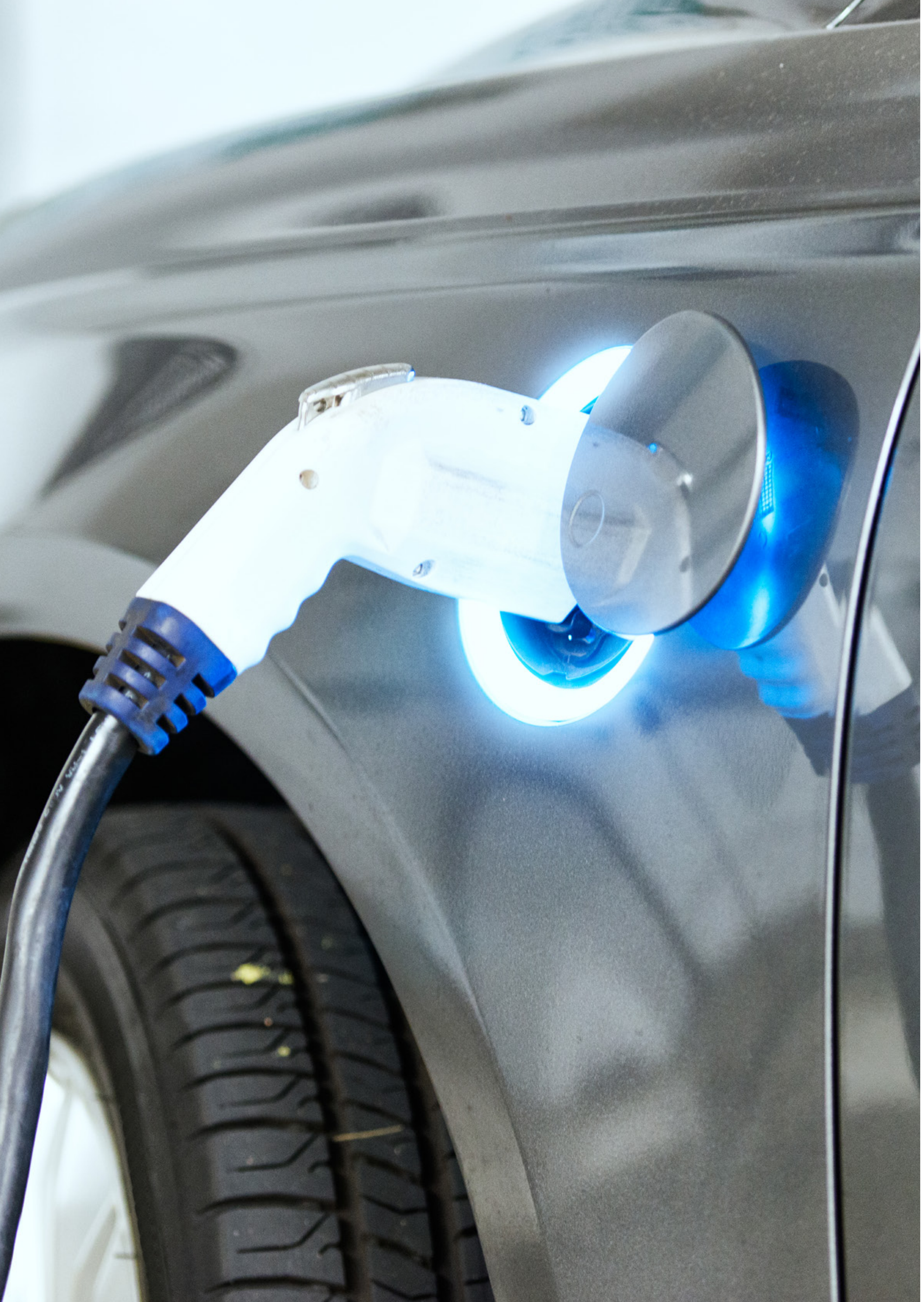


Chapter 2: Financing Green

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 targets[55].

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 basis[56]. 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 2010[57].

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 economy[58].

