

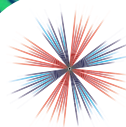


HM Government

Green Finance Strategy

Transforming Finance for a Greener Future

July 2019



**INDUSTRIAL
STRATEGY**

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Ministerial Foreword



Rt Hon Greg Clark MP
Secretary of State for
Business, Energy and
Industrial Strategy



Rt Hon Philip Hammond MP
Chancellor of the
Exchequer

The UK has a proud record in tackling climate change and protecting the environment. Transforming our financial system for a greener future is important for us to continue to lead the way.

We were the first country in the world to set long-term, legally binding emissions reduction targets, through the Climate Change Act 2008. We have led the G20 in decarbonising our economy. And, through our 25 Year Environment Plan, we are delivering our commitment to leave the environment in better condition than we found it.

But tackling climate change and environmental degradation is only just beginning. By legislating for net zero emissions by 2050, we are responding to the latest science by raising our ambition. Meeting our objectives will require unprecedented levels of investment in green and low carbon technologies, services and infrastructure. Green finance will be central to providing the flows of capital we need.

The challenges in creating a sustainable and resilient economy are great - but the opportunities are greater still. With a leading financial services sector, the UK is ideally placed


to seize the commercial potential arising from this transition, which is why green finance is at the heart of the Government's approach, and a pillar of both our Clean Growth Strategy and Industrial Strategy. It will also help ensure our financial system is robust and agile enough to respond to the profound challenges that climate change and the transition to a clean and resilient economy bring with them.

Building on the important work of the Green Finance Taskforce, this first Green Finance Strategy sets out how we will achieve this ambition and accelerate the growth of green finance, from greening the global financial system and catalysing the investment we need, to driving innovation in financial products and building skills across the financial sector.

This Strategy is also a call for collective action, setting out how we will work with industry, regulators, academia and the newly launched Green Finance Institute to deliver the urgent and far reaching change that is needed for a greener, more sustainable and prosperous future.

There is no doubt about the scale of the environmental challenge that we face. To tackle that challenge effectively and sustainably requires us to harness the delivery capacity of the market economy - and in particular to mobilise the enormous resources of our capital markets through Green Finance. This Strategy represents our commitment to taking the steps that will ensure that the UK's Green Finance sector is turbo-charged to play a crucial role in protecting the future of our planet for generations to come.

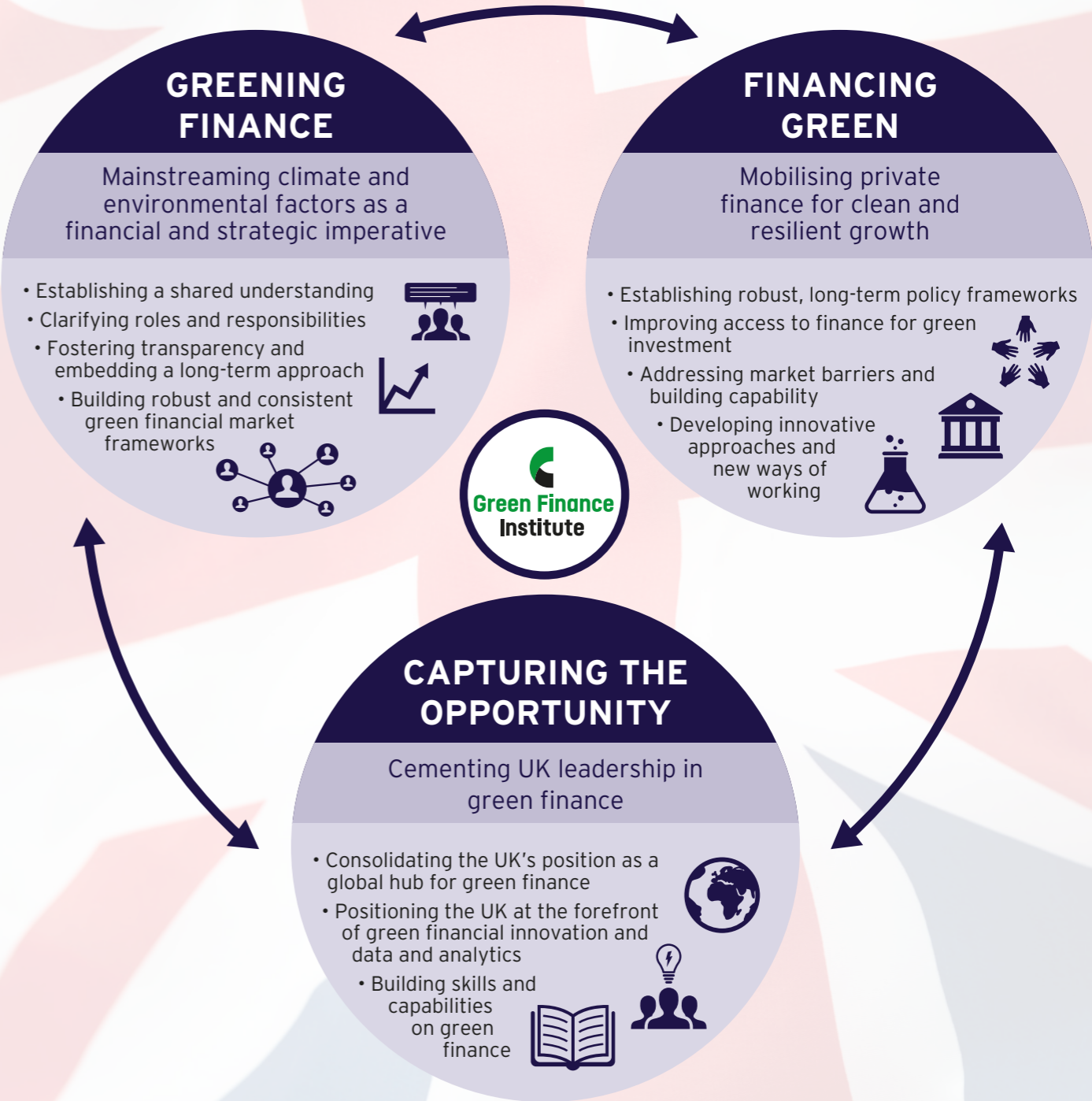

Rt Hon Greg Clark MP


Rt Hon Philip Hammond MP



The UK's Green Finance Strategy

- Aligning private sector financial flows with clean, environmentally sustainable and resilient growth.
- Strengthening the competitiveness of the UK financial services sector.



Executive summary

Climate change and the degradation of the world's natural capital assets are defining issues of our time. The world is getting warmer, sea levels are rising, pollution is costing lives and biodiversity is collapsing. The recent Intergovernmental Science and Policy Platform on Biodiversity and Ecosystems Services (IPBES) Global Assessment and the Intergovernmental Panel on Climate Change (IPCC) Special Report on 1.5°C are both timely reminders of the urgency of action.

The UK's new target to reach net zero greenhouse gas emissions by 2050 means we are the first major economy in the world to set such a target into law. We are also introducing a landmark Environment Bill, which will place environmental ambition and accountability at the very heart of government and put our flagship 25 Year Environment Plan into law.

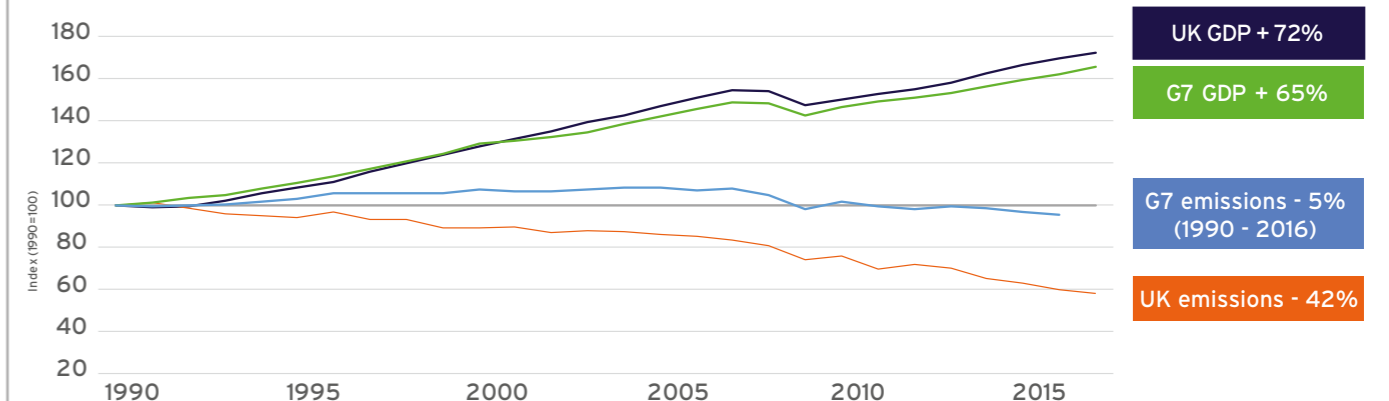
We need to shift to a world where we are at net zero emissions, and deliver our commitment that this will be the first generation in our history to leave the environment in a better condition than we found it. This means systemic changes across all parts of our economy; and in particular delivering a global financial system that supports and enables these outcomes. This strategy is our first step towards delivering that vision.

The global shift towards cleaner, resilient growth

As the international community begins to take the action that this challenge demands, a significant transformation is beginning in the global economy towards cleaner, more resilient economic growth. We expect that countries will increase their commitments and accelerate this transition at COP26 in 2020, which the UK has bid to host in partnership with Italy¹. The re-allocation of tens of trillions of dollars of capital towards green investment offers the potential to reshape cities, energy systems and land use around the world. The nature of this investment over the coming decades will determine the future of our climate, the natural world and the resilience of our communities. It also presents a substantial commercial opportunity for the UK financial sector.

As recently noted by the International Energy Agency, the UK has led the way in the transition to a low carbon economy². Since 1990, we have grown our economy by two-thirds while reducing our carbon emissions by over 40%, the strongest performance of any G7 country. There are already almost 400,000 jobs in low carbon businesses and

UK vs G7 GDP and Emissions



Source: World Bank, UNFCCC, ONS, BEIS Greenhouse Gas Inventory.

their supply chains across the country³ and clean growth sits at the heart of the UK's Industrial Strategy as one of four 'Grand Challenges'.

The Government has a proud pedigree of climate and environmental leadership, such as the UK Climate Change Act, Clean Growth Strategy, 25 Year Environment Plan and the National Adaptation Programme and now this Green Finance Strategy. As we move towards a net zero economy, finance will play a crucial role in enabling changes to our homes, how we travel and our agriculture. The UK has the opportunity to lead the way in clean, climate resilient growth that protects our natural environment.

Transforming the Financial System

As the financial risks and opportunities from the low carbon transition become apparent, a second, equally important, transformation is also underway: that of the financial system. This transformation moves beyond just funding green projects to ensuring climate and environmental factors are fully integrated into mainstream financial decision making across all sectors and asset classes.

And here too, the UK has led the way. The Green Finance Taskforce report, published in March 2018, was a landmark in the development of UK green finance. The Bank of England has played a pivotal role, both domestically and internationally, to ensure climate change is considered a mainstream and far-reaching financial risk, as well as one that requires action today. UK firms have also played a leading role at home and abroad, with banks, insurers, asset managers and pension funds in the vanguard of green financial innovation, supported by a rich ecosystem of civil society, business, academia and technical experts.

Cementing UK leadership

With our track record on clean growth and a world-leading financial sector, the UK is well-placed to seize the economic benefits of green finance. As the Industrial Strategy demonstrates, this is a win-win for our climate and environmental

ambitions, as well as further enhancing the competitiveness of the UK's real economy and financial services sector. Leadership on green finance will enable the UK to maximise the economic opportunities of the global and domestic shifts to clean and resilient growth.

Progress is undoubtedly being made. 70% of banks in the UK now consider climate change as a financial risk⁴, and green financial products are increasingly becoming more widespread in the market. But much more needs to be done. Only 10% of banks in the UK are taking a long-term strategic approach to managing the financial risks from climate change⁵, and the total global and domestic value of outstanding green bonds is only a fraction of the financing required. And more needs to be done to ensure the physical and transition risks from climate change are fully taken into account so as not to undermine the future resilience of individual investments and the wider economy.

Delivering an ambitious and credible Green Finance Strategy

Our Green Finance Strategy supports the UK's economic policy for strong, sustainable and balanced growth, the delivery of our modern Industrial Strategy and our domestic and international commitments on climate change, the environment and sustainable development.

It is informed by the private sector and wider stakeholders, and is, in part, a response to the recommendations of the Green Finance Taskforce, chaired by Sir Roger Gifford. The Taskforce is a leading example of the cross-sector collaboration that the strategy seeks to advance. To this end the Government has already taken action to implement its recommendations ahead of the publication of this strategy, such as announcing the establishment of the Green Finance Institute (GFI). As the UK's principal forum for collaboration between the public and private sector with respect to green finance, the GFI will play an integral role in supporting delivery of our Green Finance Strategy and driving the mainstreaming of green finance in the UK and abroad.

Strategy and Objectives

Our Strategy has two objectives, and three strategic pillars to achieve them:

OBJECTIVES

To align private sector financial flows with clean, environmentally sustainable and resilient growth, supported by Government action.

To strengthen the competitiveness of the UK financial sector.

STRATEGY

Chapter 1 Greening Finance

Ensuring current and future financial risks and opportunities from climate and environmental factors are integrated into mainstream financial decision making, and that markets for green financial products are robust in nature.



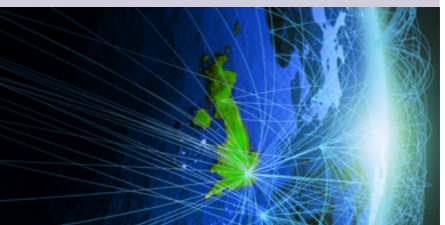
Chapter 2 Financing Green

Accelerating finance to support the delivery of the UK's carbon targets and clean growth, resilience and environmental ambitions, as well as international objectives.



Chapter 3 Capturing the Opportunity

Ensuring UK financial services capture the domestic and international commercial opportunities arising from the 'greening of finance', such as climate related data and analytics, and from 'financing green', such as new green financial products and services.



This Strategy is an ambitious package, bringing together work from across the Government, regulators and the private sector. We will be co-ordinating closely with our international partners to achieve our objectives.

Greening Finance

The transition to a green financial system means fundamental changes to the way decisions are made across the economy. To achieve the goals of the Paris Agreement and our wider environmental ambitions, all finance will need to incorporate the financial risks and opportunities presented by climate change and other environmental challenges.

There is increasing international recognition of the need to integrate climate and environmental factors into mainstream financial decision-making. One of the most influential initiatives to emerge is the Financial Stability Board's private sector Task Force on Climate-related Financial Disclosures (TCFD), supported by Mark Carney and chaired by Michael Bloomberg. This has been endorsed by institutions representing \$118 trillion of assets globally⁶. An increasingly large proportion of the private sector is now beginning to implement the TCFD recommendations and in September 2017, the UK became one of the first countries to formally endorse them.

Alongside the private sector, central banks and supervisors are also taking action to address the far-reaching financial risks associated with climate change. World leaders also took notice in 2016, and welcomed the work of the G20's Green Finance Study Group⁷, co-chaired by the UK and China.

Building on the UK's existing leadership, the first chapter of this strategy sets out the actions we are taking to ensure climate and environmental factors are recognised and acted upon as a matter of strategic and financial imperative. Our strategy focuses on four elements:

- Establishing a shared understanding;
- Clarifying roles and responsibilities;
- Fostering transparency and embedding a long-term approach; and
- Building robust and consistent green financial market frameworks.

The ambitious actions we are taking include:

- The Government setting out its expectation for all listed companies and large asset owners to disclose in line with the TCFD recommendations by 2022;
- Establishing a joint taskforce with UK regulators, chaired by Government, which will examine the most effective way to approach disclosure, including exploring the appropriateness of mandatory reporting;
- Supporting quality disclosures through data and guidance, such as that being prepared for occupational pensions schemes by a new Government and regulator sponsored working group;
- Clarifying responsibilities for the Prudential Regulation Authority, the Financial Conduct Authority (FCA) and the Financial Policy Committee to have regard to the Paris Agreement when carrying out their duties, and including climate-related financial issues in Government's allocation letter to The Pensions Regulator;
- Working with industry and the British Standards Institution to develop a set of Sustainable Finance Standards, and

chairing a new International Organisation for Standardisation (ISO) Technical Committee on Sustainable Finance;

- Working with the FCA and Bank of England, including through the Fair and Effective Markets Review, to consider steps that can be taken to understand the potential or actual barriers to the growth and effectiveness of green finance markets; and
- Working with international partners to catalyse market-led action on enhancing nature-related financial disclosures. This will complement the recently announced global review of the economics of biodiversity by Professor Sir Partha Dasgupta.

Our ambition for bringing about the systemic change required will not happen overnight, and our strategy for greening the UK's financial system will evolve.

We will continue to explore actions Government can take to green the UK's financial system and will publish an interim report by the end of 2020. The report will examine progress on the implementation of the TCFD recommendations.

Building on the UK's international experience, including the Bank of England's involvement in the Central Banks' and Supervisors' Network for Greening the Financial System (NGFS), we will also use our influence to strive towards the greening of the global financial system. This will include:

- Playing an active role as a founding member of the Coalition of Finance Ministers for Climate Action;
- Co-leading, alongside Egypt, an adaptation and resilience strand at the UN Climate Action Summit;
- Partnering with the private sector to drive the phase-out of unabated coal power and develop sustainable supply chains;
- Exploring initiatives to accelerate the alignment of financial flows to the Paris Agreement's objectives; and
- Aligning the UK's Official Development Assistance (ODA) with the Paris Agreement.

As we move forward with this ambitious domestic and international agenda, the Government will call upon the GFI to provide on-going representation, insight and guidance from the financial sector to inform our strategy.

And while the focus of this Green Finance Strategy is on private financial flows, we recognise that the financial risks and opportunities of climate change are relevant for the public sector as well as industry. That is why:

- The Government will consider the financial risk exposure relating to climate change and the low carbon transition as part of the 2020 Managing Fiscal Risks report; and
- CDC and UK Export Finance will make climate-related financial disclosures in their accounts in line with the TCFD recommendations as soon as practicable, following the close of the 2020/21 financial year.

Financing Green

A strategy to green the financial system as a whole needs to be combined with specific actions to mobilise and accelerate flows of private finance into key clean growth and environmental sectors at home and abroad.

The UK has leading, long-term and legal policy frameworks, most notably the UK's Climate Change Act, which was the first of its kind, and plans to place the 25 Year Environment Plan on a statutory footing. These help provide the long-term certainty we know investors need and the foundation on which we are financing our clean growth ambitions.

Since 2010, there has been more than £92 billion invested in clean energy in the UK⁸. We have also made specific interventions to accelerate green financing, for example, through the Green Investment Bank (GIB). Working alongside over 100 private sector and third-party investment partners, GIB committed £3.4 billion of its own capital to 100 projects with a total value of over £12 billion⁹. And the transition to a clean and resilient economy will hugely expand the opportunity for green finance investments - from homes to power generation to our natural environment.



