFD mandation, starting with the G7. Ensuring the widespread adoption of mandatory TCFD disclosures, while not a panacea, will help to create a virtuous cycle where climate-related risks are measured and more effectively managed by firms and financial institutions. Ensuring disclosure requirements are consistent across major economies will make it easier to providers of capital, reduce the risk of regulatory arbitrage, and force company management across sectors and geographies to consider appropriate risk management across.

The need for a Task Force on Nature-related Disclosure (TNFD)

As the UN's IPBES (its ecological watchdog) noted in 2019, declines in biological diversity and the significant rise in ecological disruption pose as serious a threat to financial stability as climate change. The two phenomena are connected, but distinct.⁴⁰ Therefore it is equally important to disclose both climate-related and nature-related risks, although the latter arguably represents a more complex and currently less well-understood challenge.

- HM Treasury (Nov 2020), "A Roadmap towards mandatory climate-related disclosures". <u>Link</u>.
- 40. Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IP-BES) (2019), "Summary for Policymakers of the IPBES Global Assessment Report on Biodiversity and Ecosystem Services", United Nations. Link.

Nature-related risks are those that arise from the disruption of ecological systems. These have a similar taxonomy to climate-related risks. For example, nature-related risks might be categorised as follows:

- Physical risks might include the risks to agricultural and fisheries systems as a result of declining pollinator populations, over-fishing or pollution.
- Transition risks might include the regulations imposed to prevent unsustainable land use change.

Such risks apply to a range of key commodities that have been identified as threats to stable ecosystems and resources. A report by the consultancy 3Keel has identified the seven most high-impact commodities as beef and leather, pulp and paper, palm oil, soy, cocoa, timber and rubber.⁴¹ The trade in such commodities makes accounting for risks arguably more complex than climate-related risks as it often features trading exchanges, futures contracts and long supply chains. This raises the need for standardisation of disclosures.

In the Green Finance Strategy published in July 2019 the UK Government said it would, "work with international partners to catalyse market-led action on enhancing nature-related financial disclosures."⁴² One year later in July 2020 the UK Government announced together with the Swiss government and ten financial institutions efforts to create a new Task Force on Nature-related Financial Disclosures (TNFD) by joining an Informal Working Group that will lead to the formal creation of a TNFD in 2021.⁴³

Given the scale and pace of biodiversity loss and habitat destruction, it would be regrettable for the TNFD to progress at the same pace as the TCFD but 5 years behind it. TNFD adoption and mandation should be accelerated and quickly bolted onto new and existing climate-related disclosure requirements. The general structure of the TCFD and TNFD are likely to be very closely aligned (e.g. 'governance', 'strategy', 'risk management', and 'metrics and targets') and they will have many commonalities. As a result, there is little reason to delay and in the same way that the UK has made TCFD mandatory, it should make the TNFD mandatory. The UK should also use the G7 Presidency to spur other major economies to require the use of both, with a target for both the mandatory disclosure of both climate-related and nature-related financial risks across the G7 by the end of 2022 and by the end of 2025 for the G20. Consensus on these international targets should be sought in the G7 and G20 in 2021.

Updating capital adequacy rules to recognise environment-related risks

Under the Basel III banking accords, financial institutions are required to carry a 'CET1 ratio' of 4.5%. This means that the capital they hold as a quick-access buffer – their 'rainy day fund' – must amount to 4.5% of

S. Jennings et al/3Keel (Jul 2020), "Riskier Business: The UK's Overseas Land Footprint". Link.

^{42.} HM Government (Jul 2019), "Green Finance Strategy: Transforming Finance for a Greener Future". <u>Link</u>.

Global Canopy (Jul 2020), "Financial institutions endorse UN-backed initiative to create a Task Force on Nature-related Financial Disclosures". <u>Link</u>.

their 'risk-weighted assets'. Risk-weighted assets include the company's full range of financial assets, such as loans, securities, equities, obligations and others. However, these assets are 'weighted' according to the level of risk they present. A riskier asset requires more 'rainy day fund' backing it up. This means that a high-risk asset will take up a greater portion of that 4.5%, because it is more likely to go wrong and so the company needs to set aside more capital to absorb the impact.

The Basel II accords, which were written before the financial crash, only required a 2% capital ratio, so they have been more than doubled in order to enhance the resilience of the global financial system after lessons learnt from the Global Financial Crisis. Indeed, they can be raised further in some circumstances and the quality of the capital reserves were also improved in Basel III.

These capital adequacy requirements are a key tool in macro- and micro-prudential regulation. Macroprudential supervision describes regulatory actions taken to ensure financial stability across the market as a whole. Microprudential supervision seeks to achieve the same stability, but focused at the solvency of the individual financial firm, such as examining balance sheets to assess their resilience to shocks. They ensure companies can carry their own risks, rather than passing them onto the Government in the case of an emergency. That principle can be applied to climaterelated and nature-related risks too, with assets at higher risk of stranding requiring greater capital buffers. Such a system should be phased in over time, allowing for the financial system to adapt progressively.

However, increasing risk weights on riskier assets could limit the supply of credit and other services to the economy. This is because a financial institution can use its 'CET1 ratio' (its 'capital buffer') for a limited amount of activity. If a sizeable portion of risk-weighted assets are found to be higher risk as a result of climate and nature-related risk exposures, then they will take up a greater portion of the capital buffer. This leaves less available to the 'neutral' or 'clean' economy. Such a problem will reduce over time, but it does create the risk of a short-term credit crunch. To address this, regulations should allow for lower risk weights on 'green' infrastructure and similar assets. This would lower costs for green assets by releasing more capital through lower capital adequacy requirements. The EU High-Level Expert Group (HLEG) on Sustainable Finance contemplated this approach, which it labelled "Green Supporting Factor/Brown Penalising Factor" framework addition.44 The European Commission expressed tacit support and interest for the principle of such an approach.45

Central banks and supervisors should introduce higher capital charges to assets at greater risk from climate and nature-related risks. They should do so quickly as there is sufficient evidence to act now, though over time they can review and revise the stringency of such capital charges. They should also reduce capital charges for green infrastructure, as these types of investment can actually help to reduce risks facing the global economy by helping to tackle climate change, biodiversity loss, and habitat destruction.

^{44.} HLEG on Sustainable Finance (2018) 'Final Report: Financing a Sustainable European Economy'. Link.

^{45.} Vladis Dombrovskis, then-Commissioner for Financial Stability, Financial Services and the Capital Markets Union, indicated the Commission is 'looking positively' at the possibility of introducing the Green Supporting Factor at the 2017 One Planet Summit in Paris.

Agreeing to take these steps, even if the exact increases or reductions in capital charges are made at a later date, should be another priority for the G7 Presidency.

Other aspects of the Basel framework can also play a role. For example, as suggested by Seraina Grünewald, the Basel liquidity requirements – Liquidity Coverage Ratio and the Net Stable Funding Ratio – could also pose a mispriced obstacle to green investment as green assets are generally less liquid.⁴⁶ The Counter-cyclical Capital Buffers – in essence, additional capital requirements triggered during a build-up of vulnerabilities to provide additional cushioning when a correction occurs – could also be adjusted, for example depending on a bank's exposure to carbon-intensive assets. The Sectoral Leverage Ratio – a tool for limiting the build-up of leverage within a single specific sector – could similarly be considered as a tool, for example, by making it more expensive for a highly leveraged institution to have too much exposure to carbon-intensive sectors, geographies or asset classes.⁴⁷

Changing supervisory expectations

The UK has pioneered a system designed to place senior managers at the heart of climate-related risk management. Its Senior Managers Regime (SMR) was updated in 2019 to require boards to appoint named individuals with responsibility for climate-related risk disclosure and management. The SMR was created after the 2008 crisis and related scandals (e.g. LIBOR manipulation) to ensure a culture of integrity and accountability within financial firms and the wider system. The SMR requires that boards:

- "understand and assess the financial risks from climate change that affect the firm, and to be able to address and oversee these risks within the firm's overall business strategy and risk appetite."
- "ensure that adequate resources and sufficient skills and expertise are devoted to managing the financial risks from climate change."
- "[provide] evidence of how the firm monitors and manages the financial risks from climate...the board and the highest level of executive management should identify and allocate responsibility for identifying and managing financial risks from climate change."
- "and relevant sub-committees [are provided] with management information on their exposure to the financial risks from climate... [the] information should enable the board to discuss, challenge, and take decisions relating to...climate change."⁴⁸

This model could be scaled globally so that all supervised firms, from asset owners to insurers, are required to action climate-related and naturerelated risks at the board and senior management levels or risk supervisory intervention. Doing so would create a new level of expertise and dedicate a suitable level of resource to assessing risks, driving innovation across the financial system.