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

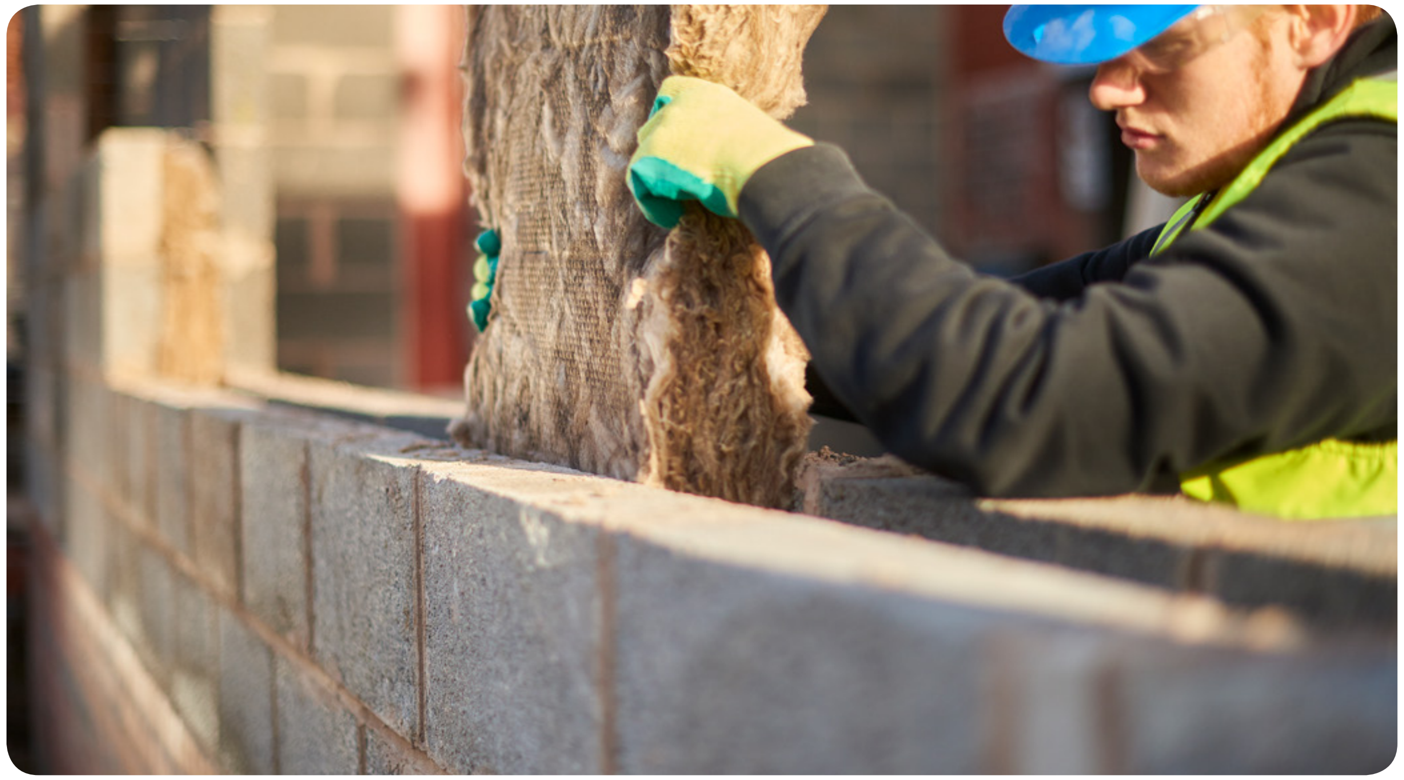


Figure 2 – Supportive policies to leverage private investment

Power

- The sector has attracted more than £92 billion of investment in clean energy in the UK since 2010.

Homes

- The Heat Networks Investment Project seeks to leverage in around £1 billion of private sector and other investment.
- The Private Rented Property EPC E Minimum Standard for England and Wales has the potential to attract around £0.5 billion of investment.
- The Clean Growth Strategy's aspiration of upgrading as many homes as possible to EPC Band C could require an investment of between £35 billion and £65 billion.

Transport

- We are investing nearly £1.5 billion between April 2015 and March 2021, with grants available for ULEV cars, vans, lorries, buses, taxis and motorcycles, and schemes to support charge point infrastructure at homes and workplaces and on residential streets.

Business Energy Use

- The £315 million Industrial Energy Transformation Fund will support businesses with high energy use transition to a low carbon future and cut their bills through increased energy efficiency.
- Climate Change Agreements provide tax discounts worth over £200 million a year from the Climate Change Levy to incentivise energy efficiency action in 53 industrial sectors.
- The £18 million Industrial Heat Recovery Support programme is designed to encourage and support investments in heat recovery technologies in industry.

Environmental Land Management

- £2 billion per annum is spent currently on land management in England under the EU Common Agricultural Policy. As we leave the EU, this money will be channelled into a new system of payments to reward land managers for providing public goods, aligned to the goals of the 25 Year Environmental Plan.

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 levering 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 years[59].