Our strategy for mobilising green investment will build on our excellent track record and has four primary elements:

- Establishing robust, long-term policy frameworks;
- Improving access to finance for green investment;
- Addressing market barriers and building capability; and
- Developing innovative approaches and new ways of working.

The ambitious actions the Government is taking within this include:

- Announcing a package of measures to mobilise green finance for home energy efficiency;
- Using the forthcoming Environment Bill to place the 25 Year Environment Plan on a statutory footing;
- Determining the steps necessary for landlords and businesses to understand and potentially disclose operational energy use;
- Strengthening engagement with local actors to accelerate green finance across the country;
- Working with the GFI to address market barriers to greater and more rapid deployment of green capital into priority sectors; and
- The National Infrastructure Commission examining the resilience of the UK's infrastructure to consider what action Government should take to ensure it is resilient to future changes, such as climate change¹⁰.

The Government is also mobilising green investments internationally:

- Since 2011, our International Climate Finance has mobilised £910 million of private finance and £3.3 billion of public finance in key sectors including forestry and land use, industrial decarbonisation, sustainable infrastructure and energy transitions¹¹.

- We are working with governments such as China, Brazil and Mexico to develop green finance markets, through the UK Partnering for Accelerated Climate Transitions (UK PACT) programme and the Prosperity Fund.

Capturing the commercial opportunity

Green Finance brings together many areas where the UK has expertise, not just in financial services but also in encouraging innovation, analytics and low carbon technology, working with civil society and providing intellectual leadership in an evolving landscape. The Industrial Strategy set out our aim to make the UK the global standard setter for finance that supports clean growth and allow us to maximise the opportunities of the global and domestic shifts to clean growth.

The UK has a strong record in green financial innovation ranging from Yieldcos, green bonds and environmental, social and governance (ESG) Exchange Traded Funds listed on the London Stock Exchange Group to green mortgages and retail investment platforms.

To ensure the UK continues to capture the commercial opportunities arising from the 'greening of finance' and the 'financing of green', our strategy aims to:

- Consolidate the UK's position as a global hub for green finance;
- Position the UK at the forefront of green financial innovation and data and analytics; and
- Build skills and capabilities on green finance.

The actions the Government is taking within this include:

- Launching the GFI to strengthen public and private sector collaboration and cement the UK's position as a global hub for green finance;
- Enhancing climate-related and environmental data and analytics and promoting dialogue with regulators and industry to support innovation;

- Promoting the adoption and mainstreaming of green finance products and services, including through the launch of a Green Home Finance Fund making £5 million of funding available to the private sector to pilot products such as green mortgages; and
- Engaging with professional bodies to drive green finance competencies - notably through the launch of a Green Finance Education Charter - upskilling the UK's diplomatic networks and building capacity on green finance across the public sector..

Conclusion

Green finance brings together many of the UK's strengths. This document builds on these strengths. It sets out a strategic framework for green finance, outlines the breadth and depth of activities already underway and sets out ambitious policy proposals to strengthen our global leadership and deliver on our vision of a global financial system fit to deliver a net zero future.

The Government recognises that delivering the systemic changes required to align private financial flows with clean, resilient and environmentally sustainable growth will require collaborative efforts across the public and private sector, and that leadership on green finance will in turn strengthen the competitiveness of the UK financial sector.

We will also explore actions Government can take to ensure a just transition and linkages with related policy areas, such as impact investing. We will formally review progress against the aims and objectives of this strategy in 2022.





Introduction

The environmental challenge

Our environment is changing. Human activity has increased the amount of greenhouse gases in the atmosphere to levels higher than at any time during the last 800,000 years. These trends are driving global average temperature rise at a current rate of about 0.2°C per decade¹² and accelerating the number of species that are becoming extinct.

The Intergovernmental Panel on Climate Change's (IPCC) Special Report on Global Warming of 1.5°C showed that humans have caused around 1°C of global warming since the pre-industrial era (1850-1900), with much greater warming in some regions, particularly the Arctic¹³. Earth has experienced major climate shifts in the past, but since the 1950s, many of the changes are unprecedented over centuries to millennia¹⁴. If greenhouse gas emissions continue at their current rate, global mean surface temperature could rise by more than 4°C above pre-industrial levels by 2100¹⁵.

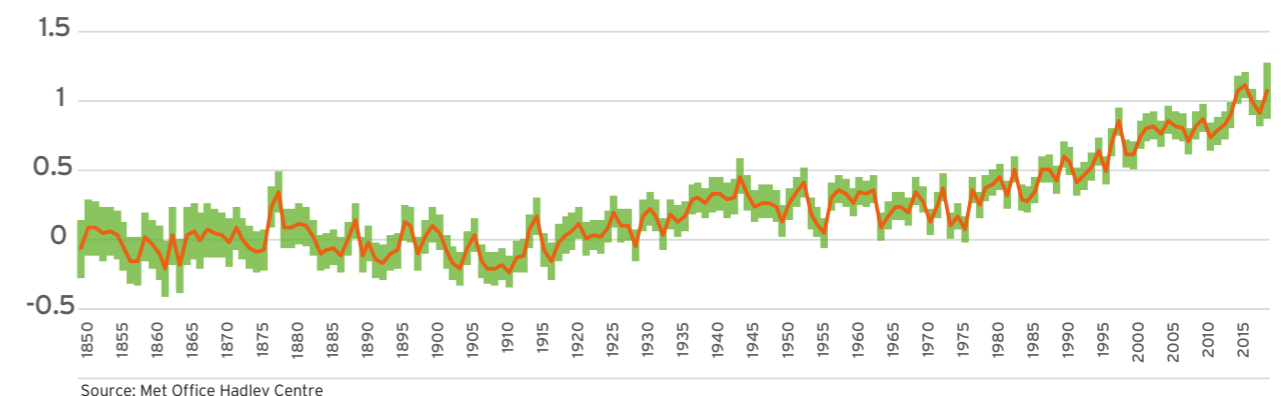
And climate change is just one factor driving biodiversity loss, along with changes in land and sea use, direct exploitation, pollution and invasion of alien species. The recent Intergovernmental Science and Policy Platform on Biodiversity and

Ecosystems Services (IPBES) Global Assessment Report showed how humans have significantly altered nature across the globe¹⁶. Some 75% of land surface is significantly altered, over 85% of wetlands (area) have been lost, and 66% of the ocean area is experiencing increasing cumulative impacts. An average of around 25% of species in assessed groups are threatened, suggesting that around 1 million species already face extinction - many within decades.

People and ecosystems worldwide are already feeling the impacts of these changes, as warming has contributed to more frequent and more intense extreme weather events such as heat waves and heavy rainfall¹⁷. This is already impacting our financial system. For example, direct and insured losses from weather-related disasters have increased significantly in recent decades - 2017 was the costliest year for insurers for weather disasters at \$132 billion¹⁸.

Within the UK, we have increased our understanding of the public health impacts and the costs to society resulting from poor air quality. Our latest set of appraisal tools indicate that the population health impacts of not delivering on our emission reductions could be around £1.7 billion per annum by 2020 and £5.3 billion per annum by 2030.

Global temperature change in degrees celsius since 1850



Source: Met Office Hadley Centre

Why finance is part of the solution

Limiting global warming to 1.5°C may still be feasible. In the next decade urgent, ambitious and concerted action is required across all countries and sectors globally to deliver emissions reductions, as well as directly remove some greenhouse gas from the atmosphere. To do this requires unprecedented change in how we invest, measure risk and assign value to assets. The IPCC estimate that for a 1.5°C trajectory annual average investments in low-carbon energy technologies and energy efficiency need to be upscaled by roughly a factor of six by 2050 compared to 2015, overtaking investment in fossil fuels globally by around 2025¹⁹.

Recognising this need for urgent and coordinated action, 195 countries signed the Paris Climate Accord in 2015 which commits signatories to keeping a global temperature rise this century to well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5°C. Signatories of the Paris Agreement also committed to making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development.

The IPBES Global Assessment Report shows that the financial sector has a crucial role to play in the transformative change needed to restore and conserve nature, and this in turn helps us tackle climate change by storing carbon in our forests, wetlands and other ecosystems²⁰. These form part of the world's natural capital assets and we need to value and manage them properly²¹. We need to build a sustainable economy that incorporates the

multiple benefits that healthy ecosystems provide to people's lives. Our environment underpins our prosperity and we see the economic benefits that flow from natural capital in increased productivity and well-being.

And here too we are cooperating internationally alongside the 196 Parties to the Convention on Biological Diversity to develop a new global biodiversity framework for the post-2020 period to combat global biodiversity loss. This new framework will address major global challenges to biodiversity, including those identified by IPBES.

Global recognition of the importance of the financial sector in delivering an orderly transition to cleaner, more resilient economic growth, and delivering global climate and environment objectives has led to the rapid growth of green finance globally. This has been increasingly the case in recent years as the financial risks and opportunities are becoming better understood. The UK has played a key role in driving this growth and shaping the agenda on green finance (see Figure 1).

In recognition of the vital role of the financial sector in delivering global and domestic climate and environmental objectives, green finance is at the heart of the UK's Clean Growth Strategy, 25 Year Environment Plan and Industrial Strategy and supports the UK's economic policy for strong, sustainable and balanced growth.

Through the publication of our Green Finance Strategy we are clear in our ambition to align private sector financial flows with clean, resilient and environmentally sustainable growth and strengthen the competitiveness of the UK financial services sector.



Figure 1 - The UK's leadership on green finance





Chapter 1: Greening Finance

Overview

The transition to cleaner and more resilient growth is reshaping the global economy as countries, industries and institutions seek to mitigate and adapt to the effects of climate change and environmental degradation. This economic transition is having significant and far-reaching implications for the financial sector as the financial risks and opportunities become more apparent. Momentum to green the financial system has grown significantly in recent years. There is now widespread support for the Task Force on Climate-related Financial Disclosures (TCFD) recommendations and an increasing number of high-profile global initiatives, such as the Sustainable Insurance Forum and the Central Banks' and Supervisors' Network for Greening the Financial System (NGFS), have been established.

However, this transformation must accelerate and proliferate in order to match the scale of the challenge faced, particularly as we move to a net zero economy. Consideration of the financial risks and opportunities from climate and environmental factors needs to move beyond 'corporate social responsibility' to become a financial and strategic imperative and normalised as good business. This chapter sets out how we will:

- Mainstream climate and environmental factors into the UK's financial system; and
- Help drive forward the greening of the global financial system.

In taking forward our strategy, we will work closely with the Financial Conduct Authority (FCA), the Financial Reporting Council (FRC), The Pensions Regulator (TPR) and the Bank of England (including in its capacity as the Prudential Regulation Authority (PRA)). When we refer to 'the UK regulators' in this Strategy we are referring to all four of these bodies.

And while the focus of the Green Finance Strategy

is on private sector flows, we recognise the integration of climate and environmental factors also has relevance to financial decision-making in the public sector.

Mainstreaming climate and environment factors

The UK's position as an international financial centre means the leadership we demonstrate in greening the UK financial system can have a wide-reaching impact, contributing to an orderly global transition towards a cleaner, more resilient and environmentally sustainable economy. Our strategy focuses on four elements:

- Establishing a shared understanding;
- Clarifying roles and responsibilities;
- Fostering transparency and embedding a long term approach; and
- Building robust and consistent green financial market frameworks.

Establishing a shared understanding:

Recent years have witnessed a 'transition in thinking' on climate change as a core financial issue. For example, the PRA's 2018 review of the UK banking sector found that 70% of banks consider climate change as a financial risk, arising from both 'physical' and 'transition' factors (Box 1)²².

However, in its first comprehensive report, published in April 2019, the NGFS, of which the Bank of England is a founding member, highlighted that climate change is not only a source of financial risk but also has distinct characteristics (Box 2)²³.

The Government supports the findings of the NGFS report, and recognises these characteristics make climate change different from other sources of structural change and mean it needs

to be considered and managed differently. The PRA's 2018 review also found only 10% of banks surveyed were managing the financial risks from climate change comprehensively and taking a

long-term strategic view.

Managing these financial risks and delivering an orderly transition to a clean, resilient and

environmentally sustainable economy will require the reallocation of tens of trillions of pounds of capital, presenting significant opportunities for the UK's financial sector.

Establishing a shared understanding of the financial risks and opportunities presented by climate and environmental factors is in our view necessary to set the foundation to deliver our green finance ambitions. The UK regulators recognise this too, which is why:

- **The Financial Conduct Authority, Financial Reporting Council, The Pensions Regulator and Prudential Regulation Authority have today published a joint statement on climate change, which the Government fully supports. The Statement recognises the relevance of climate-related financial factors to their mandates and the importance of a collective response.**

The Government is also taking action. We are working with partners, including the Green Finance Institute (GFI), to host a series of roundtable discussions with Board and Executive level representatives from across the financial sector to reinforce the relevance of the financial risks and opportunities arising from climate change, highlight the importance of urgent action and exchange views and experiences. We call on senior leaders from across the UK financial system to use their signalling and convening power to promote this shared understanding and to catalyse progressive action on climate change within the financial sector.

The Government recognises that environmental degradation and the decline of natural capital, including biodiversity loss, can also be a source of financial risk. As co-chair of the G20's Green Finance Study Group²⁴ in 2017, the UK led work to advance Environmental Risk Analysis²⁵ (ERA) and the need for better data. We welcome research, including from central banks²⁶, to further examine the financial significance of these issues.

The Government is also taking action to deepen collective understanding in this area. For example, through the Government's recent commission to assess the economic value of biodiversity, as discussed further in Box 3.

Box 1 - Climate related financial risk



Physical Risk:

Physical risk resulting from climate change can be event-driven (acute) or longer-term shifts (chronic) in climate patterns. Physical risks may have financial implications for organisations, such as direct damage to assets and indirect impacts from supply chain disruption.

Organisations' financial performance may also be affected by changes in water availability, sourcing, and quality; food security; and extreme temperature changes affecting organisations' premises, operations, supply chain, transport needs, and employee safety.



Transition Risk:

Transitioning to a lower-carbon economy may entail extensive policy, legal, technology, and market changes to address mitigation and adaptation requirements related to climate change. Depending on the nature, speed, and focus of these changes, transition risks may pose varying levels of financial and reputational risk to organisations.

Box 2 - Distinct characteristics of climate change that require a different approach



Far-reaching impact in breadth and magnitude:

climate change will affect all actors in the economy, across all sectors and geographies. The risks will likely be correlated with and potentially aggravated by tipping points, in a non-linear fashion. This means the impacts could be much larger, and more widespread and diverse than those of other structural changes.



Irreversibility: the impact of climate change is determined by the concentration of greenhouse gas emissions in the atmosphere and there is currently no mature technology to reverse this process. Above a certain threshold, scientists have shown with a high degree of confidence that climate change will have irreversible consequences on our planet, though uncertainty remains about the exact severity and horizon.



Foreseeable nature: while the exact outcomes, time horizon and future pathway are uncertain, there is a high degree of certainty that some combination of physical and transition risk will materialise in the future.



Dependency on short-term actions:

the magnitude and nature of the future impacts will be determined by the actions taken today, which thus need to follow a credible and forward-looking policy path.

Box 3 - The Economics of Biodiversity

In the 2019 Spring Statement the UK Chancellor launched a global review, led by Professor Sir Partha Dasgupta, to assess the economic value of biodiversity. The review will provide a basis in economic theory for moving the dial on global action on biodiversity, broadening the debate from science to the potential catastrophic impacts for global welfare if current trends continue unabated. The review will aim to facilitate increased international ambition, by identifying actions that will simultaneously enhance biodiversity and deliver economic prosperity.

Clarifying roles and responsibilities

The greening of finance covers a complex set of issues involving multiple actors across financial services and beyond. A clear understanding of the roles and responsibilities of the private sector, UK regulators and Government will be important as responses continue to evolve.

Further to their joint statement, the Government welcomes the actions UK regulators are taking to embed climate considerations into their supervisory practices and approach (see table overleaf). This includes the integration of environmental, social and governance considerations into codes and guidance, and setting expectations for firms to take a strategic, Board-level and long-term approach.

The UK Regulators and Climate Change

	The Bank of England - Prudential Regulation Authority	The Financial Conduct Authority	The Financial Reporting Council	The Pensions Regulator
Remit	The Prudential Regulation Authority (PRA) sits within the Bank of England and is responsible for the prudential regulation and supervision of around 1,500 banks, building societies, credit unions, insurers and major investment firms.	The Financial Conduct Authority (FCA) is the conduct regulator for 56,000 financial services firms and financial markets in the UK and the prudential regulator for over 18,000 of those firms.	The Financial Reporting Council (FRC) is the UK's independent regulator for accountants, actuaries and auditors, responsible for promoting transparency and integrity in business. It also sets the UK Corporate Governance Code and Stewardship Code.	The Pensions Regulator (TPR) is the public body that protects the UK's workplace pensions. TPR makes sure employers, trustees, pension specialists and business advisers can fulfil their duties to scheme members. It has a role in driving up standards of governance and trusteeship.
Joint statement on climate change	The UK's regulators have published a joint statement on climate change to set out how climate-related financial risks require a coordinated approach and collective action to address.			
Action on climate change	<p>Published reviews into the financial risks from climate change facing the insurance sector and banking sectors. These reviews set out how climate change poses financial risks to these firms, and how these risks have distinct characteristics that require an enhanced approach.</p> <p>Published a Supervisory Statement to enhance banks' and insurers' approaches to managing the financial risks from climate change, setting out expectations for firm's practices across governance, risk management, scenario analysis, and disclosure.</p> <p>Asked insurers to consider the impact of different physical and transition risks scenarios as part of a UK market-wide insurance stress test.</p> <p>Announced plans to test the financial system's resilience to climate-related financial risks as part of the Biennial Exploratory Scenario (BES) stress test.</p> <p>Established the Climate Financial Risk Forum, jointly with the FCA, to build intellectual capacity across the private sector for assessing the financial risks from climate change.</p> <p>Co-founded the Network for Greening the Financial System and chair work stream two on macroeconomic and financial stability implications of climate change.</p> <p>Promoted the importance of climate-related disclosures by supporting TCFD, which was set up under the Governor Mark Carney in his role as FSB chair.</p> <p>Announced its intention to undertake climate disclosures in line with the TCFD that will outline how the Bank of England manages the financial risks from climate change, becoming the first central bank to do so across its entire operations.</p> <p>Co-founded the Sustainable Insurance Forum to bring together insurance supervisors and regulators to address sustainability challenges.</p> <p>Undertook analysis on the green mortgage market, considering the relationship between energy efficiency and credit risk.</p>	<p>Extending the remit of the Independent Governance Committees to cover consideration of firm's Environmental, Social and Governance priorities and how they respond to member concerns, subject to consultation.</p> <p>Launched a Green FinTech Challenge to encourage firms to develop innovative solutions to support the UK's transition to cleaner economic growth.</p> <p>Established the Climate Financial Risk Forum, jointly with the PRA to build intellectual capacity across the private sector for assessing the financial risks from climate change.</p> <p>Published a discussion paper on climate change and green finance setting out a range of proposals in relation to climate change.</p> <p>Joined the IOSCO sustainable finance network to collaborate with other IOSCO members on sustainable finance issues.</p> <p>Introduced new requirements to improve shareholder engagement and increase transparency around stewardship.</p> <p>Launched a Discussion Paper on building a regulatory framework for effective stewardship, jointly with the FRC, to consider how asset owners and asset managers can most effectively integrate climate change and other environmental, social and governance factors into their investment activities.</p>	<p>The Corporate Governance and Stewardship Codes encourage companies and investors to report on how they have taken into account long-term sustainability factors (including environmental factors) into their decision making.</p> <p>Jointly with the FCA, the FRC also published a Discussion Paper on building a regulatory framework for effective stewardship.</p> <p>Through the Joint Forum on Actuarial Regulation, the FRC highlights the risks to high quality actuarial work arising from climate change in the annual Risk Perspective.</p> <p>The FRC monitors whether companies are complying with the statutory disclosure requirements of the strategic report (which includes reporting on principal risks and uncertainties) as well as any financial statement implications of climate change.</p> <p>The FRC's audit monitoring will consider the adequacy of the auditors' work over principal risk disclosures (including climate risk) and the financial statement implications of climate change.</p> <p>The Financial Reporting Lab will produce a report this year that will provide practical guidance on best practice climate reporting.</p> <p>The FRC's project on the Future of Corporate Reporting will consider the need for improved sustainability information from companies.</p>	<p>Updating Defined Contribution investment guidance to reflect Government regulation to clarify and strengthen trustees' duties, including in relation to Environmental, Social and Governance considerations, including climate change.</p> <p>Contributed to the revised Stewardship Code consultation welcoming the code as a tool to improve investment governance and risk management on Environmental, Social and Governance issues, including climate change.</p> <p>Co-established an industry working group on climate change to produce guidance for pension schemes on climate-related practices across governance, risk management, scenario analysis, and disclosure. TPR expect to consult on this guidance in late 2019 with a view to putting it on a statutory footing during 2020 as part of the Governance Code required by the Occupational Pension Schemes (Governance) (Amendment) Regulations 2019.</p> <p>Monitoring the landscape through questions on climate change in annual governance surveys of Defined Benefit and Defined Contribution schemes.</p>
Adaptation Reporting	The UK regulators will submit a report on actions they are taking to strengthen preparedness to climate change impacts in their respective remits under the Adaptation Reporting Power, along with 84 other organisations ²⁷ .		These reports will provide vital intelligence on the interaction between financial regulation and climate change and will provide the opportunity to collectively strengthen existing approaches as well as to inform future Government action.	