- P. D'Orazio and L. Popoyan (Jun 2019) 'Fostering green investments and tackling climate-related financial risks: Which role for macroprudential policies?', *Ecological Economics*. <u>Link</u>.
- 48. Prudential Regulation Authority (April 2019), "Enhancing banks' and insurers' approaches to managing the financial risks from climate change". <u>Link</u>.

^{46.} S. Grünewald (Apr 2020) 'Climate Change as a Systemic Risk – are macroprudential authorities up to the task?', EBI Working Paper Series. Link.

Managing environment-related risks in monetary policy

Through monetary policy mechanisms, central banks are among the worst offenders of the 'institutional investor bias' described above. Their asset purchase programmes, which inject money into the economy by purchasing the debt and certain other assets of companies, keep the cost of credit low for all firms, but especially those whose assets and debts are purchased. This tends to benefit larger firms that can issue 'investment grade' bonds or equity. A 'carbon bias' has been identified in the asset purchase schemes of the European Central Bank and the Bank of England, suggesting that central banks are complicit in preventing efficient capital flows to the next generation of 'clean' technologies and infrastructure.⁴⁹ The Bank of England itself has noted that its Corporate Bond Purchase Scheme is not aligned with the Paris Agreement.⁵⁰

However, this is far from a new phenomenon – this inadvertent accumulation of carbon-intensive assets on central bank balance sheets has also been identified in the context of asset purchases prior to 2020. For example, Matikainen, Campiglio and Zenghelis found that, according to central bank balance sheets from three years ago, "62.1 per cent of ECB corporate bond purchases take place in the sectors of manufacturing and electricity and gas production, which alone are responsible for 58.5 per cent of Eurozone area greenhouse gas emissions, but only 18 per cent of gross value added (GVA). For the Bank of England, manufacturing and electricity production – responsible for 52 per cent of UK emissions – make up 49.2 per cent of the eligible benchmark, but only 11.8 per cent of GVA."⁵¹ The authors caution that this works to push down the cost of capital for carbon-intensive issuers relative to green issuers, squarely undermining other policy efforts to do precisely the opposite.

To resolve this, Dirk Schoenmaker proposes a 'tilt' in the Eurosystem's 'eligibility criteria' – i.e. criteria determining which assets are eligible as collateral against which the ECB will provide liquidity - towards green assets. This will have the effect of making green assets more liquid relative to carbon-intensive assets (reflecting their now-wider possibilities) thus increasing demand for them, which will raise their prices and therefore reduce cost of capital for issuers of green assets relative to carbon intensive ones. The effect of a modest tilt is estimated to reduce carbon emissions in the corporate and bank bond portfolio by 44 per cent and lower the cost of capital of low carbon companies by 4 basis points.⁵² Likewise, McConnell, Yanovski and Lessmann also identify central bank collateral as a very promising macroprudential tool for climate change transition, and propose adding collateral "haircuts" based on assets' carbon intensity to the central bank collateralised lending framework.⁵³

Central banks should design asset purchase schemes to reflect the environment-related risks associated with corporate assets and bond issuers. Credit risk is already a central filter in central bank asset purchase and environment-related risks are conceptually similar. In several central banks, such as the ECB, there is an expectation that the bank will act to support general economic policy as long as doing so does not upset price

- 49. Y. Dafermos et al. (Oct 2020), "Decarbonising is easy: Beyond market neutrality in the ECB's Corporate QE", New Economics Foundation. Link.
- 50. Bank of England (Jun 2020), "The Bank of England's climate-related financial disclosure 2020". Link.
- 51. S. Matikanen, E. Campiglio, D. Zenghalis (2017) 'The Climate Impact of Quantitative Easing', *Grantham Institute*. <u>Link</u>.
- 52. D. Schoenmaker (Feb 2019) 'Greening Monetary Policy', *Bruegel*. <u>Link.</u>
- 53. A. McConnell, B. Yanovski, K. Lessmann (Nov 2020) 'Central Bank Collateral as an Instrument of Climate Change Mitigation', available from SSRN. <u>Link.</u>

stability (which seems unlikely given the low inflation of recent decades). Acting on climate risks would seem to be entirely within that broader economic remit. As a counterbalance to this argument, there are important questions about 'market neutrality', which we explore further below.

Market neutrality and central bank interventions

The concept of market neutrality has been deployed to argue against central bank intervention related to climate change. Market neutrality describes the principle that central banks should not confuse normal price discovery, which is the basis of an efficient and stable market, through their interventions. While acknowledging the need for greater climate-related disclosures, the Bundesbank president, Jens Weidmann, argues that "it is not up to [central banks] to correct market distortions and political actions or omissions."⁵⁴

The counter argument is that the notion of market neutrality is illusory because central banks already take policy decisions in designing their own market interventions. Indeed, central bank interventions are non-neutral by their very nature and always affect some segments differently to others. In recent years, the increasingly stretched arsenal of monetary policy has depended more on asset purchase schemes by central banks. This involves significantly different approaches between central banks that are predicated on risk tolerances, targeted actions or even cultural preferences that differ between jurisdictions. For example:

- Asset classes: Some central banks purchase equities (e.g. Swiss National Bank), whereas others do so via Exchange Traded Funds (such as the Federal Reserve of the USA). Others exclusively buy bonds. Others still have bought property (e.g. the Bank of Japan). In response to the COVID-19 crisis, the Federal Reserve of the USA broke new ground by buying municipal bonds to support local authorities and state governments, showing nimbleness rather than neutrality.
- **Risk profiles:** While some central banks are comfortable purchasing securities with no asset backing (e.g. the Bank of England), others focus on mortgages and car loans. Others purchase credit card debt and student loan books. In addition to this, central banks decide whether assets meet risk tolerances, usually requiring bonds to be investment-grade. Yet several have loosened such criteria to avoid bond sell-offs during the system-wide crisis of the COVID-19 pandemic.
- **Economic sectors:** Some asset purchases exclude potentially risky or distortive bonds, such as those from the financial sector (the European Central Bank does this). Prudential interventions can be even more clearly pronounced, such as the Reserve Bank of New Zealand and the Bank of England using loan-to-value ratios to deflate house price bubbles, although market neutrality is less applied to prudential regulation than to monetary policy.⁵⁵

^{54.} J.Weidmann (Nov 2020), "Bundesbank Chief: How central banks should address climate change", Financial Times. Link.

^{55.} C. Colesanti Senni and P. Monnin (Oct 2020), "Central Bank Neutrality is a Myth", Council on Economic Policies. Link

• **Social effects:** There is also the much-noted effect of loose monetary policy and higher liquidity, that benefits asset owners. For example, higher liquidity over the long term has raised house prices significantly in the UK, to the benefit of home owners and the hindrance of those attempting to get onto the property ladder. Home ownership among the under-40s has dropped dramatically as a result (among other factors).

It is also true that the neat division between fiscal and monetary policy established in the late 20th century has blurred since the financial crisis of 2008. Central banks have reached their limits in terms of available tools for economic stimulus, and so have joined with governments to play second fiddle to active fiscal policy. This not only suggests that monetary policy is not as neutral as claimed, but also that a green recovery from the COVID-19 crisis might be more effective with fiscal and monetary policies that are not in direct conflict. If fiscal policy seeks to stimulate low-carbon industries, it is odd that monetary policy should do the opposite by buying the debt of incumbent high-carbon industries. The latter is not necessarily an example of neutrality, but of policies that favour incumbency in the debt markets.

A core element of the market neutrality argument is that quantitative easing is an emergency measure. Its role is to stabilise the existing economy and not to move the economy towards a preferred, notional future. In part, this is correct: we recommend designing purchase schemes to reflect existing environment-related risks, rather than using them to artificially favour emergent industries. Our recommendation is entirely in line with the concept of stabilising the existing economy, but with a more sensitive risk filter. However, the argument is flawed when it claims that quantitative easing is an emergency measure only. In fact, it has become a mainstay of monetary policy for the past decade. The Bank of England's Independent Evaluation Office notes that "QE should no longer be seen as a transient, 'unconventional' crisis response. Instead, it is now an established part of the monetary toolkit that has been used in the UK and in many other countries in response to a range of shocks. It is likely to continue to play a key role for central banks for years to come, at least while equilibrium interest rates remain low."56 In this context, asset purchase schemes should be designed with increasing precision, particularly regarding risk management.