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 1 MtCO2e 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

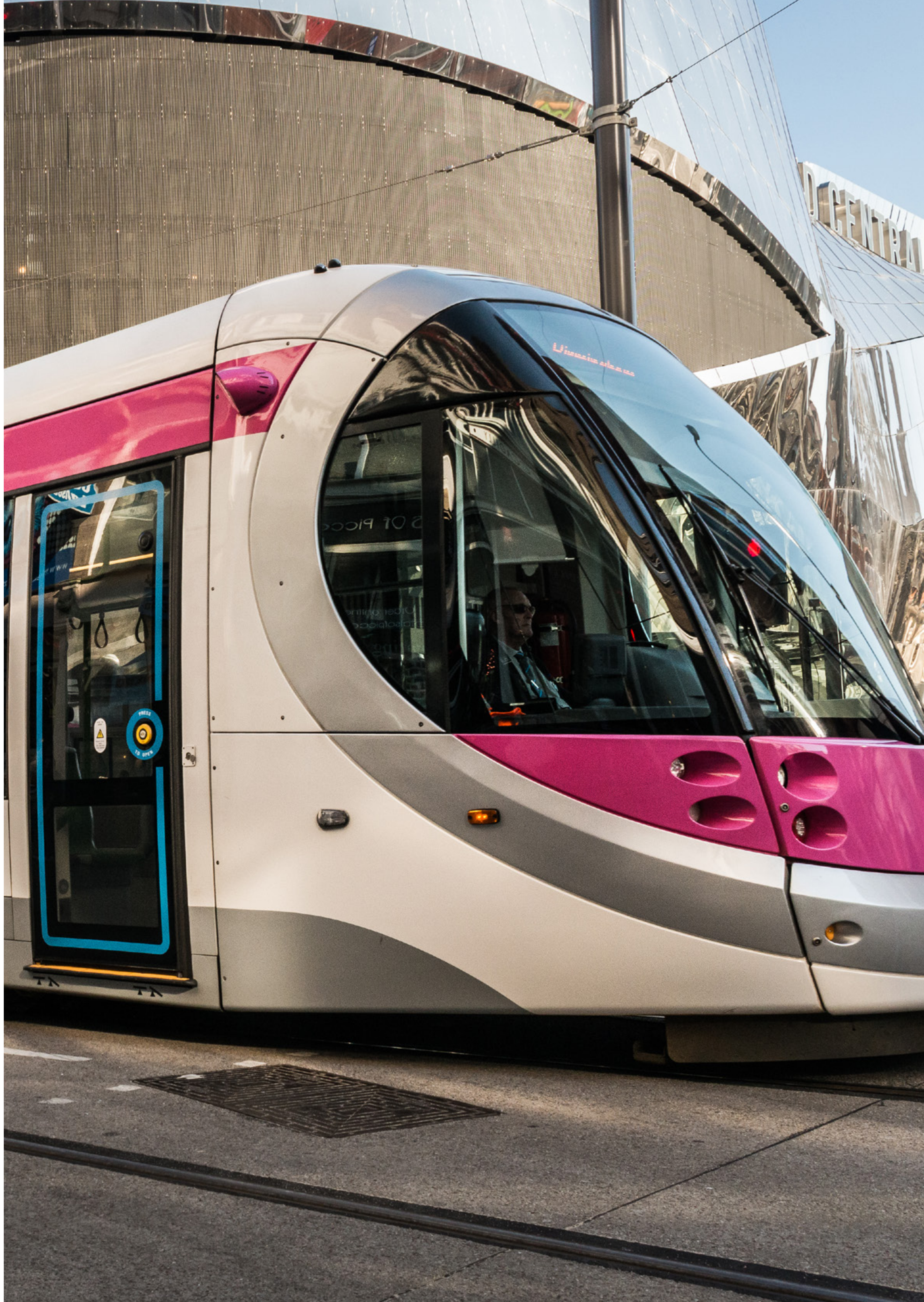
Carbon finance also offers a revenue stream for investors, by giving value to the greenhouse gas emissions that are reduced or removed by a project. The Chancellor announced a package of funding for forestry in the 2018 Budget, including a Woodland Carbon Guarantee, which will underwrite £50 million 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, ISO 14090: Adaptation to climate change – Principles, requirements and guidelines, was published earlier this year with further standards in the process of being developed[61].

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 benefits[62]. 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 in this way will ensure that decisions made about the UK's future infrastructure needs take into account, in a consistent way, not only the technological future but also the future climate.
- 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.

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.

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.

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 (GGS)[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 2015[66]. 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 Results[67]

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 emmisions

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 generation[68]- 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.