*The Prudential Regulation Authority published a Climate Change Adaptation Report as part of the second round of adaptation reporting powers under the Climate Change Act²⁸.

We recognise that the Government also has a responsibility to act. We have already delivered on the Green Finance Taskforce's recommendation **to strengthen and clarify trustees' investment duties so that from October 2019 occupational pension schemes will be required to publish their policy on financially material considerations, including those arising from climate change**²⁹. This will also require relevant schemes to publish their policies in relation to the stewardship of investments. The Asset Management Taskforce, launched by the Government in October 2017, has recently established a stewardship sub-group that will consider how the Taskforce can promote and enhance the UK as a centre of excellence for sustainable stewardship³⁰.

The Government will be taking additional action to strengthen our response by clarifying the roles and responsibilities of the UK regulators to take account of these issues.

- **For the Prudential Regulation Authority and Financial Conduct Authority, we will ensure that the need to have regard to the COP21 Paris Agreement when considering how to advance their objectives and discharge their**

functions is reflected in the next Letter of Recommendations that HM Treasury issues to each authority³¹. **Likewise we will ensure there is a similar provision in the remit and recommendations letter that HM Treasury issues to the Financial Policy Committee**³².

- **For The Pensions Regulator, we will be including climate-related financial issues in the Government's allocation letter with a view to embedding considerations in other documents when the opportunity arises.**

The Government welcomes the actions that leaders from across the financial sector have already taken to galvanise action.

For example, the Transition Pathway Initiative (TPI) (see Case Study) helps asset owners research and track investments and engage with individual companies on how they manage their greenhouse gas emissions³³. We encourage market participants to sign up to voluntary principles as relevant to their sector, such as the UN Principles for Responsible Investment, UN Environment Programme Finance Initiative's Principles for Sustainable Insurance and Principles for Responsible Banking^{34,35, 36}.

Case Study: The Transition Pathway Initiative - pension funds going green

The TPI is a global initiative to assess companies' preparedness for the transition to a low-carbon economy. It was initially established as a joint initiative between the Environment Agency Pension Fund and the Church of England National Investing Bodies to support efforts to address climate change.

Today, over 40 investors globally have pledged support for the TPI. Jointly they represent over £10.3 trillion of combined assets under management. The online tool, which is free-to-use and open-to-all, has analysed the performance of 300 companies in 14 sectors, including the airline and car industries. This sort of information helps asset owners research and track investments and engage with individual companies on how they manage their greenhouse gas emissions.

"Businesses should be able to explain to investors how they plan to manage climate change risks, invest and innovate on the way to the zero-carbon economy of the future. With the launch of the Transition Pathway Initiative, asset owners from around the world are sending a strong signal that portfolios will align in the future with companies that are taking the transition to a low carbon economy seriously" - Emma Howard-Boyd, Chair of the Environment Agency and UK Commissioner to the Global Adaptation Commission.

Fostering transparency and embedding a long-term approach

One of the essential functions of financial markets is to price risk to support informed, efficient capital-allocation decisions. As firms develop their response to the financial implications of climate change their approaches must be built upon transparent and decision-useful climate-related information and a long-term approach. The Government will take action by:

- Setting expectations and ensuring a coordinated approach on TCFD;
- Supporting high quality TCFD disclosure and reviewing progress; and
- Building on TCFD to broaden action on transparency.

Setting expectations and ensuring a coordinated approach on TCFD

In 2015, in response to a call from G20 leaders, the Financial Stability Board (FSB) established the private sector TCFD to enhance transparency on the financial risks and opportunities from climate change³⁷. One area of innovation the TCFD introduced was around scenario analysis which can foster a longer-term approach to considering climate-related financial risks and opportunities.

The Government formally endorsed the TCFD recommendations in September 2017³⁸. We welcome the progress being made implementing the recommendations on a voluntary basis. **The Government expects all listed companies and large asset owners to be disclosing in line with the TCFD recommendations by 2022.**

Box 4 - The TCFD recommendations

The TCFD has established a globally recognised framework through which exposure to climate-related financial risk and opportunities can be disclosed. A total of 785 organisations are now supporters of the TCFD, including the world's largest banks, asset managers and pension funds, responsible for assets of \$118 trillion.

Core Elements of Recommended Climate - Related Financial Disclosures



Governance

The organisation's governance around climate-related risks and opportunities

Strategy

The actual and potential impacts of climate-related risks and opportunities on the organisation's businesses, strategy, and financial planning

Risk Management

The processes used by the organisation to identify, assess, and manage climate-related risks

Metrics and Targets

The metrics and targets used to assess and manage relevant climate-related risks and opportunities

We also welcome the actions being taken by UK regulators with respect to disclosure. For example, in their October 2018 discussion paper on climate change and green finance, the FCA sought views on the value of introducing a requirement for financial services firms to report publicly on how they manage climate risks to their customers and operations as well as feedback on further steps it should consider to improve climate-related disclosures by issuers of securities admitted to trading on a regulated market³⁹. The PRA have published a supervisory statement to enhance banks' and insurers' approaches to managing the financial risks from climate change, including setting expectations on disclosure⁴⁰.

To meet the ambition of this strategy, we believe there needs to be an improvement in the quality and quantity of climate-related financial disclosure. Consistent with the recommendation of the NGFS that policymakers and supervisors consider further actions to foster broader adoption of the TCFD recommendations, the Government will be:

- **Establishing a joint Taskforce with UK regulators, chaired by the Government, to ensure a co-ordinated approach on climate-related financial issues. The Taskforce will examine the most**

effective way to approach disclosure, including exploring the appropriateness of making reporting mandatory.

- **Taking forward discussions with relevant international standard setters to promote internationally consistent disclosure.**

Supporting quality TCFD disclosure and reviewing progress

Disclosure is only useful if it guides decision-making. The Government recognises there are still challenges for industry in developing approaches to implementing the TCFD recommendations and that best practice will take time to develop.

Supporting the private sector to address these challenges, for example through climate and environmental related data and analytics, presents a significant commercial opportunity for the UK, as explored further in Chapter 3.

We recognise the Government can also play an important role in providing climate-related information to the market in a proportionate manner, as evidenced by our approach to streamlining the UK's energy and carbon reporting framework.

Case Study: The Streamlined Energy and Carbon Reporting (SECR) Framework

The Government has introduced a new Streamlined Energy and Carbon Reporting framework which came into force from 1 April 2019 to simplify carbon and energy reporting requirements for businesses. This new framework will extend the number of organisations required to report on their energy use and emissions in their company annual reports, as well as an intensity metric and energy efficiency action in the previous 12 months. This mandatory reporting obligation now falls on all large or quoted companies and large limited liability partnerships incorporated in the UK, an estimated 11,900 organisations, increasing the coverage from an estimated 1,200 quoted companies. This broadening and simplification of energy and carbon disclosures will provide a level playing field in reporting across large businesses.

We are working with the FRC to help facilitate digital reporting of SECR disclosures and to ensure the information is more accessible for external stakeholders.

We are also taking action to support the implementation of TCFD through guidance:

- **The Government and The Pensions Regulator have jointly established an industry group to develop TCFD guidance for pension schemes. The Pensions Regulator expect to consult on this guidance in late 2019 with a view to putting it on a statutory footing during 2020 as part of the Governance Code required by the Occupational Pension Schemes (Governance) (Amendment) Regulations 2019.**

The Government will work closely with the GFI to build capacity on TCFD-related issues and welcomes the actions UK regulators, and other actors, are taking, including:

- The PRA and FCA's initiative to establish a Climate Financial Risk Forum to build capacity and share best practice across financial regulators and industry in order to advance financial sector responses to the financial risks from climate change⁴¹;
- The NGFS taking forward work to provide a small number of high-level scenarios which can be used by industry to support implementation of the TCFD's recommendations⁴²; and
- Initiatives such as the TCFD Knowledge Hub⁴³, which provides resources to support TCFD implementation, powered by the Climate Disclosure Standards Board.

The Government also recognises we have an important role, working closely with other stakeholders, in reviewing progress. That is why:

- **The Government will continue to explore actions we can take to advance the greening of the UK financial system and will publish an interim report by end of 2020, including progress on TCFD implementation.**

Building on TCFD to broaden action on fostering transparency

The TCFD recommendations have been instrumental in developing a framework for disclosing climate-related financial risks and opportunities. Actions to foster transparency can also support the Government's domestic and international commitments on the environment and sustainable development. That is why the Government is supporting the work of the World Benchmarking Alliance to develop transformative benchmarks that will compare companies' performance on key areas of sustainability and impact on the UN Sustainable Development Goals.

Recent reports such as those from the Intergovernmental Science and Policy Platform on Biodiversity and Ecosystems Services (IPBES)⁴⁴ and the OECD⁴⁵ are strengthening the evidence base on the potential systemic economic and financial impacts of nature-related issues such as biodiversity loss and the private sector have highlighted the need for a complementary approach to TCFD on these broader issues⁴⁶.

To accelerate progress, the Government will:

- **Work with international partners to catalyse market-led action on enhancing nature-related financial disclosures.**

Work in this area will help companies understand what financial markets require from disclosure in order to measure and respond to nature-related financial risks, building on a report⁴⁷ presented to the G7 Environment Ministers' meeting in May this year. It will also complement the global review of the economics of biodiversity led by Professor Sir Partha Dasgupta, discussed earlier in Box 3.

Catalysing market-led action will mirror the success of the TCFD's approach by supporting the private sector to develop consistent and comparable disclosures in order to better manage, measure and respond to nature-related financial risks.

Improving financial risk understanding related to biodiversity loss and natural capital degradation will also support financial institutions and policymakers to differentiate between

companies and projects that are aligned with the implementation of international biodiversity commitments, the UN Sustainable Development Goals and the UK's 25 Year Environment Plan.

Building robust and consistent green financial market frameworks

Clear and consistent frameworks, such as green definitions and standards, will be important to ensure confidence in the effective functioning of green financial markets. The Government will be taking action through matching the ambition of the objectives of the EU's Sustainable Finance Action Plan, creating Sustainable Finance standards and working with the Fair and Effective Markets Review.

The EU's Sustainable Finance Action Plan

The Sustainable Finance Action Plan was launched by the European Commission in May 2018 as part of the EU's response to the Paris Climate Agreement⁴⁸. Its three objectives are:

- To reorient capital flows towards sustainable investment;
- To manage financial risks stemming from climate changes by considering environmental and social goals in financial decision-making; and
- To increase transparency in financial products so that citizens can make informed decisions about their investments.

The UK has formerly endorsed these objectives and will continue to use its knowledge and expertise to support the EU's objectives on Sustainable Finance.

- **The Government commits, in relation to green finance, to at least match the ambition of the three key objectives included in the EU's Sustainable Finance Action Plan.**

In accordance with the EU Sustainable Finance Action Plan, the EU proposed three legislative files. These are on disclosures, benchmarks, and a new sustainable finance framework (commonly known as a taxonomy). The UK has been closely involved in all three files and continues to

participate in Council discussions on the taxonomy file and the Member States Expert Group.

To ensure the Government has the option of onshoring the EU's proposals into UK law, regardless of the EU Exit outcome, all three files are included as part of the Financial Services (Implementation of Legislation) Bill.

Creating sustainable finance standards

Together with the private sector, we have funded the British Standards Institution (BSI) to design and roll out a programme of internationally relevant standards on Sustainable Finance, starting with the development of three new Publicly Available Specifications (PAS). The scope of the three PAS documents has been established following an extensive industry engagement exercise, and the BSI continues to coordinate with industry leaders as these documents are developed. Two of the Sustainable Finance PAS standards currently in development are:

- **PAS 7340: Sustainable Finance Framework:** A guide to outline a framework for, and provide guidance on, implementing principles and approaches to sustainable finance within financial services organisations. It establishes guiding principles and common terms and definitions related to sustainable finance to help organisations of all sizes and sectors.
- **PAS 7341: Sustainable Investment Management:** A specification setting out requirements to establish, implement, and manage the process of integrating responsible and sustainability considerations into investment management. It includes stewardship and the levels of engagement needed to demonstrate ongoing sustainable investment management and practices.

The BSI are currently refining the scope of the third PAS which will seek to set out requirements for the assessment, governance, labelling and communication of funds presented as having sustainable credentials.

The Draft PAS 7340 is expected to undergo public consultation in July-August, and we expect PAS

731 to open for consultation soon thereafter. **The Government encourages all interested parties to respond to the consultation** to help ensure the standards are robust and drive increased alignment of activity with our global sustainability goals.

The International Organisation for Standardisation (ISO) has established a new Technical Committee on Sustainable Finance which is chaired by the UK⁴⁹. The Technical Committee will develop international standards on the topic of sustainable finance, and the UK-led PAS work will look to inform and feed into this activity.

The Fair and Effective Markets Review (FEMR)

The FEMR is a working group, led by the Bank of England and co-chaired with HM Treasury and the FCA⁵⁰. Putting good conduct and accountability at the heart of financial markets, the FEMR will:

- **Work to understand the potential or actual barriers to the growth and effectiveness of green finance.**

This will engage a broad range of market participants to gather views on the level of transparency and disclosure. It will also explore metrics for measuring the impact of green finance and assess the availability of comparable data. This exercise will feed into the work of the PRA/FCA's Climate Financial Risk Forum and inform the continued development of the Government's Green Finance Strategy. Overall, the work is intended to support the development of the green finance market, which will play a vital role in the UK's transition to a clean and resilient economy.

Driving the greening of the global financial system

The UK has taken a leading role in shaping the global agenda on climate change and green finance, including through our representation in international forums and our extensive diplomatic network. These include for example:

- Establishing the G20 Green Finance Study Group with China in 2016 which provided options to G20 members on how to scale up green finance globally⁵¹. The Group's

synthesis report was welcomed at the leader's summit in China and provided global signalling to policymakers and financial markets worldwide of the need for green finance. The UK has continued to chair the group with China under Germany and Argentina's G20 Presidencies;

- HM Treasury recently became a founding member of the Coalition of Finance Ministers for Climate Action and endorsed the Helsinki principles with 21 other finance ministers. The Coalition, which was formed in April 2019, convenes finance ministers committed to taking collective and domestic action on climate change and achieving the Paris Agreement's objectives;
- The Governor of the Bank of England chaired the Financial Stability Board (FSB) during the development of the TCFD recommendations and the Bank of England was a founding member of the NGFS; and
- UK financial services expertise has contributed to the EU Sustainable Finance Action plan.

Recent years have witnessed significant progress. Through the actions of central banks and the private sector there is increasing momentum to integrate climate and environmental factors more comprehensively into the global financial system. The real-world economic changes needed to shift investment, supported by global initiatives such as the Green Climate Fund, are underway.

At the same time, we recognise further urgent action is required to meet the challenge set in the 2015 Paris Agreement to align financial flows with low carbon and resilient growth.

The Government commits to using the UK's global influence to promote the greening of the financial system internationally. This includes playing an active role in the Coalition of Finance Ministers for Climate Action; leading on the adaptation and resilience strand at the United Nations (UN) Climate Action Summit; and exploring initiatives to accelerate alignment of finance ahead of COP26 in 2020.

To drive the greening of the global financial system, the Government will:

- Champion the resilience agenda;
- Drive action through international collaboration;
- Partner with the private sector;
- Explore initiatives to accelerate alignment to the Paris Agreement; and
- Align the UK's Official Development Assistance (ODA) spending with the Paris Agreement.

Championing the resilience agenda

Building resilience to the physical risks from climate change will be essential as global temperatures increase. More fully integrating physical risks into the financial system and ensuring adaptation as well as mitigation is sufficiently addressed will be a key focus of our strategy. That is why the UK and Egypt will co-chair the global effort to promote resilience and adaptation to climate change at the UN's Climate Action Summit in September 2019.

The Government aims to promote systemic shifts in the way that public and private financial actors

plan and invest their resources to adapt to current climate impacts and build resilience for the future. These build on a number of the recommendations outlined in this strategy. The governments of Bangladesh, Malawi, the Netherlands and St Lucia are working with us to achieve this supported by the United Nations Development Programme, and working closely with the Global Commission on Adaptation, the World Bank, the World Economic Forum and the UN Environment Programme.

Driving action through international collaboration

Addressing the financial risks and opportunities arising from climate change and environmental degradation is a global challenge, and requires a collective, global response. We will drive international collaboration through our bi-lateral partnerships, our long-standing relationships with international organisations and our international network.

Partnerships are key to our work. The UK's regular Economic and Financial Dialogues with China (see Case Study), Brazil and India include green finance as an area for collaboration in financial services. In 2018, we also strengthened our relationships with China, Colombia, and Mexico and Colombia though

Case Study: UK and China partnership on green finance

At the 9th and 10th UK-China Economic and Financial Dialogue (EFD) the UK and China recognised each other as their primary partner in green finance for capital raising, product innovation and thought leadership. We agreed a set of joint priorities which are now being supported by the UK PACT programme. At the 10th EFD, the UK-China Green Finance Centre, launched by the City of London Green Finance Initiative and the China Green Finance Committee in 2018, was formally recognised by both governments.