None of this undermines the value of market neutrality as an aspiration for a broad-based monetary policy that avoids central bank activism on issues beyond market stability. How we tackle climate change is, after all, an inherently political issue and central banks should be very cautious in entering the domain of politics and policy making. Political parties have different responses to climate change and it is entirely possible to recognise climate-related risk, manage down that risk, and still avoid overly activist central banks.

We consider the market neutrality argument to be a good guiding

^{56.} Bank of England/Independent Evaluation Office (Jan 2021), "IEO evaluation of the Bank of England's approach to quantitative easing". <u>Link</u>.

principle, but not so rigid that it cannot accommodate environmental risks as a legitimate filter within asset purchase schemes. Given the growing environmental risks to financial stability that are outlined above and significant improvements in environmental risk measurement, there is a strong case for such environment-risk-based filters to be applied in asset purchases. We are much less convinced of the need for asset purchases to be explicitly focused on supporting green industries, unless that is done in a coordinated way and in lock-step with government policies and accountable to government. There is a significant risk of fuelling a green asset bubble if asset purchases are targeted at green assets as the quantity of investable green assets relative to the scale of quantitative easing is tiny: too much money will chase too few assets and it is hard to see how that would end well.

Green Taxonomies

In November 2020 the UK Government announced that it will implement a green taxonomy – a common framework for determining which activities can be defined as environmentally sustainable.⁵⁷ In theory this could potentially help to improve the understanding of the impact of firms' activities and investments on the environment, thereby helping to green portfolios and loanbooks.

While this feels intuitively appealing, it is in fact extremely challenging to assess every type of economic activity and determine whether it is "green" or not. There are good arguments, including some made here (see section four on principles-based vs rules-based regulation), as to why this is conceptually a bad idea.⁵⁸

However, the proposal for a UK taxonomy is a response to the now well-established EU taxonomy, which is attempting to define what is 'green' and what is not. A 'Platform on Sustainable Finance' has been set up by the European Commission to advise the EC on the technical screening criteria for the EU taxonomy.⁵⁹ The Platform has 57 members and 10 observers, including representatives from a range of lobby groups and with many members selected to represent interest groups.

The EC Platform and its proposals have encountered a range of implementation issues, resulting in significant delays.⁶⁰ This is primarily the result of lobbying pressure from EU Member States in Eastern and Southern Europe as well as corporate vested interests, who are seemingly intent on weakening proposed thresholds in the taxonomy so that firms that aren't particularly sustainable can be labelled 'green' even if their environmental performance does not merit this based on scientific evidence. In December 2020 more than 100 scientists urged the EC to urgently tackle these shortcomings.⁶¹

Once they are finalised, the UK taxonomy will take the metrics and thresholds in the EU taxonomy as its basis and then a UK Green Technical Advisory Group, an equivalent to the EC's platform, will be established to review these metrics "to ensure they are right for the UK market".⁶² Given where we are with the development of the EU taxonomy and its integration

- 57. HM Treasury (Nov 2020), "Chancellor sets out ambition for future of UK financial services". <u>Link</u>.
- 58. B.Caldecott (Jul 2019), "Encourages laziness and disincentives ambition': Ben Caldecott shares his thoughts on the EU's green taxonomy", Responsible Investor. <u>Link</u>.
- 59. European Commission (Accessed Feb 2021), "Platform on sustainable finance", <u>Link</u>.
- 60. F.Simon (Jan 2021), "Brussels postponed green finance rules after 10 EU states wielded veto", Euractiv. <u>Link</u>.
- K.Abnett (Dec 2020), "Scientists warn of 'critical oversight' in EU green finance rules", Reuters. <u>Link</u>.
- 62. HM Treasury (Nov 2020), "Chancellor sets out ambition for future of UK financial services". Link.

into EU regulations, it makes sense to relate UK decisions on metrics and thresholds to the ones set by the EU. However, it is critical that in contrast to the EC process these metrics and thresholds are set independently from vested interests and are set in a way that is transparent and scientifically rigorous, with membership of the UK Green Technical Advisory Group based on expertise, not industry representation.

In that way, the UK taxonomy will be the more rigorous and robust and can be used to help create a 'race to the top' dynamic with the EU and other countries introducing taxonomies.⁶³ Financial firms and their clients seeking higher standards, of which there will be many, will likely opt for the higher quality UK standards, especially if they are based on scientific evidence rather than political or commercial lobbying. In the context of debates about equivalence rulings and the implementation of the new UK-EU Trade and Cooperation Agreement, it may also be helpful for the UK to be proactive in setting more rigorous technical standards than the EU. This is an easy win where we have a clear interest in seeing the adoption of more stringent standards.

The new UK Green Technical Advisory Group could also be tasked with creating a rigorous brown taxonomy, identifying polluting activities that need to be phased out and by when based on scientific evidence. This is much more workable enterprise than the green taxonomy proposed by the EU (there are far fewer sectors and we have much better data) and an area where the UK can seek to build consensus with other international partners.

Spatial finance: building asset and environmental data transparency

In the last decade we have seen the exponential growth of climate and environmental data, in large part due to the emergence of new sensors and Earth Observation constellations, as well as the development of predictive models and measures of different natural hazards. The UK has been a world-leader in capturing, processing, and applying these datasets and methods in an academic research environment.

The UK's financial services sector, in advance of and now in parallel with changing supervisory expectations, has also been a world-leader in developing financial products and services that are helping to reallocate capital from 'brown' to 'green'. This has been supported by client demand, as well as by green finance initiatives and programmes developed by academic institutions, think tanks, finance professions, and civil society. The UK Government is also helping to accelerate the alignment of finance with sustainability through its Green Finance Taskforce⁶⁴ and Green Finance Strategy⁶⁵, as well as through the UK Presidency of COP26.

- 64. Green Finance Taskforce (2018), "A report to Government by the Green Finance Taskforce: Accelerating Green Finance". Link.
- 65. HM Treasury and BEIS (2019), "Green Finance Strategy". Link.

^{63.} A regrettable consequence of the EU deciding it needed a taxonomy in the first place.



S&P Global Ratings performed a geospatial study using satellite data and machine learning to understand how the physical impact of climate change or any environmental factors translates into a credit impact for water utilities in the US. They found that utilities located in regions with evergreen forests and perennial ice and snow had greater all-incoverage ratios than those located elsewhere, which is an indicator of stronger credit quality.

Despite this rich ecosystem of actors and initiatives, as well as a history of UK innovation and leadership in almost every aspect of green finance, financial institutions in the UK and internationally still find it hard to secure the data they need to properly measure and manage their exposures to environment-related risks.

Resolving these barriers and ensuring the rapid adoption of climate and environmental data and analysis is a necessary condition for re-pricing capital and avoiding asset stranding in the UK and internationally. It is also a significant commercial opportunity for the UK financial services sector. The market for ESG data, of which climate and environmental data is a large part, is expected to reach US\$1bn in 2021 and grow annually by 20% (Bradford, 2020). Further, and as we have argued earlier, the benefits of properly pricing environmental risks, avoiding stranded assets, and improving the efficiency of capital allocation for society, are significant. Reallocating capital away from at-risk assets could also help to close the gap in investment required for successful climate mitigation and adaptation, which are variously estimated at multi-trillion dollars of additional investment per year.⁶⁷

Spatial finance is the integration of geospatial data and analysis into financial theory and practice.⁶⁸ Four leading UK institutions – The Alan Turing Institute, the Green Finance Institute, the Satellite Applications Catapult, and the University of Oxford – launched the Spatial Finance Initiative (SFI) in 2019. SFI has been established to "mainstream geospatial capabilities enabled by space technology and data science into financial decision-making globally". By 2025, SFI wants 80% of the world's largest asset owners, asset managers, banks, and financial regulators to use spatial finance techniques to assess risks, opportunities, and impacts across various aspects of financial sector decision-making.