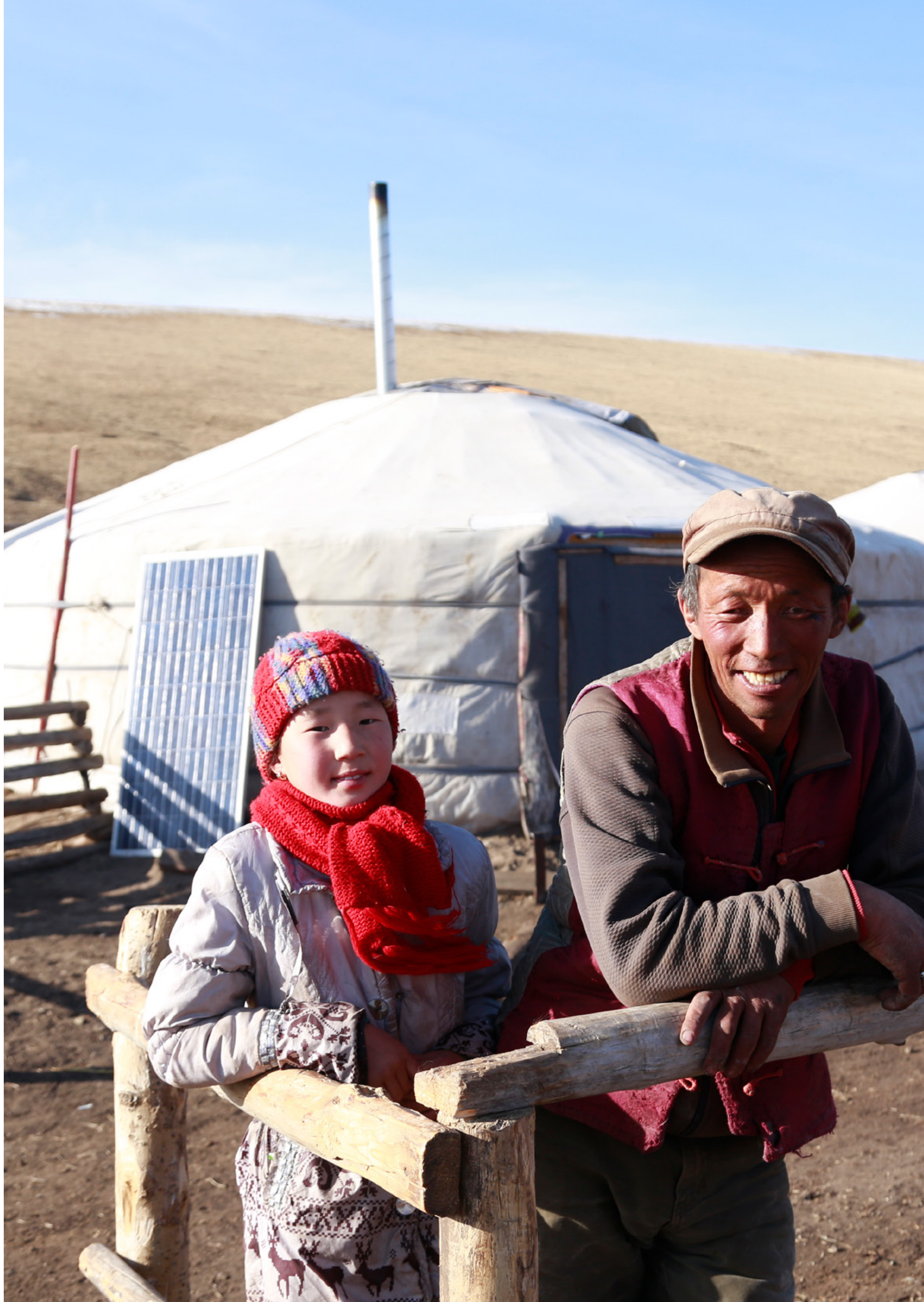
The UK is supporting countries to ensure they are mobilising private finance to be resilient to climate shocks. In July 2017, the Prime Minister launched the UK-led Centre for Global Disaster Protection. This £33 million programme draws upon UK and global expertise in risk, finance and insurance to design 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 2018[69].

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 total[70]. 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-financing[71]. 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 2008[72]. 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 sector[75].

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 management[76].

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 gasses 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 gasses which are powerful greenhouse gasses. 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 Africa[77]. 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 2050[78]. 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 assets[79] and an insurance sector generating $220 billion in premiums in 2017[80].
- 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 2017[81].
- 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 2017[82].
- 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 countries[83].

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 and in collaboration with others, 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.**

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.

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.

Green Finance Institute

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 Re[84]; Centre for Global Disaster Protection[85]);
- 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.