This will build on the work of the UK-China Green Finance Taskforce, which launched in 2016 with the aim of increasing areas of collaboration on greening the Belt and Road Initiative, TCFD implementation, ESG investing, green asset securitisation, and green standards, as well as capacity building. The group jointly launched a three-year TCFD-implementation pilot where ten leading financial institutions committed to adopting TCFD recommendations under the coordination of PRI and published an Action Plan setting clear expectations for the pilot.

The group has also developed a series of Green Investment Principles to promote sustainable infrastructure investment. As part of this work, a joint secretariat in the UK and China has been established to further develop the principles, ensure robustness, and raise ambition for green, low-carbon and climate-resilient investment. The joint Taskforce has also partnered on green and clean technology and agreed to set-up the London-Beijing Green Technology Investment Gateway.



the UK Partnerships for Accelerated Climate Transitions (UK PACT) programme.

The Government continues to support the greening of financial sector and building resilient outcomes through our long-standing collaboration with key international organisations. We will do this, in part, via our role in the Coalition of Finance Ministers and in partnership with the World Bank as its secretariat.

The UK amplifies its international assistance by collaborating with multilateral development banks (MDBs) and driving their climate ambition through Board and investment engagement. MDBs often have unrivalled reach in developing country finance ministries, national development banks and others.

As a Board Member and shareholder of the MDBs, the UK is using its expertise to drive ambition on increased leveraging of financial flows from private sources and in-country policy support for greening economies. This includes pushing MDBs to: raise ambition to align with the Paris Agreement, using their existing climate leadership to encourage climate action; adopt stretching private finance mobilisation targets where appropriate; and advocate to raise awareness of climate-related financial risks. This is especially important in their work establishing capital markets in the developing world – starting with implementing the TCFD recommendations across their own portfolios. We will also work with other institutions, including for example the International Monetary Fund, to achieve these objectives.

The Department for International Development (DFID) and the Bank of England are also scaling up their partnership to build the capacity of central banks in developing countries and the Government will explore using this as a platform to share the Bank's expertise internationally in managing climate-related financial risk.

The Government's international network, which includes climate attachés across 58 countries worldwide, accompanied by our extensive trade attaché network, promotes climate action and

mutual prosperity with our partners. Promoting the greening of finance internationally will be a key part of the Government's diplomatic strategy, financial development and climate engagement, which is outlined in further detail in Chapter 3.

Partnering with the private sector

The Government recognises we can also play a role driving private sector action and collaboration as part of our international strategy. For example, through the Powering Past Coal Alliance (PPCA) the UK and Canada, supported by CCLA Investment Management, have worked with leading institutions to establish Finance Principles with commitments on restricting financial services for new unabated coal power projects and supporting the phase out of existing capacity by 2030 in the OECD and 2050 in the rest of the world. That is why the Government is:

- **Launching the Powering Past Coal Alliance Finance Principles, through which financial institutions can commit to support the phase out of unabated coal power within Paris Agreement timeframes.**

Aviva plc, Hermes Investment Management and the Church Commissioners for England have joined the Alliance as founding signatories of the Finance Principles, alongside CCLA and Storebrand as existing PPCA finance members. The UN-supported Principles for Responsible Investment initiative will be an official Partner to the PPCA.

The Government has also launched the Global Resource Initiative (GRI) to bring together thought leaders across business, finance and civil society on the issues of sustainable supply chains. These leaders will develop ambitious, practical recommendations for how the UK can reduce the 'imported deforestation' embedded in the commodities that we consume; improving the long-term resilience of our supply chains. The Taskforce, to be chaired by Sir Ian Cheshire, will shape the direction of the Government's policy on sustainable trade while creating a model of change that can inspire other countries towards

the same ambitions. The GRI will also work closely with the GFI to support a shift towards investment that better accounts for the value of a healthy environment, a stable climate and natural capital.

Exploring initiatives to accelerate alignment to the Paris Agreement

The Government recognises these actions alone will not create the incentives to redirect finance towards clean and resilient investments at sufficient speed and scale to meet the challenge of the Paris Agreement.

Collectively governments need to be able to track economy-wide efforts to align financial flows and give political impetus to international activity. Further momentum is needed from the public and private sector, including clarifying fiduciary duties and strengthening corporate governance, developing green taxonomies, enhancing climate-related financial disclosure and improving climate-related data and analytics.

Ultimately, we need to strengthen and broaden the international coalition driving action to green the global financial system and to develop a common framework and roadmap around which leaders, governments, central banks, financial regulators and the private sector can take the collective action required.

As the Government implements this strategy, we will utilise opportunities such as at the UN Climate Action Summit in September and our G7 Presidency in 2021, to consider how best to champion action to align financial flows with the goals of the Paris Agreement.

Aligning the UK's ODA with the Paris Agreement

As the Government explores initiatives to align global financial flows, we will be taking action to ensure UK Government leads by example through **aligning the UK's Official Development Assistance spending with the Paris Agreement**, strengthening the existing provisions in the UK Government's guidance on considering climate and environmental factors.

In practical terms this will include:

- Using an appropriate carbon price in relevant bilateral programme appraisal;
- Ensuring any investment support for fossil fuels affecting emissions is in line with the Paris Agreement temperature goals and transition plans;
- Implementing a proportionate approach to climate risk assurance; and
- Ensuring that relevant programmes do not undermine the ambition in countries' Nationally Determined Contributions (NDC) and adaptation plans.

We will consider how to demonstrate that on aggregate, our ODA is delivering climate benefits and supporting implementation of the Paris Agreement. We anticipate this including identifying opportunities to work with countries to enhance and embed clean growth and climate resilience, incorporating what is included in NDCs and adaptation plans into their growth plans, to help meet the long-term goals of the Paris Agreement. We will encourage similar actions in relevant multilateral institutions and programmes, where appropriate.

Our actions to align the UK's ODA with the Paris Agreement also demonstrate the Government's commitment to leading by example by integrating climate and environmental factors into financial decision making in the public sector, as we discuss further below.

Government leading by example

The focus of this strategy is on aligning private sector financial flows with clean, resilient and environmentally sustainable growth. At the same time, the Government recognises the integration of climate and environmental risks and opportunities also has relevance to financial decision-making in the public sector. Therefore, while there is clear focus on the private sector, the public sector needs to remain alert to the impacts from transitioning to a cleaner economy,

as our understanding in this area is enhanced by improved data. That is why, the Government will:

- **Consider the financial risk exposures relating to climate change and the low carbon transition as part of the 2020 Managing Fiscal Risks report;**
- **Undertake a review, led by HM Treasury, to understand the costs of achieving net zero GHG emissions by 2050 and to understand where these costs will fall across the economy;**

- **Ask Government departments to incorporate the updated 2018 Green Book focus on climate risks in their policy development, including at the Spending Review; and**
- **Embed TCFD reporting in publicly funded financial bodies.**

Our work in this area will build on an existing framework within the public sector which has already taken steps to consider the financial risks from climate change (Box 5).

Box 5 - Selected Government activities integrating climate-related financial risks and opportunities in decision making

- In 2018/19 we updated our guidance on the preparation of Annual Reports and Accounts with new reporting requirements for Climate Change Adaptation.
- HM Treasury's Green Book provides guidance on assessing the viability and value for money of policies and projects across government⁵². The Green Book is at the leading edge internationally, including when it comes to practical appraisal of climate change, natural capital and other environmental effects. It also requires that the Climate Change Risk Assessment (CCRA) be used to account for current and future climate risks along with vulnerabilities in appraising policies and projects.
- The National Infrastructure Commission will be examining the resilience of the UK's infrastructure, to consider what action Government should take to ensure it is resilient to future changes, such as climate change⁵³. This will build upon the NIC's National Infrastructure Assessment which included recommendations on de-carbonising how the UK powers and heats its homes and deals with waste⁵⁴. The Government will publish an Infrastructure Strategy later this year in response to the NIC's National Infrastructure Assessment.
- From 2020, the Office of National Statistics will publish comprehensive Natural Capital Accounts for the UK to guide policy development in line with our long-term goals. This will provide a robust metric alongside GDP to measure the sustainable growth of our economy and highlight future priorities for public and private investment.

Embedding TCFD reporting in publicly funded financial bodies

The Government recognises that as TCFD becomes mainstream in the private sector it is also right that publicly funded financial bodies, such as CDC and UK Export Finance (UKEF) also implement the TCFD framework, as appropriate to their individual mandates and financial models. That is why:

- **CDC and UK Export Finance will make climate-related financial disclosures in their accounts in line with the TCFD recommendations, as soon as practicable following the close of the 2020/21 financial year.**

CDC is the UK's development finance institution. Its mission is to support the building of businesses throughout Africa and South Asia, to create jobs and make a lasting difference to people's lives in some of the world's poorest places. CDC invests directly by providing equity, debt, mezzanine finance and guarantees to businesses; and also, indirectly through supporting fund managers who are aligned with its mission and who invest capital on its behalf. CDC invests in seven core priority sectors: infrastructure, financial institutions, manufacturing, agribusiness, construction, health and education.

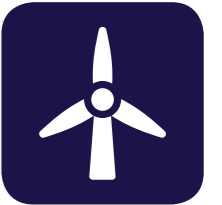
CDC established its climate change policy in 2014 and has made a strong commitment in its 2017-21 strategic framework to further assess and

address climate change risks and opportunities as a core part of its investing. Making climate change financial disclosures in its accounts in line with the TCFD recommendations is a logical next step in this process. **CDC will make climate-related financial disclosures in its accounts in line with the TCFD recommendations, as soon as practicable following the close of the 2020/21 financial year.**

UK Export Finance (UKEF) is the UK's export credit agency and a government department, reporting to Ministers in the Department for International Trade. Its mission is to ensure that no viable UK export fails for lack of finance or insurance from the private sector, while operating at no net cost to the taxpayer. UKEF provides insurance, guarantees and loans which help to make exports happen which might otherwise not, helping UK exporters and their supply chains grow their business overseas. UKEF has a total capacity of £50 billion to support UK exports.

UKEF has strong capability in the assessment of project specific risks across sectors and manages its risk profile as an export credit agency which assumes risks in line with the needs of UK exporters on a case by case basis. **UKEF will further strengthen this capability by making climate-related financial disclosures in its accounts in line with the TCFD recommendations, as soon as practicable following the close of the 2020/21 financial year.**





Chapter 2: Financing Green

Overview

Transitioning the global economy to clean, resilient and environmentally sustainable growth will require investment at an unprecedented scale. The International Energy Agency has estimated that \$13.5 trillion of public and private investment in the global energy sector alone will be required between 2015 and 2030 to meet Paris Agreement targets⁵⁵.

The UK is a world leader in cutting emissions while creating wealth. By legislating for a net zero emissions reduction target by 2050 and preparing to put the 25 Year Environment Plan on a statutory footing, we are responding to the latest science and raising our ambition. Meeting our objectives will require increased levels of investment in green and low carbon technologies, services and infrastructure.

Between 1990 and 2017, the UK reduced its emissions by over 40 per cent while growing the economy by more than two thirds, the best performance in the G7 on a per person basis⁵⁶. We have done this by taking the lead, drawing on our existing industrial strengths in technology and finance, and guided by legally binding commitments to drive down emissions and reverse the decline in our natural capital asset base. The UK clean growth sector has invested over £92 billion of public and private green investment in clean energy in the UK since 2010⁵⁷.

The UK was the first country in the world to establish a Green Investment Bank (GIB), attracting much needed private finance to address the challenge of climate change. Thanks in part to the GIB, the green investment market has improved in terms of the private sector capital available, which in turn has meant that green investment has now become more mainstream.

Through the Clean Growth Strategy, the 25 Year Environment Plan, and our Industrial Strategy we are putting in place policy frameworks capable of building on this momentum to deliver the transformation required. The Clean Growth Strategy sets out how Government is investing over £2.5 billion to support low carbon innovation from 2015 to 2021. Since the Strategy was published, the Government has continued to invest in low carbon innovation, such as through the latest wave of the Industrial Strategy Challenge Fund, and we now expect to invest more than £3 billion over this timeframe. This forms part of the largest increase in public spending on UK science, research and innovation in almost 40 years.

While progress to date has been strong, the decarbonisation of our economy requires significant levels of investment in resilient low carbon infrastructure and services. This creates huge opportunities for UK business and financial institutions. By one estimate, the low carbon economy in the UK could grow 11 per cent per year between 2015 and 2030 – over four times faster than the rest of the economy⁵⁸.

Notwithstanding our strong starting position, we cannot afford to be complacent about the barriers that will need to be overcome to scale up from current investment levels to the levels required to deliver our long-term goals. Given that much of the need for green finance will fall in less developed and emerging markets, we must also support and drive international progress.

Since 2008 the UK's International Climate Finance has been working to catalyse green private investment and create markets for sustainable low carbon ventures, as well as supporting developing countries to combat and cope with the impacts of climate change and reducing deforestation.

Our Approach

This chapter sets out the key actions that government is taking to drive the flow of green finance both domestically and internationally. Our approach recognises the need to:

- Establish robust, long-term policy frameworks;
- Improve access to finance for green investment;
- Address market barriers and build capability; and
- Develop innovative approaches and new ways of working.

Accelerating the flow of finance into the projects and technologies that will help us deliver on our objectives is a key objective for the newly launched Green Finance Institute, which will work in partnership with Government, financial services and key stakeholder groups.

And we must ensure that we have access to up to date information to track our progress. We will develop and enhance our approach for measuring progress on our objectives, including how best to monitor flows of green finance in the UK.

Establishing robust, long-term policy frameworks

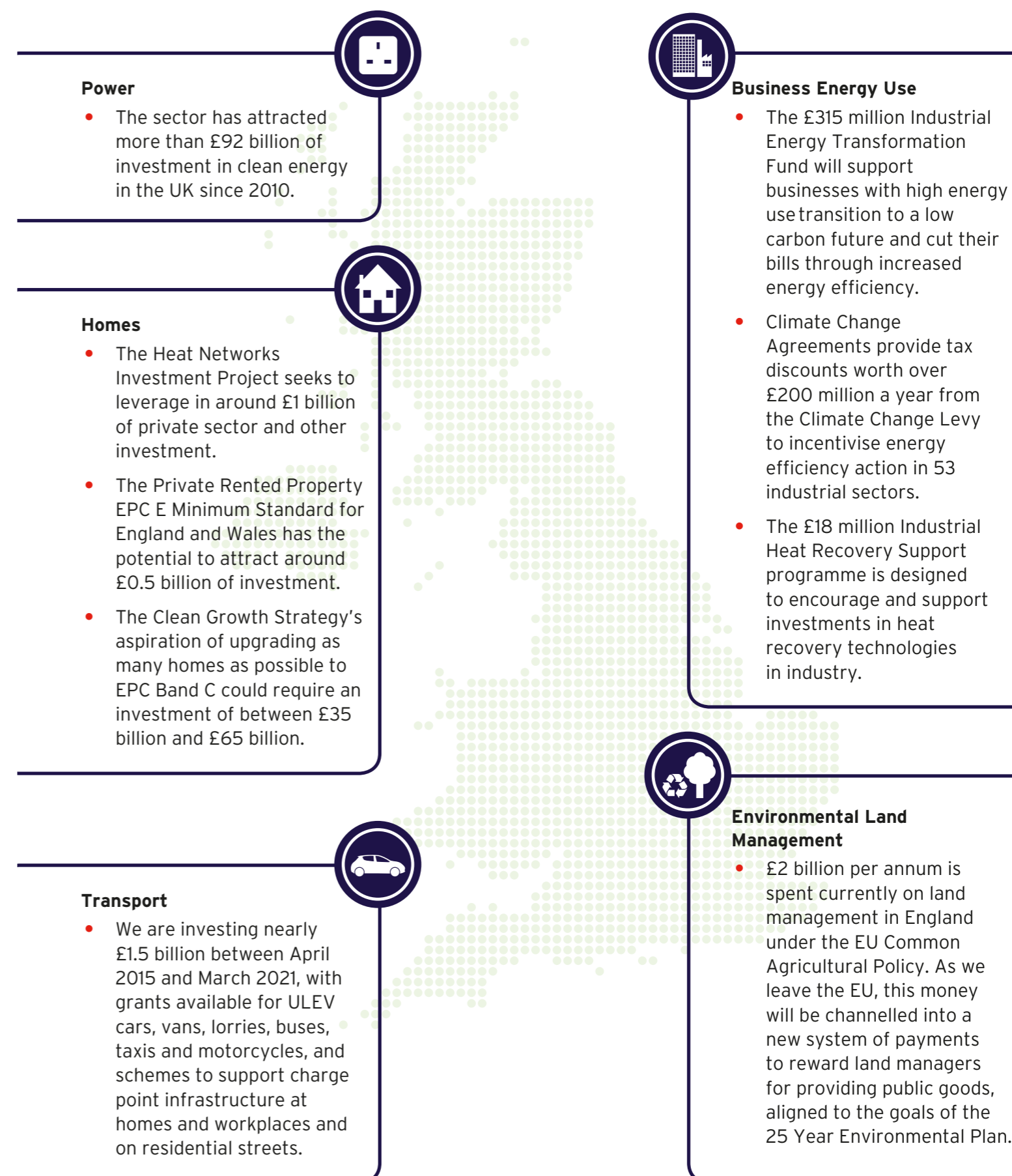
Solid foundations for clean and environmentally sustainable growth

By hardwiring our long-term goals into legislation, and setting clearly defined trajectories and robust governance arrangements to hold governments to account for delivering on these goals, and we have created a world-leading framework to ensure that the UK becomes increasingly attractive for green investment. This recognises the importance that investors place on long-term certainty when evaluating opportunities.

Under the Climate Change Act 2008, the UK was the first country in the world to introduce long-term legally binding emission reduction targets. The Act provided a statutory framework for keeping the UK on a pathway to achieving 80% reduction in emissions by 2050, guided by five-year caps on emissions - 'carbon budgets' - with independent statutory oversight by the Committee on Climate Change. The UK's new target to reach net zero greenhouse gas emissions by 2050 makes us the first major economy in the world to set such a target in



Figure 2 - Supportive policies to leverage private investment



legislation. This framework, along with our obligations under the historic Paris Climate Agreement, embodies a robust and consistent commitment to act on climate change, and to monitor progress transparently.

The Government will bring forward the first Environment Bill in over 20 years. The Bill will put environmental ambition and accountability at the very heart of government. It will help us make good on our commitment to leave the natural world in a better condition than

we found it. The published draft Principles and Governance clauses set out how we will create a new Office for Environmental Protection to make sure that we succeed. The new Office for Environmental Protection will be empowered to hold future governments and public bodies to account for progress, including through the courts if necessary. The Bill will also commit the Government to measuring and reporting on progress, backed up with a regularly refreshed, credible plan of environmental action.