This mission has only become possible in the last few years as a result of rapid developments in earth observation (cheaper sensors and platforms, and new satellite constellations with much more regular revisit periods)

D. McCollum et. al. (2018), "Energy investment needs for fulfilling the Paris Agreement and achieving the Sustainable Development Goals", Nature Energy, 3:589-599.

Caldecott (2019), "Spatial finance has a key role", IPE. Link; Spatial Finance Initiative (2019): https://spatialfinanceinitiative.com

^{66.} Case study taken from B. Burks (Jan 2020), "Space, The Next Frontier: Spatial Finance And Environmental Sustainability", S&P Global Ratings. <u>Link</u>.

and data processing (developments in AI and cloud-based computing for scanning and interpreting imagery quickly), as well as continuous improvements in predictive modelling.





To green finance and the financial system, better data is needed on 1) the impacts that investments will have on the local and global environment, as well as on sustainable development and 2) the stranded asset risks investments face from different physical and transition risks related to environmental change. Spatial finance is the key to unlocking these insights for the financial system. It is also a huge commercial and strategic opportunity and the UK is uniquely placed to capture this new frontier in financial data and analysis.

A key enabler of spatial finance is accurate and trusted global datasets of assets in every major sector of the global economy. We need to know where assets are, their characteristics, and who owns them. Using the aforementioned earth observation and AI techniques, as well as natural language processing to track changes in ownership, we can now sequence or decode the real economy using these methods. In a manner that is analogous to the Human Genome Project, led by the US and the UK with the G7 and completed twenty years ago last year, it is now possible to produce universally trusted, transparent, and verifiable datasets covering every asset in the global economy. By the end of this decade we can sequence every sector of the global economy and have successfully distributed (and maintained) the associated asset-level datasets. By 2023 we can achieve this for all the major carbon intensive sectors globally.

The UK should use COP26 to prepare and fund the launch of a new asset transparency project ("GeoAsset"). GeoAsset would drive the work and stimulate the development of innovative technologies and methods in the process. As the data becomes publicly available, it can unleash a vast array of opportunities and applications and greatly enhance the ability of financial institutions and other actors to align their portfolios and strategies with climate and other environmental objectives, as well as manage risk.

The funding required is not in new earth observation platforms, but in the processing, analysis, and interpretation of data already being collected from space. This will create immediate demand for skilled data science, AI, and environmental science graduates based in the UK.

69. Provided to Policy Exchange by the Spatial Finance Initiative, 2021. Few countries have both the capability and international platform required to do this. In addition to its critically important role as COP26 host, the UK is uniquely placed with leading capabilities in all the key areas: earth observation, data science and artificial intelligence, environmental and climate science, and finance and investment.

Capitalising on the UK's strengths can also shed light on what others are doing and how they are (in)compatible with our global development and security objectives, such as China's Belt & Road Initiative, where a lack of transparency is a major strategic problem. GeoAsset and associated spatial finance capabilities can also make significant contributions to other policy priorities, including, among others: ensuring efficient payments to farmers for ecosystem services under the Environmental Land Management Scheme (ELMS); successfully operating a new UK Emissions Trading Scheme (UK ETS) to cover more sectors and reduce reporting burdens; funding environmental and social outcomes in developing countries from ODA in a way that ensures VfM; and the measurement and management of climate impacts to enhance adaptation and resilience.

Early leadership in spatial finance will allow UK-based firms and individuals to shape the future applications and grasp the commercial opportunities, while contributing significantly to the UK's own climate goals and those of the international community. In the same way that the Human Genome Project laid some of the foundations for continued UK leadership in life sciences and contributed to our world-leading scientific response to Covid-19, sequencing the physical economy can do something similar for finance and financial services.

The UK should leverage its leadership in this area at the G7 and COP26 and be the cornerstone funder and advocate for GeoAsset. Its goal should be a coalition, analogous to the Human Genome Project, that will sequence the physical economy to produce universally trusted, transparent, and verifiable datasets covering every physical asset on earth.

Conclusion

We should lock-in and build on critically important work to enhance climate-risk management by financial institutions. This includes the TCFD, that has created a framework to help companies and financial institutions consistently measure, manage, and report their climate-related risk exposures. The TCFD should be made mandatory across the G7 by the end of 2022, together with a new TNFD focused on nature-related risks, and across the G20 by the end of 2025. The UK, working with partners, including the Italian Presidency of the G20, can put this on the agenda.

However, we should also focus on other aspects of climate and naturerelated financial risk management that are even more important than disclosure and reporting. We have suggested some of these avenues:

• Updating risk-based capital adequacy frameworks so they take account of both climate and nature-related risks and phasing new requirements in over time;

- Changing supervisory expectations globally so all supervised firms, from asset owners to insurers, need to action climate and nature-related risks at the board and senior management-levels or risk supervisory action;
- Ensuring central bank asset purchases take account of climate and nature-related risks; and
- Spurring the next generation of space-enabled data and analysis capabilities required to properly green the financial system.

Section Three: Aligning finance and investment with environmental outcomes

Once environment-related risks are measured and managed, the process of capital reallocation will accelerate. But this will not be sufficient on its own to drive the scale of capital reallocation required to tackle climate change, biodiversity loss, and habitat destruction.

Managing environment-related financial risks is not the same as aligning the financial system with environmental outcomes, such as the Paris Agreement's target of limiting global warming to well-below 2°C above pre-industrial levels and pursuing efforts to limit warming to 1.5°C.⁷⁰ Alignment with Environmental Outcomes (AEO) must be delivered by building on, not simply depending on, the recommendations we made in Section 2 on risk measurement and management. These examples highlight how environmental risk management is different from AEO:

- **Hedging:** As with any other risk, companies can hedge to reduce exposure. For example, an environment-related risk might be hedged by purchasing a derivative contract such as a swap. This has no impact on the underlying economic activity of the firm and therefore has no impact on pollution.
- **Regulatory arbitrage:** As has been seen in recent decades, the developed economy supply chains have moved offshore to countries with lower environmental standards. This 'carbon leakage' is not solely the result of higher environmental standards, but there is substantial evidence to suggest that it has been an important driver.
- **Market biases:** As discussed above, institutional investors dominate capital markets. They also display a bias in favour of 'incumbent' infrastructure, which perpetuates the status quo. Next generation 'clean' technologies, including zero carbon energy generation and climate-resilient assets, are crowded out of capital markets by existing projects. Other biases exist, such as the 'Sunk Costs Fallacy' described above, in which investors pursue strategies despite falling returns. Another example builds on the well-known 'home bias' among investors. In their 2020 study of European investors, Boermans and Galema found evidence of a 'Carbon Home Bias' essentially a tendency of investors from more carbon-intensive

 B. Caldecott (2020), "Defining transition finance and embedding it in the post-COVID-19 recovery", Journal of Sustainable Finance and Investment. Link. countries to inadvertently bias their portfolios to carbon-intensive stocks due to the well-documented phenomenon of 'home bias', i.e. a tendency to bias a portfolio to the home market.⁷¹ Further, even where investors are pricing in climate risks, there are questions about the scope of the risk premium – in their survey of climate risk perceptions amongst institutional investors, Krueger, Sautner and Starks found that while investors did believe some equity valuations where too high given risk of stranding, they believed the degree of overvaluation to only be modest.⁷²

• **Time to embed:** A new system will take a long time to embed and, arguably, will only truly mature after it has been tested by real-world systemic or sub-systemic shocks. This is partly because of the complexity of climate- and nature-related risks: they are non-linear, near-universal, societal and physical, and still not fully understood. This is a strong argument for greater use of stress testing, but also reason for active planning for AEO.

To effect real change and remove environment-related risks to financial stability, companies should be required not only to disclose risks (e.g. through mandatory TCFD and TNFD) but also to commit to transition plans.

Targets and transition plans for alignment

Alignment with positive environmental outcomes will require financial institutions to develop and execute transition plans. This would require financial institutions to ensure the alignment of their portfolios or loan books with key ecological thresholds over time, disclosing progress towards interim targets and the end objective on a regular basis. For climate change this should be all holdings in a portfolio or loanbook being net zero by 2050 or earlier, with clear interim targets. Frameworks for such transition plans have already been developed, such as those by the Transition Pathways Initiative (led by two UK pension funds) and the Climate Action 100+ Net Zero Benchmark. Similar initiatives exist in a number of specialist sectors within the investment community.