Box 6 – Action to drive clean growth and environmental performance

- Announcing two missions and further support for innovation under the Industrial Strategy's Clean Growth Grand Challenge, committing to at least halve the energy use of new buildings by 2030, and to establish the world's first net zero carbon industrial cluster by 2040 and at least one low-carbon cluster by 2030. These missions will drive public sector and private sector action to achieve these specific objectives and seek to develop and pilot solutions that can be replicated.
- Cutting emissions and energy bills for our businesses. To understand how we can encourage banks and energy service companies (ESCOs) to engage in the energy efficiency market for small and medium sized enterprises (SMEs) we released a call for evidence which asked whether there would be any value in a government guarantee to underpin loans to SMEs from ESCOs, financial institutions, energy efficiency lenders and partner organisations, to de-risk these products.
- Publishing the outcome of the Review of CCUS Delivery and Investment Frameworks by the end of 2019 to support delivery of the Government's CCUS Action Plan. The Action Plan was designed to enable the first CCUS facility in the UK, to be commissioned from the mid-2020s. This is a key step towards meeting our ambition of having the option to deploy CCUS at scale during the 2030s, subject to costs coming down sufficiently.
- Agreeing sector deals in areas such as offshore wind and nuclear power – ensuring that investors and the Government have a shared plan to deliver the investment and skills needed to maximise UK opportunity.
- Committing to launch a roadmap for heat decarbonisation policy in 2020, to set out how we get to a long-term policy framework for decarbonising heat in the first half of the next decade. More immediately, the Government will introduce a Future Homes Standard by 2025 to ensure new build homes are future-proofed with low carbon heating and world-leading levels of energy efficiency. We are also developing a regulatory pathway to phase out fossil fuel heating in buildings not connected to the gas grid during the 2020s. Together, these actions will unlock significant new green finance opportunities, including Green Mortgages for new build and potentially also new business models for retrofit.

- Publishing the Clean Air Strategy, which sets out ambitious action for achieving emissions ceilings of key air pollutants by 2020, and 2030 from all sources, including transport, industry, agriculture, and domestic sources. A key emphasis of the strategy is to target action to reduce public exposure to the most harmful pollutants, committing to setting a new, ambitious, long-term target to reduce people's exposure to fine particulate matter.
- Publishing a Road to Zero Strategy, setting out measures towards cleaner road transport to put the UK at the forefront of the design and manufacture of zero emission vehicles.
- Committing public money to environmental outcomes under the Agriculture Bill. This could include the protection and enhancement of our natural and working landscapes, delivering clean air and water, promoting natural resilience to climate impacts, and encouraging tourism and wellbeing. Our new environmental land management system will help the farming and forestry sectors grow greener by offering an improved market for environmental goods and services, and thereby enable the farming sector to unlock opportunities for investment from the private sector.
- The forthcoming Energy White Paper will seek to address the challenges arising from the radical transformation of the energy system over the coming decades. It will set a vision for the development of the energy system out to 2050, consistent with the Government's climate change goals, and sets out a series of actions out to 2030 that prepare the energy system for the long term. It will set out a new approach to financing nuclear and increased ambition on other technologies.
- Setting out in the Resources and Waste Strategy how we will eliminate avoidable plastic waste, double resource productivity and eliminate avoidable waste of all kinds by 2050. It creates the long-term policy environment to leverage the investment needed to achieve our high recycling ambitions, and to further develop our domestic reprocessing and secondary materials markets. By showing leadership and supporting the development of technologies and solutions that maximise the value we get from resources and minimise waste, we can achieve strategic ambitions more quickly, as well as increase the UK's competitiveness and opportunities for trade.

Ratcheting up ambition

Over the last year we have increased our ambition for transforming energy and environmental performance in key sectors, with new policy statements, sector strategies and roadmaps, and new measures in Budget 2018 and the Chancellor's 2019 Spring Statement.

Box 6 sets out some of this economy wide action from measures to incentivise investment in energy efficiency in buildings to the development of new markets for technologies such as offshore wind and carbon capture, usage and storage (CCUS).

A key theme of the Green Finance Taskforce was the importance of driving supply and demand for green lending products. In publishing this strategy, we are:

- **Announcing new proposals focused on driving action and investment in the Commercial and Non-Domestic Buildings and Homes sectors.**

Commercial and non-Domestic Buildings

In response to a recommendation from the Green Finance Taskforce, **the Government will work with partners to determine the steps necessary for landlords and businesses to understand,**

and potentially disclose, their operational energy use. We are currently working with the Better Buildings Partnership on their Design for Performance initiative and their review on ways operational performance can be measured and utilised in certain new builds.

The Government intends to consult on the future trajectory of the minimum energy efficiency standards in the non-domestic private rented sector in Summer 2019. This demonstrates the Government's commitment to providing landlords and businesses in the sector both time to respond and certainty. Current and future rented sector policy is projected to be one of the key measures in driving energy efficiency improvements through the 2020s.

Homes

In the Clean Growth Strategy, we set an aspiration to upgrade as many homes as possible to Energy Performance Certificate (EPC) Band C by 2035 with fuel poor homes reaching this standard by 2030. The total investment required to improve our housing stock to this standard is estimated between £35 billion and £65 billion. This will require mobilising significant private investment from new sources so, alongside the Clean Growth Strategy, we called for evidence on Building a Market for Energy Efficiency. **The summary of responses to that Call for Evidence is published alongside this document.**

Based on the responses to this Call for Evidence and the recommendations of the Green Finance Taskforce **we intend to take action that will build the market for green finance products to support home energy efficiency.** These actions include:

- **Publishing a consultation later this year** on the merits of setting requirements for lenders to help households improve energy performance of homes they lend to.
- **Publishing an update to the EPC data available through open data, and a commitment to update this at least every six months, to support lenders in driving energy efficiency by evaluating the EPC performance of their lending**

portfolios. We will also consider how this data could be made available on a live basis as part of updating the EPC Register platform.

- Given support for the Pay as You Save approach, **we will continue to explore further opportunities for simplification and improvement of the Green Deal framework to support the funding of energy efficiency measures.**
- **Sponsoring new technical standards (PAS 2035:2019 & PAS 2030:2019) covering the end-to-end delivery of energy efficiency measures.** The British Standards Institution published these standards in June. These will be embedded within the new TrustMark government endorsed quality scheme, which large financiers have stated will improve the investment attractiveness of energy efficiency. It will also ensure consumers get what they are expecting and have suitable financial protections in place.
- **Reviewing how Government energy efficiency data, using the National Energy Efficiency Data-Framework (NEED), could be used to support innovative green finance product development.**

Improving access to finance for green investment

Long term policies and increased ambition have sharpened the incentives for investment from the private sector. Our strategy recognises the need for additional government support to overcome investment hurdles in certain sectors. This includes:

- The provision of carefully designed public support to leverage private capital; and
- Measures to unlock new revenue streams in areas such as natural capital, carbon finance and resilience.

Public funds to leverage private capital

To improve access to finance Government has allocated substantial resources to fund investment in clean energy and natural capital growth. These funds are leveraging in larger sums from the private sector in order to achieve the overall level of investment required. Our strategy recognises the transformative potential of blended funding models and other innovative mechanisms for delivering public support.

For example, the Heat Networks Investment Project, provided as 'gap funding' to grow the market, aims to have a transformative impact on the development of cost-effective carbon savings required to meet our future carbon reduction commitments. In return for a public investment of £320 million, the project is aiming to lever in around £1 billion of private and other capital by 2021.

We are also making smaller strategic investments to pump prime new markets by funding the development of effective project delivery models that others can replicate with confidence. For example, we are investing £5.7 million of investment to kick-start planting in the Northern Forest – an initiative which will see a minimum of 1.8 million new trees by 2022 – and will help to develop and test approaches that will lay the foundations for the National Forest Partnership to achieve their longer-term ambition of 50 million trees planted over the next 25 years⁵⁹.

Building on this experience, **we are expanding our portfolio of blended, innovative funds** to ensure that public investment acts as a catalyst, increasing access to finance for promising new technologies and investment models:

- A new **clean growth venture capital fund** will be launched with a £20 million capital contribution from the Department for Business, Energy and Industrial Strategy (BEIS), with a view to attracting a matching or potentially greater capital sum from the private sector. In addition to catalysing the Clean Growth equity financing market,

this money will be invested on commercial terms in UK companies seeking to commercialise promising technologies.

- We are working with stakeholders, including in the finance sector to explore the potential for a **Natural Environment Impact Fund**. This could provide a mix of technical assistance and capital support to kick-start a pipeline of commercially attractive, revenue-generative projects.
- The £400 million **Charging Infrastructure Investment Fund** will accelerate the roll-out of charging infrastructure by providing access to finance to companies that deliver public charge points. The Government will invest up to £200 million in the Fund, to be matched by private investors.
- We are developing an **Industrial Energy Transformation Fund**, backed by up to £315 million of investment, to support businesses with high energy use to transition to a low carbon future and to cut their bills through increased energy efficiency. The Government has consulted on the design of the fund.
- **We are investigating options to increase the size of the Public Sector Energy Efficiency Loan Scheme (managed by Salix Finance).** This approach will be outlined in a roadmap for the public sector later in 2019 along with other key policies and programmes required to meet the ambitions of the Clean Growth Strategy. The scheme the has funded over 17,000 projects, enabling public sector organisations to reduce their bills, with savings recycled into a dedicated fund for reinvestment. The scheme is estimated to deliver £1.4 billion (undiscounted) of public sector bill savings over the period 2018-2032 and projects are estimated to reduce greenhouse gas emissions by 1MtCO₂e over the fifth carbon budget period (2028-2032)⁶⁰.

- The Government will create the **UK Shared Prosperity Fund** (UKSPF), a programme of investment to tackle inequalities between communities by raising productivity, following our departure from the European Union. The UKSPF will invest in the foundations of productivity as set out in our Industrial Strategy to support people to benefit from economic prosperity, especially in those parts of the UK whose economies are furthest behind.

Unlocking new revenue streams

Whilst there is a clear role for government to act as a cornerstone investor, it is equally important that green projects are able to develop new revenue streams that provide rewards for the environmental benefits they deliver.

We are taking action to do this by developing new approaches to financing natural habitats, expanding carbon finance, enhancing resilience and reforming regulatory frameworks.

Financing natural habitats

The Government has committed to introducing mandatory biodiversity net gain for developments in England as part of its longer-term ambition to embed a 'net environmental gain' principle for development. Biodiversity net gain describes an innovative approach to development that aims to leave the natural environment in a measurably better state for wildlife than beforehand. While the focus of biodiversity net gain is on avoiding negative impacts and encouraging improvements for wildlife within development sites themselves, it also offers potential to stimulate the development of markets in off-site compensation and habitat banks. Habitat banking enables many small developer contributions to be aggregated for investment in larger scale green infrastructure.

Alongside biodiversity net gain, Natural England is rolling out district-level licensing for developments that impact great crested newts. District-level licensing enables developers to fund off-site compensatory habitats for protected species that are affected by development. This changes a system designed to ensure simple compliance into one that delivers positive environmental improvement, funded by developers.

By enabling the long-term planning of habitat creation, improving opportunities to find suitable land and enabling trade in habitat units, these new policies have the potential to open up the field of habitat creation to a wider suite of potential investors and to remove some existing barriers to investment in natural capital.

Expanding Carbon Finance

Carbon finance also offers a revenue stream for investors, by giving value to the greenhouse gas emissions that are reduced or removed by a project. The Chancellor announced a package of funding for forestry in the 2018 Budget, including a Woodland Carbon Guarantee, which will underwrite £50 million of carbon credits from forestry. In the 2019 Spring Statement, the Chancellor further announced a Call for Evidence that would explore whether travel providers should be required to offer carbon 'offsets' to their customers. Such a requirement could create a new source of demand for carbon offsets, one form of carbon finance.

The UK has led the way in developing robust standards for offsetting, including the Woodland Carbon Code which provides a robust basis for terrestrial carbon offsetting. Our Peatland Code strongly supports corporate social responsibility investments and has good potential to support offsetting in the future. These standards have helped a growing number of businesses invest in carbon reductions with confidence.

The Government will consider how to further deepen the links between public and private sector initiatives to mobilise and spend carbon finance. For example, we will explore the scope for further private sector engagement in REDD+ (Reducing Emissions From Deforestation and Degradation), a key pillar of the international framework for investment in nature-based solutions. We are committed to further supporting the development of robust offset standards, including the development of methods for accounting for marine carbon offsets, to increase the opportunities for investment in nature-based solutions to climate change.

Enhancing Resilience

The frequency of destructive weather events,



in particular flooding and coastal erosion, is likely to grow. This year the Department for Environment, Food and Rural Affairs (Defra) has consulted on the scope for new local funding mechanisms to generate revenue streams to back investment in reducing these risks and on the UK's infrastructure requirements for climate resilience and flood risk management. Later this year Flood Re, one of the world's biggest and most innovative natural hazard re-insurance programmes, which is designed to ensure householders in high flood risk areas can access affordable insurance, will complete its first scheme review. Following consideration of this report and the recent consultations, government will publish a new policy statement in 2019, including the role of complementary finance sources, local funding mechanisms and the ongoing Flood Re scheme.

National and international standards bodies (BSI and the International Organisation for Standardisation (ISO) respectively) are additionally exploring the role of standards in climate change adaptation. By providing rigorous and consistent approaches to adaptation decision making, standardisation offers improved confidence and transparency in order to leverage investment in resilience activities. The first international adaptation standard, ISO14090: Adaptation to climate change – Principles, requirements and guidelines, was published earlier this year with further standards in the process of being developed⁶¹.

Reforming regulatory frameworks

Government recognises that driving investment at the scale required to meet some of our long-term goals requires different approaches to regulation. For example, in our Resources and Waste Strategy we have committed to reforming the current packaging producer responsibility system. This includes adopting the 'polluter pays' principle so that producers of packaging cover the full net cost of managing their packaging at end-of-life, compared with less than 10% of the costs of managing household waste under current legislation. This will increase the incentives for supply chain innovation, accelerating the

development and uptake of low impact packaging solutions and the commercial rewards of investing in sustainable product design and more durable products. Our intention is to legislate by 2021 and to have reforms operational by 2023.

In the water sector, some public utilities are working with regulators to deliver environmental objectives in a different way. For example, by paying farmers and landowners to modify their land uses the overall pollutant burden in a catchment can be reduced. By offsetting in this way pollutant load targets for catchment areas can be met at a far lower cost than equivalent action through investment in conventional water treatment infrastructure. Nature-based solutions to protecting water supplies, reducing pollution and addressing flood and drought resilience also deliver valuable benefits for carbon sequestration, biodiversity and wider social objectives.

One currently operating scheme, which was set up primarily to address pollution, has been forecast by the utility concerned to deliver savings of over £100 million for bill payers together with a range of additional benefits⁶². These initiatives, demonstrated in connection with water management, are scalable and transferable more widely. Government will work with the water industry and regulators to identify barriers to the further development of this model and its adoption in other areas.

Addressing market barriers and building capability

We recognise that even with long-term policy in place, and bold and ambitious commitments to provide access to finance, there are also market frictions that can prevent the flow of private sector finance from supporting our clean growth and environmental ambitions.

We are taking action to drive financing opportunities in low carbon and resilient infrastructure, support local green finance action and to reduce transaction costs.

Driving financing opportunities in low carbon and resilient infrastructure

We will showcase green investment opportunities and drive the demand for and development of resilient, investment-ready projects:

- We recognise significant investment is required in low carbon infrastructure in the UK to deliver our carbon budgets. The government's ongoing Infrastructure Finance Review explores how government can continue to ensure that good infrastructure projects can raise the finance they need, particularly in the light of technological change, the changing nature of our relationship with the European Investment Bank, and the need for infrastructure that is resilient to climate change and required to deliver our fourth and fifth carbon budgets. This review will inform both the 2019 Spending Review and the National Infrastructure Strategy.
- As discussed in Chapter 1, the National Infrastructure Commission (NIC) is carrying out a study, to understand the current and future resilience of UK infrastructure. This will develop a framework for assessing resilience and making recommendations to government that can be used in the next National Infrastructure Assessment, which is required by HM Treasury every five years. Integrating climate considerations
- BEIS will be supported by the Infrastructure and Projects Authority to seek to apply a green filter to the National Infrastructure and Construction Pipeline.
- The Government recognises the importance of investing in natural capital to create great places for people to live and work. This is why Government is working closely with local stakeholders and investors involved in development in the Oxford Cambridge Arc. Embedding natural capital into major new development at the outset will help to maximise the opportunities for nature-based solutions to climate change and flood resilience, create great places for people and attract investment. It can help improve strategic planning and decision-making, achieving better environmental outcomes.
- The benefits of investing in green infrastructure are clear, with increasing evidence that spending time in nature can bring health and well-being benefits (see Future Parks Accelerator Case Study). The Government wants to encourage more investment, and as a first step we will be

Case Study: Future Parks Accelerator

In February 2019 the Secretary of State for Housing, Communities and Local Government announced an investment of £1.2 million into the Future Parks Accelerator programme. Future Parks Accelerator is a joint National Lottery Heritage Fund and National Trust programme to support 8 local authority areas to transform their parks estates, testing and learning from new and innovative models of parks management and funding to create more sustainable parks estates for the future. The learning from the programme will be shared widely to help local authorities to develop sustainable plans for their parks estates.

Newcastle City Council has blazed a trail for the Future Parks Accelerator programme; they have undergone a pioneering journey to set up a Parks and Allotments Trust and in April 2019 transferred their parks and green spaces estate to the Trust on a long lease. During their journey, Newcastle City Council have gathered significant learning and developed key documents which will be of value to many other local authorities. The Government has invested £210,000 to help Newcastle to collate and disseminate their learning with other areas.

setting out what 'good' green infrastructure looks like. Natural England has commenced a project to define a framework of green infrastructure standards to assist local authorities to audit and plan for green infrastructure in their area. This will also inform work by government to develop national planning policy and guidance and better ways of measuring changes in green infrastructure in order to encourage investment.

Supporting local green finance action

The Green Finance Taskforce also highlighted the important role of local actors in guiding potential investors towards opportunities that meet local priorities, and therefore stand a good chance of securing backing from local communities and decisions makers. Often there is a lack of the resources and skills needed to develop a pipeline of projects sufficient to unlock investment opportunities in local areas, and investment-ready project proposals are in short supply.

Innovative projects such as those showcased below (see Natural Capital Pioneers Case Study) have shown that with the right leadership and the application of suitable skills and resource this barrier can be overcome.

The Environment Agency is working closely

with local authorities, for example through the Manchester IGNITION project, to find innovative funding and financing solutions to pay for resilience measures, which could be adopted more widely. These approaches will inform new ways local stakeholders can raise the funding they need to manage local risks.

Sharing local best practice

Delivering the required transformation means building on the existing pockets of good practice including those described above so that all communities can access the finance that they need. Ultimately this depends on strong local leadership, but central government can play a clear role. That is why the Government is taking action, including supporting the rollout of local strategies for unlocking additional investment:

- Through the Heat Networks Delivery Unit, we are supporting local authorities through the early stages of project development.
- The Local Energy programme is designed to start to build the capacity and capability at local levels to deliver integrated clean growth solutions. To date the Government has invested £10 million in the Programme. This includes funding for all 38 Local Enterprise Partnerships to write their own energy strategies, five local energy hubs to

support a pipeline of low-carbon projects (using the energy strategies as a basis for their work) and a suite of supporting toolkits and guidance.