While the definition and appropriate characteristics of climate alignment targets for financial institutions are becoming clearer as a result of extensive recent work and growing voluntary commitments,⁷³ those for nature are far less developed. For nature, we think this should imply that:

- All holdings in a portfolio or loanbook should no longer contribute to biodiversity loss or habitat degradation as soon as possible before 2025;
- By the end of 2022, all holdings should be free of any links to deforestation;
- By 2030, all holdings should be making a neutral or positive contribution to nature by 2030.
- 71. M. Boermans and R. Galema (Jun 2020), "Carbon Home Bias of European Investors". Link.
- P. Krueger, Z. Sautner and L. Starks (Jun 2019) "The Importance of Climate Risks for Institutional Investors', ECGI Working Paper Series in Finance". <u>Link.</u>
- 73. For example, see: UNEPFI (undated), "The Net-Zero Asset Owner Alliance". Link; UNF-CC (undated), "Race to Zero Campaign". Link; Science Based Targets (undated), "What are 'science-based targets?". Link; UNEPFI (2020), "Aligning finance for the Net-Zero Economic: Thought Leadership Series". Link.

This reflects the urgency of the IPBES conclusions in its Global Assessment report⁷⁴ and would mirror the 'nature positive by 2030' campaign⁷⁵ and the ambitions of the Leaders' Pledge for Nature.⁷⁶ While there is significant detail to be worked out, this is something that can and should be done ahead of CBD COP15 so that commitments can be mobilised over the course of 2021.

Within two years AEO targets and associated transition plans should be required on a 'comply or explain' basis from supervised firms in the UK. 'Comply or explain' means that those who do not adopt a transition plan need to explain why they have not done so. The UK's Financial Conduct Authority uses 'comply or explain' with the UK's Stewardship Code, requiring that FCA-regulated asset management firms should either sign up to the Code or disclose their alternative strategies.

Transition finance

The financial system exists to provide credit, insurance and other services to enable society's economic activities. Without this fundamental connection, there is no justification for the expensive, taxpayer-funded bailouts of financial services firms during the 2008 crisis. Societies around the world are now shifting their economic models to avoid environmental breakdown, meaning that the financial system must provide the financial tools to do so. To this end, the British Chancellor Rishi Sunak has called for the financial sector to be a "critical enabler" of the net zero policy agenda.⁷⁷

'Transition finance' is the provision and use of such products and services to support counterparties, such as companies, sovereigns and individuals, to realise alignment with environmental and social sustainability.⁷⁸ Arguably, *all* finance needs to become transition finance if we are to deliver the objectives of the Paris Agreement and the UN SDGs.

Making access to capital or financial services conditional on meeting sustainability objectives can take a variety of forms. One of the most powerful and potentially effective forms is linking a counterparty's cost of capital directly to its sustainability performance. Sustainability-linked loans (SLLs) and sustainability-linked bonds (SLBs) attempt to do this for borrowers or issuers and have recently gained prominence, although their development remains nascent.⁷⁹ For example, NatWest has launched a 'green mortgage' that offers lower interest rates to owners of energy-efficient homes. In 2021, it plans to allow borrowers to fund green home improvements through their existing mortgage at low rates.⁸⁰

Sustainability-linked financial products can take the form of this generalisable SLL example: Company A secures a lower cost of capital from the bank if it achieves carbon reduction targets. A lower cost of capital is possible because Company A has calculably lower credit risk due to less energy use resulting in lower energy bills and lower potential future carbon price liabilities. The lender can share some of that reduction in credit risk with the borrower, creating a win-win where the borrower secures a lower cost of capital and the bank makes more money.

- 74. Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (May 2019), "Global Assessment Report on Biodiversity and Ecosystem Services", United Nations. Link.
- 75. See: Nature Positive (undated), "What is the Global Goal for Nature?". Link.
- 76. See: Leaders' Pledge for Nature (undated), "Leaders' Pledge for Nature: United to Reverse Biodiversity Loss by 2030 for Sustainable Development". Link.
- 77. HM Treasury (Nov 2020), "Chancellor sets out ambition for future of UK financial services". Link.
- B. Caldecott (2020), "Defining transition finance and embedding it in the post-COVID-19 recovery", Journal of Sustainable Finance and Investment. <u>Link</u>.
- 79. Nordea (October 2020), "The sustainable loan market: A snapshot of recent developments". Link.
- 80. N. Megaw (Jan 2021), "UK banks to launch wave of green products", Financial Times. Link.

The Covid-19 related stimulus and bailouts, with the attendant massive increase in government-backed financing facilities for counterparties, creates an unprecedented challenge and opportunity. One result has been a record year for capital raising in the private sector, helped by loose monetary policy. We argue that over time all public finance, such as bailouts, should be conditional on adopting plans for meeting ambitious pre-determined sustainability objectives. For example, all public finance above a certain level (e.g. >US\$10m) should become sustainability-linked by a certain future date (e.g. 2023) with commitments by private financial institutions being encouraged to make all finance above that same level sustainability-linked by a later date (e.g. 2025).

To scale this type of conditionality across finance, industry and government must develop sustainability performance KPIs that are effective. These need to genuinely enhance environmental outcomes, while also reducing or at least not negatively affecting counterparty credit risk. Finding the KPIs that do this and scaling their use is mission-critical for making all finance transition finance.

KPIs need to be able to drive the scale of change required from counterparties and they need to do so efficiently and effectively over relevant time horizons. They need to be suitably rigorous and robust to avoid greenwashing from counterparties and providers of capital, and the best structures and KPIs also need to be rapidly scaled and widely adopted to achieve the greatest amount of change possible in the shortest amount of time. KPIs can cover many aspects of a counterparty's performance (from strategy to management) and cover outcome and/or process type metrics. Counterparties can have multiple KPIs and these will need to interact in ways that are mutually reinforcing and not create unintended consequences. Key questions include:

- What are the right KPIs for different environmental outcomes in different sectors?
- What KPIs are good for short, medium, and longer-term outcomes?
- What are the best ways of measuring different environmental KPIs? How should KPIs differ by sector, geography, and asset class?
- How can KPIs be measured transparently and rigorously?
- How should KPIs be evaluated and what makes a good or bad KPI for environment conditional finance?

To answer these and related questions we recommend the UK establish a new initiative that will work closely with counterparties and providers of capital in a trusted and pre-competitive way, with all results being published and openly available.



In addition to beginning the systematic testing of environment-related KPIs and working to scale the adoption of the best KPIs, the initiative could develop a plan and pathway for sector wide data and information sharing, creating a context where providers of transition finance share their experiences and also actively participate in testing and scaling the most effective KPIs and incentive structures.

Scaling transition finance would create demand for new financial products and services to help clients to transition. Precedents for this are commonplace in other areas: car insurers reward safer drivers as standard; corporate insurers reduce excesses for customers who undergo training in cybersecurity and thereby lower their exposure; banks expect borrowers to obey auditing and governance norms.

This process will involve the development of packages of financial products and services with differing levels of complexity and duration, designed to help counterparties transition. Some of these exist already, for example in the form of some recent SLLs and SLBs, or are emerging and in the future could encompass swaps, smart contracts, new prediction markets and/or new forms of public and private partnership. These will be developed and tailored by sector and geography, with solutions varying across different asset classes. Transition Finance should, therefore, be viewed as a much richer and more diverse arena than simply SLLs and SLBs, critical though these are.

Mutually reinforcing packages of financial products and services will also be necessary for counterparties dealing with the impacts of Covid-19. Commercial or concessional financing since the crisis began will likely need to be restructured and refinanced, potentially repeatedly over many years, and if public finance is involved then policymakers ought to consider the direction counterparties should be heading in and what broader policy objectives they can support as they go.

We need to be clear that transition finance is applicable to all counterparties. While we focus on firms here, this also encompasses governments and individuals. For the latter this could include homeowners looking to retrofit their homes, retail investors seeking to contribute to the transition through their investments, or workers needing to retrain as industries change and evolve.

Spurring financial institutions to think more expansively and creatively about the ways they can and should use finance to support borrowers and issuers to transition is necessary, but is also a massive market opportunity for the City of London. UK financial services can create and profit from the provision of bespoke financial products and services that are needed to support companies around the world in their transition towards a sustainable economy.

Driving forward international corporate governance and stewardship reform

Corporate governance refers to the rules and processes by which companies are governed, and to what end. It not only ensures that the company complies with the law, but also sets a culture by which the company acts as a good corporate citizen, or not. Active ownership and investor stewardship is the delivery of long-term value for clients and other stakeholders, creating sustainable benefits for the economy, society and the environment. The UK is a regulatory world-leader in both corporate governance and stewardship.

The Companies Act Section 172 sets out the duties of company directors to ensure the success of a company, whilst having regard to the long-term consequences of any decision, as well as any impacts of the company on the community or the environment. The UK Corporate Governance Code sets out a range of standards relating to corporate behaviour. All Premium Listed firms must report on how they apply the code in their activities. Both the Act and the Code thereby deliver a principles-based approach designed to ensure responsibility in the directors' fiduciary and reporting duties. However, there is a need to prioritise and specify environmental responsibility more clearly within these regulations.

Corporate governance codes internationally should be updated to reflect the urgent societal need for environmental action. The UK has an interest in internationalising best practice in corporate governance, creating a larger playing field for high-quality commercial activity. Greater alignment of corporate governance best practice and regulation will help to improve outcomes and make it easier for investors deploying capital across different jurisdictions.

Driving the adoption of best practice is especially important across Commonwealth common law jurisdictions. Doing so will help to reinforce the 'Commonwealth dividend' and could help to reduce the 'home bias' we described earlier that afflicts institutional investors.⁸¹

The Commonwealth itself has examined the issue of corporate governance before, last in 1999⁸², but the intervening period has seen fundamental changes in business and society. The new operating environment for businesses requires organisations to respond to issues as diverse as climate change, resource scarcity, social tension and inequality, geopolitical tensions and rapid technological advances.

Another Commonwealth country that has led on corporate governance reform is South Africa. The King Report on Corporate Governance (issued in 1994 (King I), 2002 (King II), 2009 (King III) and most recently in 2016 (King IV)) sets out a world-leading corporate governance framework for companies in South Africa. The King Reports have consistently set out

^{81.} M. Boermans and R. Galema (Jun 2020), "Carbon Home Bias of European Investors". Link.

See: Commonwealth Association for Corporate Governance (1999), "Principles for Corporate Governance in the Commonwealth". Link.

an integrated approach to corporate governance in the interests of a wide range of stakeholders. King IV identifies principles in five key areas:

- Leadership, ethics and corporate citizenship
- Strategy, performance and reporting
- Governing structures and delegation
- Governance functional areas
- Stakeholder relationships

The King Reports are widely acknowledged as world-leading and have contributed to the development of governance frameworks in a variety of jurisdictions.

In addition to the UK and South Africa, other Commonwealth countries have developed their own corporate governance codes (including Australia, Canada, India, and Malaysia) but – by emphasising the economic, environmental and social aspects of a company's activities – the King Reports place a special emphasis on corporate governance issues that are particularly relevant to developing countries.

We propose that a new voluntary gold standard in corporate governance code be prepared. This would be the equivalent of a 'King V' that would be focused on common law Commonwealth countries (or potentially more broadly) with the process being announced and commencing at the Commonwealth Heads of Government Meeting 2021 in Kigali or as part of the G7.

In parallel, a similar process could be established to internationalise the UK's aforementioned Stewardship Code. Again, increasing the adoption of best practice and properly embedding both environmental risk management and alignment with environmental outcomes across asset owners and asset managers, will help to improve corporate strategies and behaviours. It will also help to create the pool of net zero and nature positive assets that institutional investors will need to hold in order to meet the climate and nature objectives we described above.

The UK Stewardship Code is a set of principles embedded in UK law that institutional investors are expected to follow. The Stewardship Code aims to integrate high environmental, social and governance (ESG) standards among asset owners and managers. It defines stewardship as "the responsible allocation, management and oversight of capital to create long-term value for clients and beneficiaries leading to sustainable benefits for the economy, the environment and society."⁸³ The Code sets out principles that must be 'applied and explained', in that companies must explain how their board and staff deliver respective principles. Three of the principles refer to environmental and climate-related stewardship within corporate purpose, investment strategy and clients' own integration of stewardship. The UK should present this as a model for international adoption.

83. Financial Reporting Council (2020), "The UK Stewardship Code 2020". <u>Link</u>.

Costs of regulation

An obvious criticism of additional regulation is that of costs. Regulatory burdens, particularly in bureaucratic requirements, create real costs for the financial system and this can have the effect of stymying growth. However, the system of new requirements we propose represents a costeffective approach, with a number of points in its favour.

First, the counterfactual is central to the case for reform. Without action on disclosures and transition plans, the financial system will continue to be exposed to such risks. Shocks will occur with increasing frequency as environmental changes manifest. Acting now will identify risks, allow cost-effective remedies and prevent asset stranding.

Second, there is a strong case in favour of standardisation in regulation. A wide range of approaches to ESG, risk disclosures and other environmentfocused initiatives exist in the global market. These are confusing and risk a costly over-compliance that only inflates the costs of transition. The beneficiary of clarity and standardisation is the financial community itself.

Third, we have argued for a principles-based regulatory system (as below), which allow space for financial firms to innovate and find the lowest-cost solutions to environment-related risks.

Finally, for the City of London there is a very large opportunity in our recommendations. By maintaining its lead as a centre of excellence in green finance, the City will benefit from growing demand for transition finance. The UK would be supporting this position by pursuing our recommendations at the international level.

Section Four: the case for principles-based regulation

Generally speaking, there are two approaches to financial regulation: rules-based and principles-based.

In broad terms, 'principles-based' means setting broader expectations and leaving it to supervised firms to decide the best way to meet these expectations. It tends to include broad-based standards, outcomes-based regulation and places greater onus on senior management to use their own judgement, with associated accountability. The approach has been pioneered in the UK over the past 20-30 years and it fits well within the UK's common law system, which lends itself to regulatory and legal evolution. A good example of principles-based regulation is found in the PRA's Senior Managers Regime, discussed above. Other common law jurisdictions, such as Australia and Canada, have also adopted principlesbased approaches to financial regulation.

'Rules-based' approaches are more prescriptive, setting out specific rules and procedures to be followed. Perhaps the most prominent rulesbased regulatory system is that of the EU, which borrows a great deal from the French 'civil law' system.

The EU's Technical Expert Group on Sustainable Finance has proposed a 'taxonomy' designed to classify all economic activities, offering a good example of its civil law, rules-based approach. However, the approach has a number of significant drawbacks. It is binary, whereas sustainability is gradated. It is particularly vulnerable to industry lobbying and administrative lags. It creates 'labels' for green products and services, which makes them not only appear niche (rather than sustainability being a universal goal), but also risks overinflating those assets' valuations.

Both principles-based and rules-based systems have their merits. An obvious advantage of rules-based systems is clarity – it is easier and arguably more just to hold a manager responsible for breaking a rule. Principles can be more difficult to define, which is part of the reason that the English common law approach fits well with principles-based regulation: judges are entrusted with and used to interpreting principles and creating precedents for such interpretation.

However, there are strong reasons for the UK to promote principlesbased approaches for environmental financial regulation globally. These include:

- Utilising market efficiency: Firms should be free to respond to clear market signals, including those from governments and regulators, in the most efficient and cost-effective ways available. This lowers the cost of the transition. More prescriptive rules can cause 'box-ticking', in which firms meet requirements but go no further, leading to a less dynamic and efficient response.
- **Simplicity:** Simplicity helps to avoid gaming of the rules through loopholes or pursuing the letter of the law but not the spirit. As has been seen in the contorted tax arrangements of some multinational companies, jurisdiction matters. Financial systems and environmental change are both cross-border and should not be allowed to succumb to similar regulatory arbitrage.
- **Broader reach:** It is necessarily harder for a rule maker to anticipate every possible violation *ex ante* than it is for a regulator or judge to assess whether a firm's actions met expectations *ex post*. Principles-based regulation therefore captures all possible actions and business models within the regulated environment, rather than just those identified by the rules.
- **Culture:** A principles-based approach will tilt the regulated environment towards a culture of integrity. The Bank of England's 2020 assessment of the SMR found that it was "supporting higher professional standards".⁸⁴ This creates an environment with its own momentum towards lower environment-related risks and therefore helps to move the system rather than just provide a static backstop.
- Adaptability: If a firm is told to meet a specific rule, as under the rules-based approach, then it will continue to meet that rule until it is changed. This can become outdated as risks and solutions evolve, for example alongside technological advances. Alternatively, if the firm is presented with an 'expectation to manage risks in line with available methods', then it must evolve over time with reasonable societal expectations. The rapidly changing nature of environment-related risks and solutions therefore makes principles-based regulation more suitable.
- **Lower vulnerability to capture:** All rule makers, from regulators to legislators, are vulnerable to lobbying. This means that rules can be influenced and reflect the designs of vested interests. Principles-based systems are less vulnerable to this because they are simpler and because accountability is *ex post*, so it is more likely to be a judge or regulator assessing the firm's actions rather than a rule maker trying to anticipate them.
- International applicability: For reasons set out above, it is easier to apply principles across borders than prescriptive rules, making it possible for countries to share these principles without sacrificing sovereignty. This not only makes it easier for the G7 to take the initiative and influence global financial regulation, but also to regulate long supply chains and thereby manage nature-related risks through commodities markets.