- We are also transferring the £10 million Rural Community Energy Fund to the hubs to support communities to develop local projects.
- In January 2019, the Government and UK100 delivered the first Investing in Local Energy conference. The conference, held in Leeds, brought together leading green finance experts and investors and some of the UK's largest companies and town hall leaders from across the country to discuss how to unlock at least £2 billion to help support clean local energy projects as part of the Industrial Strategy.
- We are supporting the Ecosystems Knowledge Network to bring together local natural capital champions to engage with national partners and potential investors through a Natural Capital Investment Forum.

Reducing transaction costs

Novelty and uncertainty add to the costs of project proposals and reduce the chances of attracting funding. In the previous section, we noted the successful models that are being tested in some areas and the support that Government is providing to enable these models to mature and be replicated on a larger scale.

In addition, the size and volume of projects at a local and regional level often prohibit securing large scale financing. Many of the solutions required are by nature small scale both for those seeking to secure decarbonisation and environmental outcomes.

We welcome the action by local authorities and the private sector on these issues:

- The City Leap Project, led by Bristol City Council, has demonstrated how large volumes of small projects can be

aggregated into a single capital raising prospectus to unlock private finance.

- In Cumbria, Nestle and other partners are pioneering the Landscape Enterprise Network (LENS) approach. This requires an understanding of stakeholders within the landscape and their reliance on natural capital assets, such as soil, water or woodland. By first identifying the market, the LENS approach starts with potential sources of investment, which could be a range of local stakeholders including water utilities, local and multinational businesses, employers and householders. When combined with tools such as reverse auction this could provide an efficient mechanism for multi-stakeholder landscape investment.

In order to drive the reduction of transaction costs, in March 2019, the Government launched the Boosting Access for SMEs to Energy Efficiency (BASEE) competition. The competition will provide £6 million of funding to accelerate the growth of the energy services market for small and SMEs by driving down transaction costs and promoting third party investment in energy efficiency projects. The funding will be available for new innovative scalable business models or solutions that reduce costs, simplify processes and encourage take up of energy efficiency by SMEs at scale.

Developing innovative approaches and new ways of working

The Government can also play an important role working with others to develop innovative approaches to accelerating green investment and demonstrating the success of low carbon, resilience and natural capital investments and associated benefits. This includes catalysing public-private sector collaboration and exploring new ways of working, for example, with regard to Government procurement.

Case Study: Natural Capital Pioneers Programme

The IGNITION project, led by Greater Manchester Combined Authority with support from the DEFRA 'Pioneers' Programme, has shown how local governments can access green finance for natural capital investment and identify pipeline project opportunities for investors. The project has built a knowledge base of resources around contracting and investment approaches that will enable investment in nature-based solutions to be scaled in city regions across Europe. The first investment opportunity within IGNITION will enable investors to share the financial rewards from investing in sustainable urban drainage solutions, to deliver substantial reductions in public institutions' water and sewerage bills.

Pioneer programmes in North Devon and Suffolk have highlighted the benefits gained from the sea and options for translating this into revenue generative investments. These include restoring fish stocks and improving fishing infrastructure, boosting sustainable tourism, increasing the impact of water quality schemes, increasing the positive effects of blue carbon on the climate and of biodiversity on human health and wellbeing. In North Devon, lead project partner WWF will pilot two promising models for structuring this type of investment during the current financial year.

Public-Private sector collaboration

A key theme of our Green Finance Strategy is public-private sector collaboration. Bringing together the investor community with policy makers and project developers can help to develop innovative and shared approaches to address finance challenges in key sectors. The GFI has been created, in part, to lead some of this work.

- **The Green Finance Institute will launch a series of mission-led coalitions that will convene multi stakeholder groups to address the barriers to greater and more rapid deployment of green capital.** These projects will help to accelerate private investment in the Government's Clean Growth Strategy and 25 Year Environment Plan through tangible actions that will unlock supply and demand and encourage green investment.

The Government will this year publish its Clean Maritime Plan. As the global transition to zero emission shipping gathers pace over the coming years, driven by increasing international pressure to tackle emissions of greenhouse gases and air quality pollutants, the UK has the opportunity to build on its existing position as a world leading financial centre to become the global hub for the provision of green finance for the clean maritime sector.

- **To capitalise on this opportunity, the Government will launch a 'Financing Green/Greening Finance for Maritime' initiative at London International Shipping Week.** This will have a dual approach, both providing information to industry about zero-emission funding opportunities, while also promoting opportunities in clean maritime to potential investors.

Exploring new ways of working

We are also using our innovation funding to support new ways of working and to foster new approaches in the private and public sectors:

- Modern Energy Partners (MEP) is a collaboration between BEIS, the Energy

Systems Catapult (ESC) and Cabinet Office. MEP's mission is to enhance the capability in energy managers and associated decision makers to come together with supply chain experts (including investors) to develop and design, finance, procure, build and operate cost-effective integrated energy solutions. The project is mobilising the public sector to use its own sites as a pathfinder to attract investment and stimulate innovation.

- **The pilot phase of MEP finished in March 2019, and the project has successfully been awarded £20 million to support phase two.** The project will grow private sector expertise in cutting-edge smart, integrated energy efficiency solutions that combine low carbon generation, storage and energy demand management, to benefit both individual sites and the wider energy system. Up to £14 million will be used to implement sophisticated energy upgrades at up to eight sites, with designs for up to 36 additional public sector sites completed by the end of March 2021.
- The Greening Government Commitments (GGC)⁶³ also demonstrate Government's leadership in improving the environmental sustainability of its own estate. Specific targets are set for reducing emissions, waste and water, and for improving sustainable procurement. The value of overall saving from reduced energy use, waste arisings and water consumption are estimated at £150 million in 2017/18 compared to the 2009/10 baseline. Following the achievements reported under the GGCs across government so far, a commitment to making further progress beyond 2020 has been maintained, demonstrating a commitment to leadership in this area.
- The BEIS Whole House Retrofit competition is a key step towards accelerating a reduction in domestic retrofit costs. The competition supports the Clean Growth Grand Challenge, in particular the Buildings Mission, which aims to halve the cost of

retrofitting existing buildings to the same energy standards as new buildings by 2030. The £10 million grant funding will be awarded to projects that can demonstrate cost reductions by carrying out deep retrofit at scale on a large number of similar properties. The funded projects will need to consider both process related and material innovations, by focusing on mass production and large-scale delivery.

Driving International Green Investment

At least \$6 trillion per annum of new or reallocated infrastructure investment up to 2030 will be required to meet the Paris Agreement, and the wider Sustainable Development Goals^{64, 65}. While this is a major challenge, it also presents significant economic opportunities.

This huge investment and economic opportunity will drive the transformation of the global economy to be environmentally sustainable, resilient, and prosperous for all. It includes decarbonising industry and transport, building smart energy systems and increasing access to

affordable, clean energy. Different economies will face varying challenges, and the UK is working through its strong partnerships and the Official Development Assistance portfolio to overcome hurdles and accelerate action. Public sector funding is particularly crucial in accelerating climate action in difficult to reach areas like adaptation and resilience. But public sector funding alone is insufficient to meet the investment needed for the global transition to environmentally sustainable growth. Public interventions must therefore focus on mobilising private finance and removing market barriers to such investment.

The Government is committed to helping developing countries in this global transition, including through the shared developed country goal of mobilising \$100 billion per year in climate finance from public and private sources by 2020 and through to 2025. The UK has committed to spend at least £5.8 billion of International Climate Finance between 2016 and 2020. This builds on the £3.87 billion that the UK spent on climate activities between 2011 and 2015⁶⁶. These funds have thus far produced outcomes in key areas including forestry and land use, industrial decarbonisation, and energy transitions (Figure 3).

Figure 3 - 2018 UK Climate Finance Results⁶⁷



590 MW
Clean energy capacity installed



17 million
People provided with improved access to clean energy



10.4 million
Avoided or reduced tonnes of GHG emissions



47 million
People supported to cope with climate change



£3.3 billion
Public finance mobilised for climate change



£910 million
Private finance mobilised for climate change

By sharing skills and expertise the UK assists governments to develop the policy frameworks to enable private investment, and help businesses design strong projects to access finance. We also use strategic public investment and innovative financing instruments to leverage private finance and break down market barriers to investment. Across Government we have a number of country focused programmes to help develop green finance markets, including UK Partnering for Accelerated Climate Transitions (UK PACT) and the Prosperity Fund. Examples are outlined in Annex A. This is supported by our work to transform domestic, international and multilateral institutions, as well as institutional investors, to make green finance part of their core business.

Establishing robust, long-term policy frameworks

Responding to the needs and priorities of developing countries, the Government is marshalling its' expertise to design regulatory and market frameworks that are opening up stable enabling environments for investment. For example, our Global Energy Transfer Feed-in Tariff (GET FIT) programme has supported the development of small-scale on-grid renewable energy projects in Uganda by working on feed in tariffs and with government. By working closely with the energy regulator and the Government of Uganda, this has delivered 87MW of renewable power generation⁶⁸ - creating jobs, reducing emissions and providing a major boost to the country's total power generation capacity making greater access to energy for Ugandans. The regulator is now highly skilled and able to continue the work on its own.

The UK is supporting countries to ensure they are mobilising private finance to be resilient to climate shocks. In July 2017, the Prime Minister launched the UK-led Centre for Global Disaster Protection. This £33 million programme draws upon UK and global expertise in risk, finance and insurance to design and support disaster risk financing systems, helping developing countries put financing and plans in place before disaster strikes.

Improving access to finance for green investment

UK finance has been used in a range of innovative ways to help communities and businesses access finance. For example, in Sub-Saharan Africa, the Government funded Renewable Energy Performance Platform (REPP, £148 million) supports small and medium sized project developers by providing technical project development advice and early stage finance. As the scale of this support grows so too does the momentum behind these renewable energy markets, attracting private and institutional investors. Through the Global Climate Partnership Fund (GCPF, £55 million investment), the Government is using its finance to lessen risk and attract funds to support local financial institutions in 25 countries. GCPF provides these institutions with technical and financial support to provide green loans at commercial rates. This is stimulating a market for these debt products with 34 local financial institutions making 74,000 loans to SME and household clients by 2018⁶⁹.

Limited access to insurance also restricts investment and damages the resilience of communities and economies. An estimated \$163 billion of assets are underinsured in the world today, with emerging economies accounting for \$160 billion (96%) of the global total⁷⁰. The Government is supporting alternatives to traditional insurance to address this barrier, for instance: Global Parametrics is a UK funded and based social enterprise to strengthen resilience to natural disasters in developing countries. The company uses cutting-edge climatic, seismic and financial risk modelling to design products that provide financial protection to organisations operating in developing countries.

Furthermore, the Centre for Environment, Fisheries and Aquaculture Science (Cefas) is working to improve the climate resilience of Small Island Developing States (SIDS). Ecosystem-based insurance products are being explored to address unsustainable state debt accumulation as a result of extreme weather events, by facilitating access to funds for restoration or as compensation to fishermen. Both of these goals aim to rehabilitate



the protective and livelihood-related functions of ecosystems. For instance, coastal ecosystems such as coral reefs, mangroves and seagrass beds, can provide storm protection for coastal communities, while supplying benefits for fisheries and tourism.

The UK's climate finance is leveraging private investment; attracting institutional investors and taking advantage of the expertise of the City of London. This combined approach offers huge potential to mobilise green finance. The Government uses its funds to kickstart markets; help projects reach financial close and demonstrate profitability, reduce risk perceptions and improve the cost of capital. For instance, UK funds are being used in the Sustainable Infrastructure Programme (SIP) in Brazil, Colombia, Mexico and Peru (SIP Latin America, £177.5m). They accelerate the implementation of national green development plans by catalysing private sector investments into low carbon infrastructure.

Addressing market barriers and building capability

Our climate finance is responsive to market barriers and the needs of developing countries. The UK Government is building strong partnerships with countries including China, Mexico and Colombia, to deliver technical support. For example, the £60 million UK PACT programme works closely with governments to develop the enabling environment for investment. This includes projects progressing local green finance taxonomies and supporting climate related asset disclosure and transparency. UK PACT will expand into other geographies and sectors in the coming years.

Multilateral investment is a key tool for building capability to gain and deliver investment scale in countries; these funds have well-developed pipelines, can deliver at scale, and are producing results. The UK has been one of the largest contributors to multilateral funds financing the green economy, and we work to focus fund investments where they can play a full role as a lender of last resort and maximize private sector mobilisation.

The UK has contributed £720 million to the Green Climate Fund (GCF) to date and is one of the leading contributors to the Global Environment Facility (GEF), having committed £250 million for 2018-2022. Since 2015, the GCF has become the world's largest dedicated climate fund and the key multilateral fund for supporting implementation of the Paris Agreement. It has committed \$5 billion across 102 projects to date, while leveraging over \$12.6 billion in co-financing⁷¹. The UK has been a strong advocate of the GCF doing more to mobilise private sector finance; pushing successfully for the establishment of a dedicated Private Sector Facility to work directly with the private sector.

The UK is also a founding member of the Climate Investment Funds (CIFs) and is the largest contributor, investing over \$2.5 billion since 2008⁷². Over the coming years, the CIFs will have allocated over \$8 billion to projects that reduce emissions; support clean growth; build climate resilience and protect forests across more than 70 developing countries^{73, 74}. At over \$5 billion, the Clean Technology Fund (CTF) is the largest of its programmes and focuses on the deployment of clean technologies to reduce the greenhouse gas emissions of developing economies. Investments are designed to help push new technologies over the 'tipping point' so that they no longer require concessional finance and can instead be supported by the market. The CTF has an impressive track record: its dedicated private sector windows have on average mobilised £7 from investment partners for every £1 of CTF finance spent; with around a third of the co-financing coming from the private sector⁷⁵.

Developing innovative approaches and new ways of working

Where there is a limited range of financial instruments available to deliver green investments, particularly in more challenging markets such as forest commodities, the Government promotes innovation using its climate finance. For example, the UK's Partnerships for Forests (P4F) programme, working with Lestari Capital, helped to incubate the new Sustainable Commodities Conservation Mechanism. This helped to meet demand for forest protection and

restoration and promoted long-term conservation through global commodity markets. Furthermore, P4F's first successful partnership, a sustainable rubber production initiative, has mobilised £68.4 million of private investment and brought 88,000 hectares under improved sustainable land use management⁷⁶.

Moreover, the UK is making targeted investments to support innovative financing for emerging sectors, such as Blue Carbon. The Government recently announced £12.75 million to fund mangrove restoration, which will support projects in Small Island Developing States, and those with high rates of deforestation. The program will mobilise strategic public and private sector investments in the Blue Carbon sector, with a focus on developing incentive-based instruments including technical cooperation grants, loans, high-risk investment grants and equity. £20 million of junior capital has also been committed to the Eco Business Fund (EBF). This is an impact investment fund, lending throughout Latin America and the Caribbean, promoting environmentally responsible business in the Fund's four focus areas of agriculture and agri-processing, fisheries and aquaculture, forestry, and sustainable tourism. EBF is demonstrating a commercially viable financing model which leverages private sector capital whilst complementing this with a strong technical assistance arm to both beneficiaries and financial institutions. The fund will drive transformational change through embedding environmentally sustainable lending practices within partner financial institutions.

The UK has been a strong supporter of action under the Montreal Protocol to tackle fluorinated gases that damage the ozone layer. Building on these efforts we are working with international partners to deliver an early switch from technologies that use other fluorinated gases which are powerful greenhouse gases. This includes the Kigali Cooling Efficiency Programme which is designed to mobilise private investment into energy efficient cooling technologies.

The Government also promotes low carbon growth through CDC, the UK's Development Finance Institution. CDC invests across Africa and South Asia to promote the transition to low carbon growth and offers support to the companies it invests in to become climate smart. In the past two years they have committed over \$500 million in clean power generation, including founding the renewable energy platform Ayana to develop utility scale solar and wind generation projects across India, and supporting off-grid solar power company M-KOPA to provide 90 million hours of kerosene-free lighting a month, to 750,000 households across East Africa⁷⁷. Also, through the UK Climate Investments (UKCI) the UK is mandated to invest £200 million in green projects across Sub-Saharan Africa and India on commercial terms. This fund is designed to mobilise private sector finance to scale up renewable energy and energy efficiency projects and demonstrate that low-carbon investments can be profitable.



Chapter 3: Capturing the Opportunity



Overview

Demand for green finance from consumers, investors, and governments is expected to grow substantially over the coming decades. A report from Ricardo Energy & Environment, prepared for the UK Committee on Climate Change, estimated that the potential global market size for low carbon financial services could reach £280 billion per year in 2030 and £460 billion in 2050⁷⁸. With strengths across the full financial services spectrum, deep pools of capital, and a leading track-record on environmental policies, the UK is uniquely placed to capitalise on this opportunity and strengthen its position at the forefront of this market. This chapter sets out how the Government, working in partnership with the newly launched Green Finance Institute (GFI), will look to support the private sector in the delivery of this ambition. Our strategy for doing this has three core elements:

- **Consolidating the UK's position as a global hub for green finance** – the Government is committed to maintaining the UK's leading position as a global financial centre for green finance. We will do this by coordinating UK activities behind a shared strategic direction, in partnership with the GFI, and establishing the global market for green finance;
- **Positioning the UK at the forefront of green financial innovation, and data and analytics** – the Government will create an environment that catalyses UK innovation in green finance products and services, including data and analytics, in collaboration with regulators, industry, and academia; and
- **Building capabilities and skills on green finance** – the Government recognises the need to upskill finance professionals and government officials and promote awareness in civil society to unlock the full potential of green finance.

The UK as the global hub for green finance

The government is committed to ensuring the UK continues to be at the forefront of the global green finance market, building on its strengths as a global financial centre:

- The UK is the largest centre for asset management and insurance sectors in Europe, with an asset management sector managing £9.1 trillion of assets⁷⁹ and an insurance sector generating \$220 billion in premiums in 2017⁸⁰.
- UK banking sector assets are the largest in Europe and the UK is a world-leader in cross-border bank lending, with a global market share of 18% in 2017⁸¹.
- These sectoral strengths are underpinned by a reliable and longstanding professional services sector. The legal services sector alone is the largest in Europe and second largest globally, while the UK also enjoys a leading accounting sector with net exports of £2.5 billion in 2017⁸².
- The UK benefits from access to global capital pools, a central time zone, and a stock exchange which hosts one of the world's most international capital markets, with roughly 500 international companies listed from more than 70 countries⁸³.

As the Chancellor set out in his annual Mansion House speech in June 2018, this enduring strength in financial services has been built on three pillars: innovation, resilience and openness. This combination provides the foundation for long-term success, and ensures the UK has a world-leading position in the markets of the future, including in the green finance market.

Creating a strategic focus for UK green finance

As consideration of environmental risks and opportunities becomes more deeply embedded into the financial mainstream, the Government is taking action to cement UK leadership in green finance. We recognise the need for a permanent and co-ordinated effort to ensure the UK can continue to capitalise on the opportunities presented by the burgeoning green finance market. That is why, building on the work of the Green Finance Initiative, we are:

- **Launching the new Green Finance Institute to strengthen public and private sector collaboration and cement the UK's position as a global hub for green finance.**

Box 7 - The Green Finance Institute - building partnerships to accelerate green finance

The GFI, launched on 2nd of July 2019 at the Green Finance Summit, is a response to the first recommendation of the Green Finance Taskforce report and is led by Chairman, Sir Roger Gifford, senior banker at SEB and former Lord Mayor of the City of London, and CEO, Dr Rhian-Mari Thomas OBE, former Barclays executive.

Supported by £2 million of seed funding from the UK Government and £2 million from the City of London, the GFI's overarching mission is to accelerate the domestic and global transition to a clean, resilient and environmentally sustainable economy through accelerating UK leadership in green finance.

As the UK's principal forum for public and private collaboration on green finance, the GFI will foster greater alignment of public and private sector initiatives, create commercial opportunities for UK finance providers, and strengthen the competitiveness of the UK financial services sector and the UK's global green finance brand.

The Green Finance Institute will focus on four specific areas:

- Catalysing finance to accelerate the economic transition through convening both sector-focused and place-based mission-led coalitions to unlock the barriers to the deployment of capital;
- Supporting the greening of the financial system through close collaboration with financial regulators and policy-makers;
- Building UK capacity on green finance, including providing an accessible, digital platform to collate resources and share and showcase developments across all aspects of UK green finance; and
- Driving the global green finance agenda through international dialogue, partnerships and trade.



Establishing the global market for green finance

Climate change is a global issue that requires a global response. The world's greatest emissions reductions potential is in emerging markets while the greatest need for adaptation finance is in some of the least developed countries.

The Government is committed to establishing green finance markets worldwide. Working closely with the GFI, we will take a coordinated approach that captures and aligns the diplomatic routes through which the UK engages with key markets on green finance, drawing upon the Government's networks of financial services attaches in the Foreign and Commonwealth Office and the Department for International Trade.

Local green finance markets around the world will play a significant contribution to tackling climate change and there is a need for them to be developed in order to provide local currency finance and investments. The Government recognises this and is committed to supporting the development of local green finance, as outlined in Chapter 2. The UK government is, for instance, promoting low carbon development and affordable, clean energy through the Prosperity Fund and UK Partnering for Accelerated Climate Transitions (UK PACT) (see Annex A).

In building green finance markets, there is a growing demand for expertise from the private sector, governments and regulators, and a need for cross-sector collaboration. The UK will maintain strong commercial and diplomatic partnerships with key green finance markets, with the aim of sharing best practice and increasing cross border flows of green capital.

The private sector has already been instrumental in driving forward this agenda through the City of London's Green Finance Initiative, which has already hosted three successful international Green Finance Summits to galvanise action. The Initiative is helping the UK build formal business-to-business partnerships with Brazil, China, India, and Mexico (see Figure 4) - key partners for UK exports of financial services. These private sector partnerships aim to deepen ties with the UK on green finance, driving innovation and scaling-up green cross-border capital flows (e.g. UK-China Green Finance taskforce; see Chapter 1). Going forward the GFI will play a central role in strengthening these partnerships and encouraging UK financial and professional services to engage with other financial centres on green finance.

Driving innovation in green finance

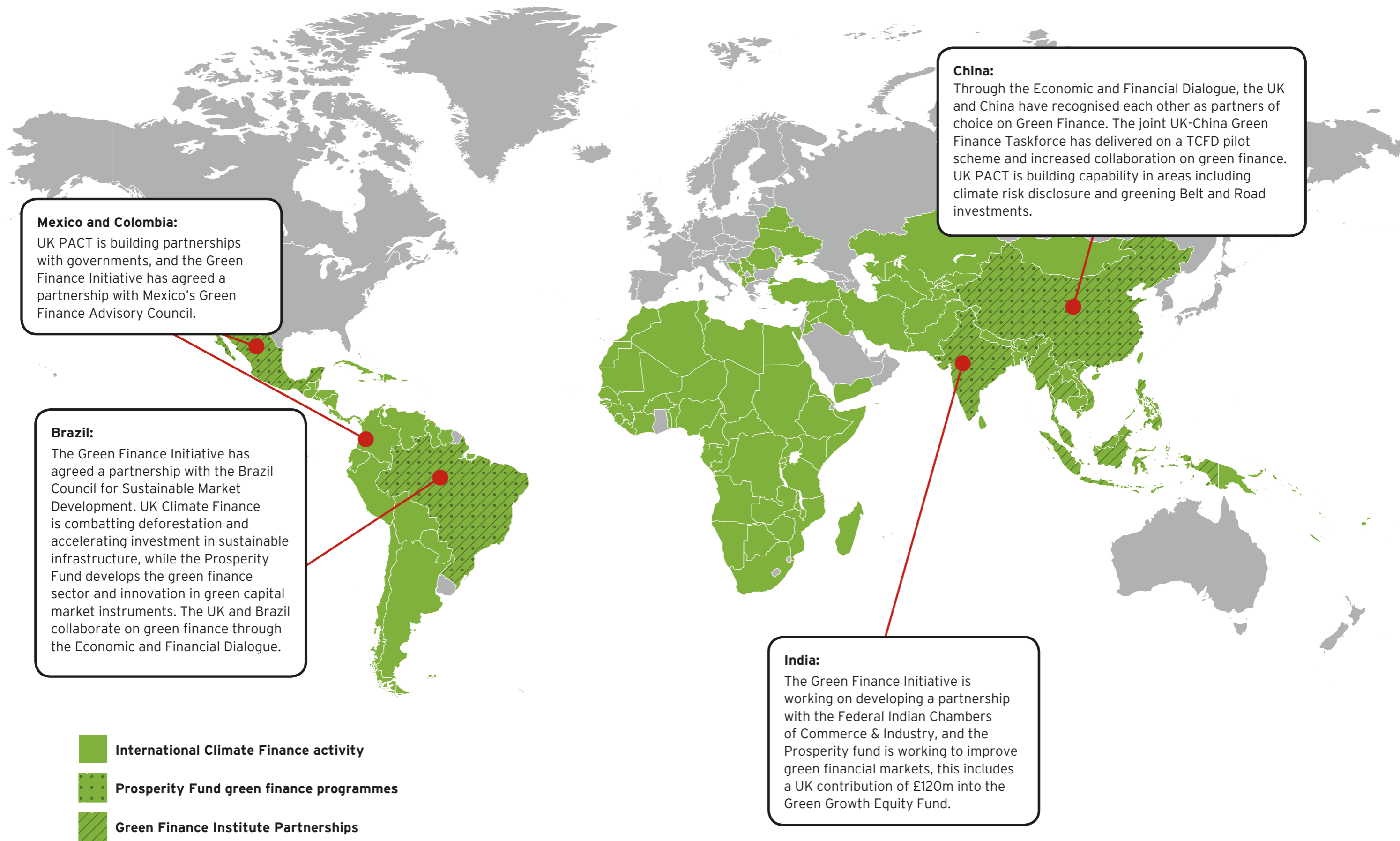
The challenges posed by climate change and environmental concerns affect all areas of the UK economy and offer important opportunities. Increased demand for green and climate-resilient investments will drive the supply of new innovative products. The UK's reputation for financial innovation and its ability to create and

develop new ideas, including in areas such as fintech, alternative finance, and big data, provides a key opportunity for UK firms to first innovate and then mainstream green products and services.

There have already been important advances in UK green finance activity across sectors of the industry, often supported by public sector policy. For example:

- Asset managers are increasingly taking an interest in investing in companies that take environmental, social and governance (ESG) factors into account, while green venture capital funds are growing;
- The London Stock Exchange Group (LSEG) has taken a leading role in driving innovation, both in providing a platform for products and delivering on new financial products, from ESG Exchange Traded Funds, Yieldcos and green bonds, to sustainability and ESG indexes for passive investors to track (e.g. FTSE Russell), as shown in below Case Study;
- Insurers and pension trustees are increasingly seeking to understand the financial risks and opportunities arising from climate change, with government supporting this through pensions regulations (see Chapter 1) and initiatives to strengthen resilience to climate change and natural disasters (e.g. Flood Re⁸⁴; Centre for Global Disaster Protection⁸⁵);
- Banks are launching green mortgage products and expanding the corporate green loan market;
- In the retail space, consumers are increasingly driving the need for innovative financial products that allow them to invest in line with ESG principles through crowdfunding and retail investment platforms; and
- Finally, all of the above is creating opportunities for the wider professional services ecosystem, whether legal services for Corporate Power Purchase Agreements, or accountants, actuaries and sustainability consultants supporting the implementation of the TCFD recommendations.

Figure 4 - UK's climate investments and green finance partnerships



The Government's ambition is for the UK to remain a leader in developing innovative green finance products and services and climate-related data and analytics. Our approach to doing this has four elements:



Creating effective regulatory and policy frameworks and encouraging common standards to correct market failures and promote consistency, clarity, and best practice;



Promoting dialogue between government, regulators, academia, and the financial sector to understand and identify challenges and opportunities;



Enhancing climate and environmental data and analytics to reduce information asymmetries and foster transparency; and



Developing policies to promote the adoption and mainstreaming of green finance products and services.

Creating effective frameworks and encouraging common standards

Building on the UK's reputation for quality regulation in financial services and thought leadership in climate policy, the Government recognises the importance of fostering a policy and regulatory environment that stimulates innovation and encourages investment in the real economy. As set out in the first two chapters, the Government is committed to enacting forward-looking and transparent real economy policies and building robust green financial market frameworks and common standards.

Promoting dialogue to support innovation

The bulk of expertise in green finance sits within the private sector and over the past few years we have consistently worked in collaboration with industry in developing policy. Fostering a dialogue between the public and private sector is important to enable the sharing of expertise, building momentum around new innovations, and

to understand, identify, and respond to challenges and opportunities.

At the request of the Government, the City of London's Green Finance Initiative was established in 2016, bringing together financial sector leaders, academics, and the civil society into a market development group. Subsequently, HM Treasury and the Department for Business, Energy and Industrial Strategy (BEIS) jointly convened the Green Finance Taskforce, composed of leading experts on green finance to work with their industry peers to provide a series of recommendations on how to accelerate the growth of green finance. The GFI will build on these examples of public-private collaboration, as shown above.

There is also a constant dialogue between the UK regulators and industry. For example, as referred to in Chapter 1, the Financial Conduct Authority and the Prudential Regulation Authority have established a Climate Financial Risk Forum to build capacity and share best practice across financial regulators and the private sector on green finance. The forum brings together senior representatives from banking, insurance, and asset management. One of the forum's four working groups is specifically focused on innovation⁸⁶.

The Government has also supported dialogues with regulators, other governments and the private sector on topics of innovation in financial services. For instance, the Sustainable Finance Study Group, co-chaired by the Bank of England and People's Bank of China on behalf of the UK and China, fostered discussion on the potential of green securitisation, venture capital, and digital technologies leading to ways to mobilise capital for the transition to a greener economy. HM Treasury officials, regulators, financial institutions, and academics also took part in roundtables in Beijing and Hong Kong in Spring 2019 to discuss ways to operationalise green asset-backed securities as well as the benefits and risks associated with transferring green securitised loans to institutional investors in the debt capital markets.

Enhancing climate and environmental data and analytics

Governments, regulators, academia, civil society and the private sector all have a key role to play in developing and promoting access to environmental and climate-related financial data and analytics. This should help investors make better informed decisions and stimulate the development of new financial products, including green Fintech, unlocked from enhanced data availability, analytics and understanding of potential applications.

The UK Government already provides a wealth of publicly available environmental and climate-related data, building on its reputation for publishing and using open data for accountability, innovation, and social impact⁸⁷. For example, the Government and publicly funded entities are already showing leadership in the collection, management, and analysis on physical climate-related data, energy and greenhouse gas emission-related data. For further detail on the UK's public data sources and relevant institutions pertaining to climate-related risk analysis please see Annex B.

The Government is also committed to enhancing the quality, coverage and use of geospatial data across all sectors of the economy, including the financial sector - which is also in the remit of the Geospatial Commission formed in April 2018. Earth observation, combined with artificial intelligence (AI), has the potential to transform the availability of data in our financial system and change how risks, opportunities and impacts are measured and managed by financial institutions. The UK already has world-leading capabilities in both.

We welcome recent developments including:

- The Alan Turing Institute (the UK's national institute for data science and AI) which, in support of the AI and Data Grand Challenge, has established a Sustainable Finance Interest Group to bring together

researchers to support financial institutions and regulators to integrate AI and geospatial data into financial services, and analyse the performance of sustainable investments;

- The Spatial Finance Initiative (SFI) which was established in 2019 by The Alan Turing Institute, Satellite Applications Catapult, the GFI, and the University of Oxford Sustainable Finance Programme to mainstream the use of geospatial data and analysis in financial decision-making globally⁸⁸; and
- The work of the public-private partnership Space for Climate - aimed at creating a seamless supply chain of reliable and quality assured data ready to translate into climate services including those needed by the finance sector.

In line with the Green Finance Taskforce recommendations, the Government recognises there is a need for further innovation and coordination in data availability, comparability and aggregation, as well as a better understanding of existing datasets and potential applications within the financial sector. That is why:

- **The Government is working with UK Research and Innovation (UKRI) to explore options for future research funding to reduce information asymmetries and promote transparency in the availability and application of climate risk information.** The Natural Environment Research Council (NERC) and Innovate UK, which are part of UKRI, are working together to deliver a research and innovation programme. This will develop improved information and analytics on climate and environmental hazards, as well as vulnerability and exposures to support the financial sector and other corporates. Further details will be announced later this year.
- **The Government will work with the GFI to**

explore the use of climate analytics and data to support mission-led coalitions (see Chapter 2), and to mobilise green investment.

- **The Geospatial Commission, together with other Government backed organisations (e.g. UK Research & Innovation, NERC, the UK Space Agency, The Satellite Applications Catapult, The Alan Turing Institute), and the Spatial Finance Initiative, will explore how to accelerate UK efforts to secure and support the adoption of geospatial datasets required to green the global financial system.**

These actions will help promote the mainstreaming of green finance products and services, and support green fintech.

Promoting the adoption and mainstreaming of green finance products and services

The UK Government recognises the importance of enacting policies that foster innovation in green finance and the mainstreaming of new products and services. This includes creating an environment that allows innovation to flourish and promotes best practice – building on the LSEG's leadership in mainstreaming new green products, as shown in the Case Study below – as well as through direct incentives to stimulate innovation across asset classes and industry sectors.

Case Study - the London Stock Exchange Group: Innovation in Capital Markets

London Stock Exchange Group (LSEG) has taken a range of steps to support investors and issuers in the transition to a low-carbon and sustainable economy. It has developed a comprehensive sustainable finance and investment offering and continues to innovate in support of market needs.

LSEG was the first major exchange in the world to launch a dedicated green bond segment back in 2015. It now has over 100 active Green and sustainable bonds listed on its markets by issuers including corporates, municipalities, sovereigns and multilateral development banks from 16 countries, which have raised more than \$29 billion in 12 currencies.

Renewable energy funds are another important structure to drive capital to the green economy. Listed green funds have been a success story at the LSEG, with 11 renewable funds, in addition to others focused on energy storage, energy efficiency and environmental technologies, collectively worth over \$9 billion. The market for Yieldcos is also gaining traction with 12 renewable Yieldcos currently on the LSEG with a market capitalisation of £7.6 billion.

LSEG's index and analytics business, FTSE Russell has been active in the global index space since 2001 when the FTSE4Good Index Series was launched and currently has approximately \$16 trillion benchmarked to its indexes. Its data and analytics tools support many of the world's largest asset owners as they look to integrate ESG into their investment strategies.

There has also been a significant uptake in Exchange Traded Funds (ETFs), with 64 ESG ETFs with a total value of \$5.1 billion (as of Nov 2018) – up 45% compared to the previous year. 80% of professional investors expect investment into ESG ETFs to grow over the next five years, with 20% expecting a dramatic rise in interest.

We welcome the launch of the FCA's Green Fintech Challenge in October 2018, building on its pioneering regulatory Sandbox service and Innovation hub, to help businesses test innovative propositions in the market with real consumers. The Green Fintech Challenge aims to support firms that require specific regulatory support in developing innovative green solutions to assist the UK's transition to a greener economy. The initiative offers a range of support services for the successful applicant depending on the individual needs and maturity of the firm, including a dedicated Innovate Adviser, authorisation support, live market resting in the sandbox, and formal and informal guidance. Applications closed in January and the first nine successful applicants were announced in April this year⁸⁹.

The UK Government is also committed to supporting financial innovation that can encourage the decarbonisation of the UK housing sector – a key contributor to UK carbon emissions. That is why:

- **We are launching a £5 million Green Home Finance Innovation Fund** to pilot over 18 months green home finance products that have sustainable business models, will incentivise energy efficiency retrofit, and are supported and promoted effectively by the lender. The pilots will test the extent to which green finance products are attractive to consumers, drive energy efficiency works and can be self-sustaining.

Government policies in this area need to be focused on securing additionality by addressing existing barriers to the adoption and mainstreaming of green finance products and services. In this context, the Government has been carefully considering the call to issue a sovereign green bond.

Green bonds have demonstrated significant growth in recent years, and the Government recognises the importance for this broader growth to continue. At present the Government does not plan to issue a sovereign green bond, given the absence of significant barriers to market for corporate issuances in the UK. In addition, the Government does not consider a sovereign

green bond to be value for money compared to the core gilt programme, which remains the most stable and cost-effective way of raising finance to fund day-to-day government activities (including existing and new green expenditure). This owes to the strength of investor demand for gilts, the well-established nature and size of the market, as well as the fact that gilts can be built up to benchmark sizes across a range of maturities, resulting in a highly liquid market and diverse investor base.

The Government remains open to the introduction of new debt financing instruments but would need to be satisfied that any new instrument would meet value for money criteria, enjoy strong and sustained demand in the long-term and be consistent with the wider fiscal objectives of government. The Government continues to monitor the case for a sovereign green bond and will keep this under review. Meanwhile, the Government has already set out plans for significant investments in clean and resilient growth as outlined in Chapter 2.

Building Capabilities and Skills

As green finance continues to establish itself in the mainstream, there will be an increasing need for the UK and global financial services industries and related sectors to develop the capabilities of their workforce with relevant education and training in green finance principles and practice. As a leading global financial centre and with a world-renowned network of universities and Chartered professional bodies, the UK is strategically placed to establish and promote global professional and educational standards for green finance. Our aim is for the UK to consolidate its reputation as the home of the green finance professional and to capture the commercial opportunities arising from the global demand for training and qualifications in green finance.

Working with professional bodies

UK-based professional bodies are already leading the world in embedding green finance into programmes of initial and continuing professional development, as the examples below demonstrate. Such programmes are designed to ensure that

finance practitioners have the necessary skills and expertise needed to understand climate science, integrate environmental factors into financial risk analysis and investment decision-making, seize opportunities in green finance and help align private sector finance with the transition to a clean and resilient economy.

For example, in 2018, the Chartered Banking Institute launched the new Green Finance Certificate – subsequently adopted by the Chartered Institute for Securities and Investment – and Chartered Financial Analyst UK has recently launched an ESG Investing certificate. In a similar vein, work is underway in a wide range of UK-based professional bodies to raise awareness of the financial risks from climate change and embed green and sustainable finance principles and practice.

Building on this work, the Government in collaboration with a working group of professional bodies and the GFI has developed a Green Finance Education Charter.