 Prudential Regulation Authority (December 2020), "Evaluation of the Senior Managers and Certification Regime". <u>Link</u>. The UK should argue strongly for principles-based financial regulation of environment-related risks and alignment. It will likely find supporters of this in the anglosphere, much of which inherited the English common law system.

The EU is pursuing a geopolitical strategy based on regulatory dominance and will likely see this area of financial regulation as an opportunity to exert influence. Other nations should be wary of rulesbased systems that may simply amplify the EU's approach and regulatory influence across multiple sectors. The UK, together with other common law jurisdictions, should build a coalition in favour of a principles-based approaches to regulating financial services, including but not limited to green finance. The UK can and should be more vocal in advocating for principles-based approaches. The first step should be commissioning a short review examining how principles-based approaches to financial regulation can be improved, adopted, and applied to new areas of finance, including green finance.

It is important to recognise the contextual debate around principlesbased regulation. In the regulatory rethink which followed the Great Financial Crash of 2008, principles-based regulation did not escape unscathed. Hector Sants, the then-chairman of the Financial Services Authority (FSA), emphasised in a 2009 speech that the phrase "may have been misunderstood", and that "a majority majority of market participants are decent people; however, a principles-based approach does not work with individuals who have no principles". Sants went on to rebrand the FSA's regulatory approach as 'outcomes-focused regulation.⁸⁵

At the time, the intervention was widely interpreted by the media as an end of 'light touch' regulation with which PBR became associated.⁸⁶ By extension, this contributed to a sense that an overly lax regulatory regime was partly to blame, and the seeming move away of the regulatory regime from 'principles-based' to 'outcomes-focused' means a wholesale change in regulatory approach to a more heavy-handed rules-based system.

However, PBR was arguably used as a convenient scapegoat. The US, where regulators have long adopted a more rules-based approach, did not fare much better.⁸⁷ Neither is it true to say that principles-based regulation was one of the casualties of the financial crisis – the '11 Principles for Business' are still the cornerstone of the FCA.⁸⁸

But the aftermath of the crisis did bring at least two important changes, which are relevant to applying PBR to green finance policy. Prudential rules around capital requirements – which prescribe very specific ratios – are and will remain the domain of specific rules. PBR is relevant wherever regulatory objectives are more complex, more long-term and there is no consensus on the best way of achieving them. These two lessons from the crisis should be seen as core to the application of principles-based regulation.

Sants H (2009) "Delivering intensive supervision and credible deterrence", 12 March 2009

^{86.} Inman P (2009) "'Be very afraid', FSA warns bankers", The Guardian, 12 March 2009, https://www.theguardian.com/business/2009/mar/12/regulators-financial-crisis

^{87.} Black J (2010) The Rise, Fall and Fate of Principles-Based Regulation, LSE Working Papers, <u>https://core.ac.uk/download/</u> pdf/17332.pdf

^{88.} FCA Handbook, The Principles, <u>https://www.handbook.fca.org.uk/handbook/PRIN/2/1.html</u>

1. Regulators must keep reviewing relevant disclosure to prevent sliding into tick-box compliance.

Regulators and supervisors should constantly evaluate to what extent a given firm complies with the spirit of the principles – in other words, it must be 'outcomes focused'. In the context of post-crisis regulation, this meant adopting a more intensive form of supervision and assessing the judgements of firms' senior managers against clear regulatory objectives.

In the context of green finance this could, for example, include assessment of the quality of TCFD-aligned disclosures and planning. This would apply not just to the quality of information provided but also its accuracy.

2. Regulators should resist the urge to issue too much prescriptive guidance but instead be clear in setting out regulatory objectives.

Regulators should also resist the process whereby principles-based systems have evolved into poorly designed rules-based systems due to firms seeking more prescriptive clarity. As firms request such clarification, a canon of 'clarifications' becomes the dominant body of regulatory material, rather than the principles themselves. A result is the tick-box culture that PBR is explicitly intended to prevent. This pressure on regulators originates with firms themselves, who seek to lower 'interpretive risk'. Regulators should resist this and instead focus on clear regulatory objectives.

Principles-based rulemaking does not – and should not – mean lax supervision. This requires regulators that are well-resourced, able to hold their own when going up against large firms, and above all, able to distinguish from many bespoke approaches to compliance which ones are truly furthering regulatory objectives.

Section Five: strategy and recommendations

Below, we set out an 12-point plan for greening the global financial system. This provides an ambitious programme that the UK can promote through the multiple diplomatic events to be held in 2021. As the host of the G7, the co-host of COP26 and a key participant at CHOGM, the UK is exceptionally well-placed to lead this agenda. The recovery from COVID-19 creates an opportunity to reform finance and the Biden administration provides new impetus behind action on climate change. There will rarely be such a confluence of events, with the UK so clearly able to take the lead.

The programme of reforms we set out is ambitious and requires political support at the highest possible level. Diplomatically, this should begin with Boris Johnson and his Italian and American counterparts. This triumvirate will be able to bookend 2021's diplomatic programme, building momentum from Biden's major economies climate summit, via the G7 and G20, through to COP26. Each provides opportunities to reaffirm the direction of travel and expedite reforms. It provides clear deadlines and mid-points for 'sherpas' (the diplomats conducting the more detailed negotiations), which will ensure elements like the naturerelated disclosure frameworks can advance more quickly.

If all G7 members mandated TCFD at the level of financial governance within their jurisdictions, this would account for a very large portion of global financial activities. The G7 accounts for 45% of global GDP (a measure of economic transactions) and an even larger proportion of global wealth. They also host 11 of the world's top twenty financial hubs, including a quarter of all equities investment flows and almost a third of all Initial Public Offerings (IPOs).⁸⁹ These risk disclosures provide the baseline for more active transition plans that will place the financial system at the heart of environmental progress, helping to answer the many criticisms about its societal value.

Importantly, there is also a role here for China. As host of the 15th Conference of the Parties (COP15) to the Convention on Biological Diversity (CBD), China can play a key role in setting new rules for nature-related financial risks. The UK should seek to gain China's support for a new TNFD as part of its diplomatic efforts. That will help to tie China into the broader multilateral system by allowing it a leading diplomatic role, even despite recent geopolitical tensions.

If the UK manages these summits effectively, it will have taken a major

^{89.} Figures drawn from the World Federation of Exchanges, Link. These data may be slightly inflated as they are based on the parent companies of exchanges, not exchanges themselves. Therefore there will be some inclusion of non-G7 data from smaller exchanges in the Netherlands, Belgium and Portugal.

step in preparing the financial system to withstand environment-related shocks, as well as support the wider economic transition to a sustainable future. The UK will have demonstrated its leadership at the global level, highlighting its continued diplomatic weight after Brexit, as well as its independent commitment to key values. It will have set the global system to reflect the UK's common law approach and re-secured the City of London as the home of green finance.

Our programme of reforms is set out below in twelve key recommendations:

Recommendations 1 and 2

The UK should mandate nature-related financial risks to its prudential disclosure regime, in the same way as it has set out plans to mandate climate-related risks.

It should then use its presidency of the G7 to spur other major economies to require the use of both frameworks.

In the same way that the UK has made TCFD mandatory, it should make the TNFD mandatory. The UK should also spur other major economies to require the use of both frameworks, with a target for both the mandatory disclosure of both climate-related and nature-related financial risks across the G7 by the end of 2022 and by the end of 2025 for the G20. Consensus on these international targets should be sought in the G7 and G20 in 2021.

Recommendation 3

Central banks and supervisors should introduce, over time, higher capital charges to assets at greater risk from climate and nature-related risks.