Global initiatives such as the Global Research Alliance for Sustainable Finance and Investment – created in 2017 by a network of global research universities to promote multi-disciplinary academic research on sustainable finance, are also advancing the agenda.

Training for the Public Sector

While green finance capability in Government has grown significantly in recent years, developing green finance skills in the public sector continues to be important. That is why:

- **The Government has been working closely with the University of Oxford to create a short course for UK government policy officials to provide foundational knowledge on green finance.** This has been trialled by UK policy and trade officials across 30 different High Commissions, Embassies, Consulates, and Missions across North America, Latin America, Southeast Asia, and Australasia from December 2018 to June 2019. Financial and Professional services teams in the Department for International Trade have also trained staff

Box 8 – Green Finance Education Charter

On 14 May, Government together with the Green Finance Initiative hosted a roundtable for CEOs of professional finance and accounting bodies to discuss how they could lead the drive to develop appropriate programmes of initial and continuing professional development to build the capability and capacity of the banking, finance and professional services sectors to mainstream green finance.

Following the roundtable, the Government, a working group of professional bodies, and the GFI have developed a charter that commits professional bodies to taking prompt action to identify and address gaps in the development of green finance knowledge and skills, and engage members on the risks and opportunities climate change and environmental challenges present to their professions. The Charter will be launched at the Green Finance Summit in July 2019, with a wide range of UK-based professional bodies expected to sign up to the Charter by the end of the year.

Going forward the new GFI will work with UK-based professional bodies to help build skills and capabilities in green finance.

in UK embassies and consulates globally on Green Finance; and

- **The Government will be strengthening its training for the public sector by organising a public-sector conference on green finance, to take place on 17 October 2019.**

The conference will aim to co-ordinate efforts on green finance policy across central and local government, showcase work and successes, provide a forum to discuss emerging topics, and provide opportunities for peer learning and exposure to latest practices on green finance.

Building Consumer Awareness and Demand

As green finance becomes increasingly mainstream, there will be a growing demand for retail products such as green mortgages. Improved consumer awareness and understanding of how their money is invested will give individuals greater agency in choosing these financial products. This will help stimulate demand for green products and create a feedback loop with greater innovation in the UK green finance sector. Crowdfunding options and retail investment platforms are already leading the way and tapping into this nascent market.

While the Government's Green Finance Strategy has mainly sought to address the role of Government, regulators, financial institutions and industry in growing green finance, we fully recognise the vital role of individuals in driving demand for green financial products and services and delivering the UK's environmental objectives. That is why the first Green GB Week in October 2018 was aimed at engaging consumers on Clean Growth issues, including green finance through events, media and campaigns. We also welcome the Mayor of London's Climate Action Week in July this year, and the second Green GB Week in November will provide further opportunities for Government to reach new audiences with its messages⁹⁰.

The UK Government is taking forward a range of broader activities to engage with individuals and make it easier for them to invest in line with their values. The Department for International Development (DFID) and the Department for Digital, Culture, Media and Sport (DCMS) are leading a number of cross-government initiatives to make progress on this agenda. These include

the Taskforce on Growing a Culture of Social Impact Investing in the UK, support for the new independent Impact Investing Institute (see Next Steps below for more details), and the Investing for a Better World project.

The 'Investing in a Better World⁹¹' project, sometimes called The National Conversation on Investing in the Global Goals, aims to better understand the public's views on ethical, responsible and impactful investment practices. Its research will help industry understand the shape and scope of UK customer demand for responsible and impactful investment, in order to support sustainable investment in the developing world and help deliver the Global Goals, a set of 17 goals agreed by world leaders at the UN to end poverty and protect the environment.

To achieve this, the Government is running a nationally representative survey of 6,000 people on their values, awareness, interest, and barriers to action. This will result in a comprehensive, statistically valid view on how the UK public thinks about responsible investment. Interim results will be available for the UN High Level Political Forum in July, where the UK will also present its Voluntary National Review on its progress against achieving the Sustainable Development Goals domestically.

DFID has also run a series of events to raise awareness and to work with industry to support more product development so that people have more opportunities to invest in line with their values. The findings of this work will be publicly available after the UN General Assembly in September. We will consider the findings as we implement the Green Finance Strategy, working closely with the GFI and the Impact Investing Institute.

Next Steps

This Strategy sets out the actions we will take in the coming years to accelerate the growth of green finance, both at home and overseas, and use this to drive economic growth in the real economy at a time of huge change and opportunity. The Strategy supports the UK's economic policy for strong, sustainable and balanced growth and delivery of our modern Industrial Strategy. It also helps to ensure the UK remains at the forefront of global efforts to fight climate change and protect our environment while strengthening the competitiveness of the UK's financial services sector.

The Strategy comes at an important time for the UK's climate leadership following our setting of a net zero emissions target and ahead of UN Global Climate Action Week in September and COP26 next year. The Government will continue to work closely with the private sector as we deliver our strategy, building on the work of the Green Finance Taskforce through the establishment of the Green Finance Institute, and we will seek opportunities to further strengthen our approach.

As part of this, we will explore linkages to related issues, such as delivering a just transition and accelerating social impact investing.

Delivering a just transition

The transition to a clean, low carbon economy can help give us towns and cities with cleaner air and warmer homes with lower bills while growing our economy and supporting new jobs in emerging low carbon industries. Already there are almost 400,000 jobs in low carbon businesses and their supply chains in the UK.

But as our economy changes it is vital we make sure that this growth is inclusive, benefitting people across the UK, supporting workers as industries transform and ensuring the costs as well as the benefits are shared fairly, protecting consumers, workers and businesses. This is why alongside our announcement of legislating for net zero, we also announced that HM Treasury

will be conducting a review into the costs of decarbonisation, including how to achieve this transition in a way that works for households, businesses and public finances, and the implications for UK competitiveness. Over the summer we will publish our Energy White Paper that will aim to bring down energy bills and recently we've also developed sector deals on nuclear, offshore wind and automotive that will create green-collar jobs across the country and support the UK's other world class sectors to take part in this transition. For example the UK's expertise in the North Sea from oil and gas is now part of a growing offshore wind supply chain.

Capturing synergies with the impact investment agenda

Impact Investment is investment with the intention to generate a positive, measurable impact on society and the environment alongside a financial return. It is an important complement to green finance and together they have the potential to address some of the most pressing social and environmental challenges in the UK and internationally. The UK has seen significant growth in the impact investment market over the last two decades supported by a number of pioneering government initiatives. Big Society Capital was established in 2012, with funding made available from dormant bank accounts, to act as a market champion and as a wholesaler of capital for voluntary community and social enterprise organisations committed to social or environmental impact. The Social Impact Investment Taskforce of 2013, launched as part of the UK's presidency of the G8, created a network of National Advisory Boards for each member state to drive impact investing.

In 2016, Government set up an independent Advisory Group chaired by Dame Elizabeth Corley (former Chief Executive and Vice-Chair at Allianz Global Investors) to answer the question: "How can the providers of savings, pensions and

investments engage with individuals to enable them to support more easily the things they care about through their savings and investment choices?” Their report, ‘Growing a Culture of Social Impact Investing in the UK’⁹², made far-ranging recommendations for government, regulators and industry. In March 2018, the Prime Minister commissioned an industry taskforce to progress the recommendations in the report. The Taskforce published their final report in June this year.

This Taskforce has been closely aligned with the Green Finance Taskforce in working to promote a more sustainable future for our planet and people. Key areas of collaboration identified include: the role of innovative technology; effective tax relief regimes, consistent reporting principles and innovation of financial instruments and structures to leverage incremental capital. We will continue to explore green finance synergies with impact investing initiatives in the UK, including as we seek to support the establishment of a new Impact Investing Institute (see Box 9).

Box 9 – A new Impact Investing Institute

The Impact Investing Institute, announced in June, is being established to accelerate the growth and improve the effectiveness of the UK impact investing market. It brings together the UK National Advisory Board on Impact Investing (UK NAB) and the Implementation Taskforce for Growing a Culture of Social Impact Investing in the UK (Implementation Taskforce) and will be led by their chairs, Sir Harvey McGrath (former Chair of Man Group and Chair of Big Society Capital) and Dame Elizabeth Corley (former Chief Executive and Vice-Chair at Allianz Global Investors). The Institute will combine the energy, supporter base and achievements of these two groups to provide a focal point for the UK impact investing market and accelerate the potential for finance to improve people’s lives at home and in developing countries.

The Institute has broad backing across the financial services and social sector, and will be supported by private firms and foundations alongside the Department for Digital, Culture, Media and Sport (DCMS), the Department for International Development (DFID) and the City of London Corporation. It will work with government as well as regulators and other policy makers to drive thought leadership and innovation. One such body is the new GFI, which will champion green finance in the UK and abroad. Both Institutes will identify areas where there are common themes and opportunities for joint working.

Reviewing progress

The Strategy sets out an ambitious approach that will require strong collective action to deliver. We also recognise the systemic changes required will not happen overnight.

To quote Bank of England Governor Mark Carney in the context of breaking the ‘Tragedy of Horizon’; ‘the task is large, the window of opportunity is short, and the stakes are existential’⁹³.

To ensure we meet the challenge, we will:

- Specifically review progress on greening the UK’s financial system, including implementation of the TCFD recommendations, by the end of 2020, as outlined in Chapter 1; and
- Conduct a formal review of progress against the ambitions and plans across all three chapters of this Strategy in 2022.

Annex A – Prosperity Funding and UK PACT Programmes supporting green finance market development

India: India’s Prosperity Fund programme will work in partnership with government and regulators in India to help develop a green finance market. The programme aims to improve financial market regulations, promote innovation in green finance instruments / taxonomies, and mobilise green finance. £120million of prosperity funding has also been used to support the Green Growth Equity Fund (GGEF), which aims to crowd in private sector investment to finance green infrastructure projects. Further programming used UK expertise to support the issuance of green bonds, resulting in an Indian public sector company committing \$4 billion to finance vital clean energy infrastructure in India. This commenced with a first tranche of \$300 million worth of green ‘masala’ bonds issued on the London Stock Exchange.

Mexico: The Energy strand of the Mexico Prosperity Programme aims to develop the skills of men and women, businesses, and government institutions to support Mexico’s transition to a low carbon economy. Likewise, prosperity funded indicative activities as part of the Financial Services Agile Programming Fund will seek to complement efforts to catalyse green finance in Mexico through capacity building, policy recommendations, and market guidelines (including, but not limited to, a taxonomy for green projects).

UK PACT in Mexico spans across several sectors, with a strong focus on green finance. As well as work on renewable energy, climate policy, waste and sustainable transport, UK PACT works closely with the Mexican Government to increase access to green finance at a national and sub-national level. The programme focuses on harmonising guidelines and standards; improving pipeline development and increasing innovation in green finance products and green finance policy design. Projects include: capacity building work with

key institutions; supporting a green finance hub; mobilising green finance for the development of smart cities and infrastructure and developing green bonds.

Brazil: The Green Finance strand of Brazil’s Prosperity Fund programme aims to mobilise private finance and support effective allocation of government resources to leverage private investment into sustainable infrastructure. This will be achieved by developing Brazil’s green finance sector and using UK expertise to develop new capital markets instruments for sustainable infrastructure. It complements the energy strand of the Brazil programme which supports the transition to a low carbon economy.

Colombia: UK PACT in Colombia works to directly influence the growth and development of green finance flows and local and international capital markets. The programme works in partnership with the government in several priority areas for green finance, including unlocking finance flows and mobilising investment, asset-owner information disclosure to promote transparency, a green bond roadmap and a climate finance accelerator.

China: The energy and low carbon strand of the China Prosperity programme aims to reduce global emissions by accelerating China’s low carbon energy transition, capitalising on UK energy and low carbon expertise. The programme will focus on clean technology policy and regulation, thereby supporting the transition away from unabated coal; fundamental energy system reforms; and enhancing China’s engagement with international energy and climate governance structures.

The first UK PACT projects in China strengthen collaboration between the UK and China on green finance, building on the priorities highlighted by the UK and Chinese governments in their EFDs (see Case Study in Chapter 1).

Indonesia: Under the Indonesia Renewable Energy Programme there is a focus on increasing green finance flows into Indonesia’s renewable energy sector through technical assistance and capacity building.

Association of Southeast Asian Nations

(ASEAN): The ASEAN Low Carbon Energy Programme will strengthen policy and regulatory frameworks for green finance and energy efficiency; facilitate greater investment in low carbon technologies, including improved green finance flows; increase innovation and knowledge transfer in energy efficiency and low carbon technologies; and facilitate more efficient use of energy in target countries.

Annex B - UK Public Sector Climate-related Data Ecosystem

Physical environmental data

- **Flood map data:** The Environment Agency publish a wide range of flood risk information, including maps, as open data, for example, the 'Risk of Flooding from Rivers and the Sea' and 'Risk of Flooding from Surface Water' and related datasets⁹⁴. Not all this information considers the effects of climate change directly, but may still give an idea of what increased flood risk looks like.
- From 2024 the quality and range of flood risk information available will improve when the new national flood risk assessment is published. This information will consider a range of climate change scenarios in line with UK Climate Projections (UKCP18), supporting planning activities seeking resilience to future climates.
- **The UK Climate Projections (UKCP18):** Launched by DEFRA last year, these Met Office projections (funded by DEFRA and BEIS) provide the most up-to-date assessment of how the climate of the UK may change over the 21st century. UKCP18 is the first major update to the UK's national climate change projections for nearly 10 years, and the suite of products includes global and regional scenarios. Government will make use of UKCP18 to inform its adaptation and mitigation planning and decision-making, and the

Projections will also help businesses and individuals to take action to improve resilience.

- **Environmental change:** In May 2019 the government published an outcome indicator framework for measuring environmental change pertinent to the goals of the 25 Year Environment Plan. This framework of 66 indicators acts guides readers to many of the available data sets that can inform them about key aspects of environmental change, including factors related to climate resilience.
- **UK Research and Innovation (UKRI)** Strategic Priorities Fund, the Natural Environment Research Council and the Met Office, alongside the Engineering and Physical Sciences Research Council (EPSRC), the Economic and Social Research Council (ESRC) and the Arts and Humanities Research Council (AHRC), have launched a UK Climate Resilience Programme (£18.7 million), aimed at bringing together fragmented climate research and promoting multi - and inter-disciplinary climate risk and adaptation research⁹⁵;
- **The Centre for Environmental Data Analysis (CEDA)** serves the environmental science community through provision of a long term data archive, a data intensive supercomputer (JASMIN), and participation in a host of relevant research projects, for example by providing access to UKCP18 datasets. CEDA is primarily funded by NERC (based within RAL Space, a department of the Science and Technology Facilities Council), provides state of the art data storage, through three data centres, and data processing facilities to support environmental science, further environmental data archival practices, and develop and deploy new technologies to enhance access to data. The CEDA data archive is part of a family of NERC data centres that together form the NERC Environmental Data Service.

- **Defra's Environment Analysis Unit** is developing a new online resource that will make the evidence base on natural capital more accessible to non-specialists. This resource will synthesise and signpost a very wide range of published valuation and natural capital evidence, guidance, tools and applications to support analysts and decision-makers to better value and account for natural capital in England. An initial version will be launched during 2019, and improved versions are planned to be developed as this area evolves.
- **The UK hosts the European Space Agency Climate Change Office. This runs the Climate Change Initiative (CCI+).** The European Space Agency (ESA) Climate Change Initiative (CCI), is a programme whose aim is to provide stable, long-term, satellite-based Essential Climate Variable data products for climate modellers and researchers. This can be achieved by realising the full potential of the long-term Earth Observation (EO) archives that ESA, together with its member states, has established over the last 30 years, as a significant and timely contributions to the ECV databases required by United Nations Framework Convention on Climate Change (UNFCCC). The activities of the programme are undertaken across Europe with the UK leading many of the science areas.
- The adoption of the UK-led Traceable Radiometry Underpinning Terrestrial and Helio-Studies (TRUTHs) mission as a European Space Agency Earthwatch Mission. Proposed by the National Physical Laboratory, TRUTHs is a small to medium size EO operational mission aiming to enhance our ability to estimate the Earth radiation through direct measurements and to enhance interoperability and performance of the global earth observing system, through cross-calibration with other satellites.

Energy and GHG- emissions- related data

- **National Atmospheric Emissions Inventory** (funded by BEIS, DEFRA, The Welsh Government, The Scottish Government and Northern Ireland's Department of Agriculture, Environment and Rural Affairs) provides estimates of emissions to the atmosphere from UK sources such as cars, trucks, power stations and industrial plants and land use. Free and open access data is available on gov.uk to support companies in reporting emissions Including conversions factors to calculate emissions from metrics such as energy use;
- **Energy Performance Certificate (EPC) data:** MHCLG will seek to publish an update to the EPC data available through the Open Data Communities website and commit to regularly update this data to support lenders in driving energy efficiency by evaluating the EPC performance of their lending portfolios, to improve the energy efficiency of buildings within lenders' portfolios. We will also consider how this data could be made available on a "live" basis as part of updating the EPC Register platform.
- **The UK is a mission partner on MicroCarb, the first European mission to measure carbon. The UK Space Agency is working with the French Space Agency CNES on various parts of the hardware and the development of the algorithms with world experts from University of Leicester and University of Edinburgh.**

Geospatial Data

- The Geospatial Commission was formed in April 2018 as an independent expert committee to advise government on the most productive and economically valuable uses of geospatial data and to deliver beneficial changes. The Commission is looking to publish a National Geospatial

Strategy at the end of this financial year 19/20. Their activities over the coming year are framed within two pillars, the first focusing on unlocking the potential of geospatial data in key areas across the private and public sectors and the second growing the geospatial ecosystem through activities focusing on data improvement, building skills to use geospatial data and the adoption of technology and innovation. 'An Initial analysis of the Potential Geospatial Economic Opportunity,' published by Cabinet Office in 2018, shows a potential economic value of £6 billion to £11 billion per annum from high-value use cases, not including the financial sector itself.

- The UK Space Agency (UKSA) leads on civil space policy. The UK has world-leading satellite EO capability, from developing and building missions to managing and exploiting data and creating trusted applications and services. The UK's vision by 2040 is to maximise the potential of EO - for the economy, science and society - by providing the quality-assured data required to underpin mass market and business applications, cutting-edge science, and the development of effective and efficient policy and operational decision making. Our priorities include maximising the opportunities in international partnerships, investing in global innovation and

growth through research and innovation, and positioning EO as a fundamental infrastructure and tool underpinning industrial strategy, policy and societal needs.

- The UKSA works on climate services through the Space for Climate partnership - a public-private-academic partnership working collaboratively to ensure a seamless supply chain for climate data from space. Our collective ambition is that the UK leads the world in trusted climate expertise and products. The UKSA is seeking to chair CEOS (the Committee on Earth Observation Satellites) in 2023/24. CEOS ensures international coordination of civil space-based EO programmes and promotes exchange of data to optimize societal benefit and inform decision making for securing a prosperous and sustainable future for humankind.
- The UK is home to a third of Europe's total AI companies and twice as many as any other European country (MMC Ventures, 2019). The AI and Data Grand Challenge's AI sector deal - agreed last year-⁹⁶ established of a strong partnership between business, academia and government. £300 million has been allocated by the EPSRC to fund research related to 'data science and AI' complementing the new centres for doctoral training mentioned above.



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