There is sufficient evidence for higher capital charges to be applied immediately, though they should be phased in progressively to allow institutions to adapt. Over time these can be reviewed and the stringency revised.

Central banks and supervisors should also reduce capital charges for green infrastructure, as these types of investment can actually help to reduce risks facing the global economy by helping to tackle climate change, biodiversity loss, and habitat destruction. This measure should be introduced immediately where high-quality, science-based taxonomies exist to identify the relevant green infrastructure.

Agreeing to take these steps, even if the exact increases or reductions in capital charges are made at a later date, should be another priority for the members of the G7 and the UK as its president.

Recommendation 4

The UK should work to promote principles-based green finance regulation. This should begin with a study into how such regulations can be improved, partnering with other nations that share the 'common law' tradition.

The UK, together with other common law jurisdictions, should build a coalition in favour of a principles-based approaches to regulating financial services, including but not limited to green finance.

The UK can and should be more vocal in advocating for principlesbased approaches given their benefits. A natural forum for propagating this approach more widely will be the Commonwealth Heads of Government Meeting in Kigali in June. However, the UK should work closely with sympathetic non-Commonwealth partners such as the USA to progress this agenda.

The first step should be to commission a short review examining how principles-based approaches to financial regulation can be improved, adopted, and applied to new areas of finance, including green finance.

Recommendation 5

The UK should promote the Bank of England's Supervisory Statement, using it as a model to mandate action on environment-related risks at the board and management level of supervised firms.

The Bank of England's Supervisory Statement for climate change is proven best practice in the financial system. It should be adapted to different contexts and its adoption conscientiously promoted so that all large supervised firms across the G7 (and then the G20), including asset owners, asset managers, banks, and insurers, are required to action climate-related and nature-related risks at the board and senior management levels or risk supervisory intervention.

Doing so would create a new level of expertise and dedicate a suitable level of resource to assessing risks, driving innovation across the financial system.

Recommendation 6

Central banks should design asset purchase schemes to reflect the environment-related risks associated with corporate assets and bond issuers.

Central banks should design asset purchase schemes to reflect the environment-related risks associated with corporate assets and bond issuers. This should take place as soon as such risk assessments are mainstream, reliable, and allow broad-based interventions. Under the guiding principle of market neutrality, asset purchases must be broad-based, and so depend on this maturity to avoid unintended biases.

For climate-related risks, we believe risk assessments have reached this stage of maturity for incorporation within asset purchase schemes.

For nature-related risks, there is still research and development to be done, but once disclosures are mainstreamed, central banks should reflect this through their policies.

Recommendation 7

In order to track environment-related financial risks accurately and transparently, the UK should lead a coalition to create the first comprehensive digital map of all physical assets in the world through the use of earth observation satellites, AI and financial data.

The UK should leverage its leadership at the G7 and COP26 to be the cornerstone funder and advocate for a new global asset transparency project, analogous to the Human Genome Project, that will sequence the physical economy to produce universally trusted, transparent, and verifiable datasets covering every physical asset on earth. This is a necessary condition for 'spatial finance', which is itself a pre-requisite for greening the global financial system.

Recommendation 8

The UK should require large supervised firms to implement transition plans that remove environment-related risks from their portfolios and loanbooks. It should then promote this approach internationally.

Once environment-related risks are measured and managed, the process of capital reallocation will accelerate. But this will not be sufficient on its own to drive the scale of capital reallocation required to tackle climate change, biodiversity loss, and habitat destruction.

Within two years, alignment with environmental outcome targets and associated transition plans should be required on a 'comply or explain' basis from supervised financial institutions in the UK, with the UK then promoting this internationally.

For climate change this should require all holdings in a portfolio or loanbook being net zero by 2050 or earlier, with clear interim targets. For nature, all holdings in a portfolio or loanbook should not contribute to biodiversity loss or habitat destruction as soon as possible before 2025, with zero deforestation by the end of 2022, and then all holdings making a positive contribution to nature by 2030.

Recommendation 9

The UK should also require Premium Listed firms on UK stock exchanges to produce similar transition plans regarding their own commercial interests. Such plans should be put to a distinct shareholder vote at the firm's AGM. The UK should encourage international partners to do the same through the G7, G20 and COP26.

Reflecting our recommendation that supervised financial firms must adopt environment-related risk transition plans, this requirement should also be applied to all Premium Listed firms on UK stock exchanges.

Such transition plans should be put to a distinct shareholder vote at the company's Annual General Meeting, for adoption, amendment or rejection. Whereas supervised financial firms represent systemic risks for the economy, listed firms represent a significant portion of invested capital, making them systemically significant too. However, the associated risks faced by listed firms (notwithstanding those that are also financial services firms) are primarily the interst of the firms' shareholders. Therefore the appropriate 'regulatory' process is a shareholder vote.

As with other recommendations, the UK should work with international partners, particularly the USA and Italy, to put this proposal on the table at the G7, G20 and COP26.

Recommendation 10

All public finance, whether bailouts, credit facilities or export finance, should be made conditional on sustainability transition plans relating to key environmental thresholds.

Transition finance is the provision and use of financial products and services to support counterparties, such as companies, sovereigns, and individuals, realise alignment with sustainability. The financial system exists to support society's economic activities and so, arguably, all finance needs to become transition finance if we are to deliver the objectives of the Paris Agreement and the UN SDGs. Industry will need to develop packages of transition finance products and services with differing levels of complexity and duration designed to help counterparties transition.

Supporting borrowers and issuers to transition is critical to decarbonising the economy, but is also a massive market opportunity for the City of London. UK financial services can create and profit from the provision of bespoke financial products and services needed to support companies transitioning towards a sustainable global economy.

To spur the market and reduce the exposure of public sector balance sheets to the risk of stranded assets, over time, all public finance should become conditional on meeting ambitious pre-determined sustainability objectives. For example, all public finance above a certain level (e.g. >US\$10m) should become sustainability-linked by a certain future date (e.g. 2023) with commitments by private financial institutions being encouraged to make all finance above that same level sustainability-linked by a later date (e.g. 2025).

The UK should lead the way and make this commitment in the context of enhancing the efficacy and risk management capabilities of all public financial institutions. Further, the UK should establish a new initiative that works closely with counterparties and providers of capital in a trusted and pre-competitive way to develop and test the sustainability-linked KPIs that will underpin sustainability-linked financial products and services. This will help to solidify the City of London's leadership in this commercially significant area.

Recommendation 11

Anew, voluntary gold standard in corporate governance and stewardship should be developed and promoted through the Commonwealth Heads of Government Meeting in June 2021.

We propose that a new voluntary gold standard in corporate governance and stewardship be prepared, based on leading examples across Commonwealth common law jurisdictions such as the UK and South Africa.

The process should be announced and commencing at the Commonwealth Heads of Government Meeting 2021 in Kigali or as part of the UK's G7 Presidency. Increasing the adoption of best practice will help to improve corporate strategies and culture in relation to environmental risks and alignment with environmental outcomes. It will also help to create the pool of net zero and nature positive assets that institutional investors will need to hold in order to meet their climate and nature objectives.

Recommendation 12

The UK should create a 'race to the top' dynamic with EU on green taxonomy metrics and thresholds. The British taxonomy's metrics and thresholds should be set independently from vested interests and set transparently and with scientific rigour.

To this end, membership of the UK Green Technical Advisory Group should be based on expertise, not industry representation.

The UK should also develop a brown taxonomy that defines polluting activities that need to be phased out and by when.

The UK's decision to pursue a green taxonomy is not one we would recommend, but it is logical on the basis of the EU's progress towards developing a taxonomy. The EU's approach is heavily influenced by corporate representation and by member states' political or economic interests. The UK should create a taxonomy based on scientific evidence. This would create a higher quality taxonomy, which will be recognised by industry, investors and civil society. Perhaps most importantly, it will also create a methodology for other countries to follow, as it will not be based on EU-specific priorities but on universally applicable scientific evidence. This will not only improve the quality of the taxonomy but also British influence in the global system.

Further, the new UK Green Technical Advisory Group could also be tasked with creating a rigorous brown taxonomy, identifying polluting activities that need to be phased out and by when based on scientific evidence. This is much more workable enterprise than the green taxonomy proposed by the EU (there are far fewer sectors and we have much better data) and an area where the UK can seek to build consensus with other international partners.



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