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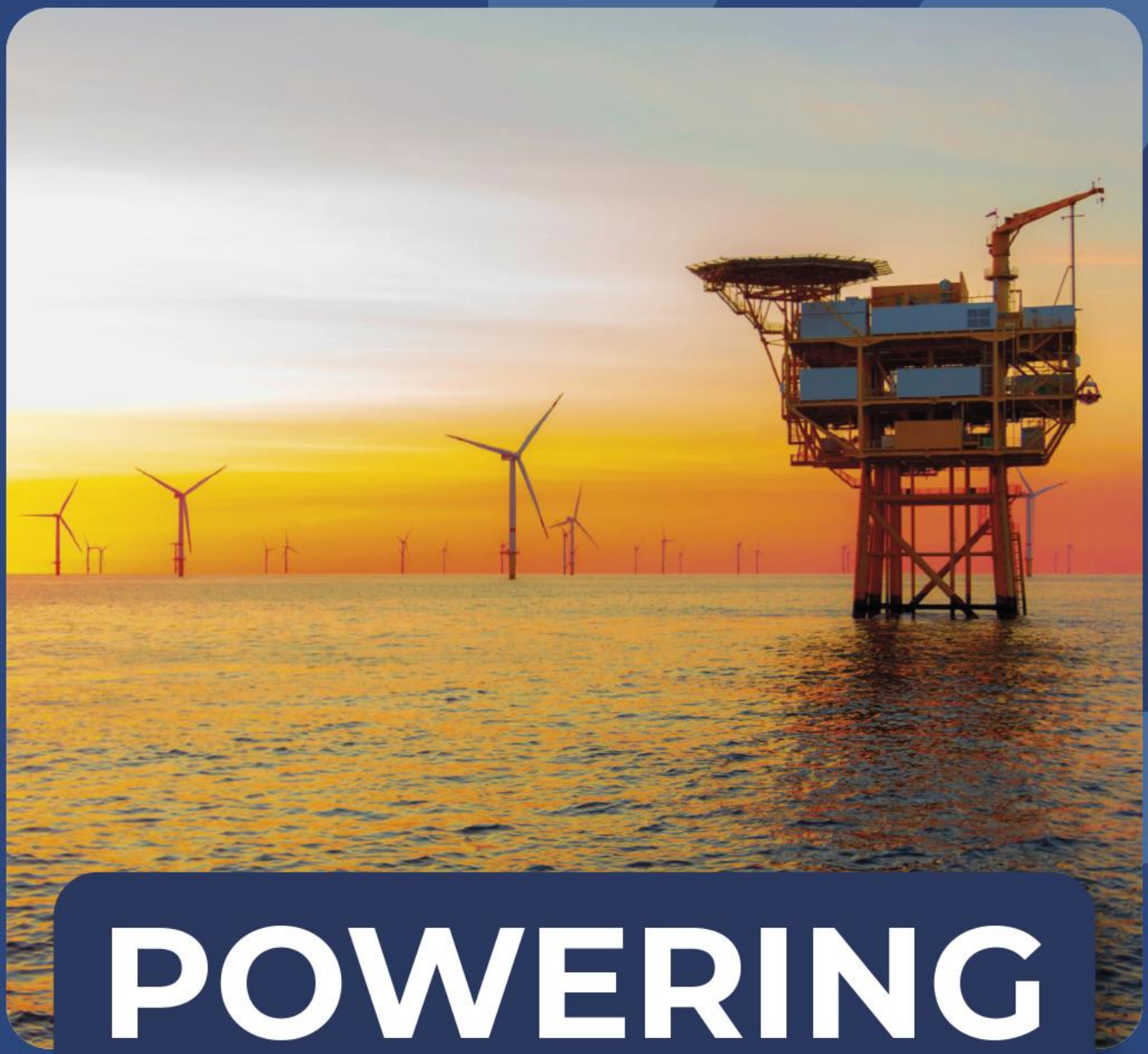

POWERING UP BRITAIN

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Ministerial Foreword

From the coalfields that powered our Industrial Revolution, to the North Sea oil that helped fuel our growth during the final quarter of the 20th century, Britain has profited from access to cheap, abundant energy.

Yet a global pandemic, Putin's brutal war in Ukraine, and Britain's continued reliance on imported oil and gas have pushed up energy prices to unprecedented levels over the past year. The Government has stepped in this winter to pay half of the typical household's bills over winter and around half of wholesale energy costs for some businesses. And we've radically increased electricity generation from renewables like wind and solar. But much bigger challenges remain. How do we secure the reliable, affordable energy that we need to power Britain's future? How do we wean ourselves off the polluting sources of energy that are destroying our planet? And how do we make sure that families in this country can never be held hostage again by someone like Putin who uses energy as a tool of aggression?

We certainly won't find the answers to those questions by looking backwards. Russian gas, just like Vladimir Putin himself, belongs in the past. Instead, this is the moment we commit to a different future. One that breaks with the fossil fuels that powered our past two centuries. One that will meet Britain's long-term energy needs. One that will get bills down so they stay down, and deliver among the cheapest wholesale energy prices in Europe by 2035. One that will help us become a net zero economy by 2050, ending our contribution to global warming. And one that will boost economic growth, using Britain's unique assets and talents to drive the energy transition.

This document – Powering Up Britain – is the Government's blueprint for the future of energy in this country. By bringing together our Energy Security Plan, and Net Zero Growth Plan, it explains how we will diversify, decarbonise and domesticate energy production by investing in renewables and nuclear, to power Britain from Britain. It sets out the extraordinary opportunities opening up in technologies like Carbon Capture, Usage and Storage, Floating Offshore Wind Manufacturing, and hydrogen, which will not only help us reach net zero, but also consolidate Britain's position as a global leader in green energy. And it details how we will use that leadership to influence energy decarbonisation internationally.

The creation of a new Department for Energy Security and Net Zero in February was a clear statement of intent by this Prime Minister and this Government. Today, I am proud to be publishing the new Department's manifesto for the future. By setting Britain on course to greater energy independence, it will deliver energy security. By bringing down bills and keeping them down, it will deliver consumer security. By embracing renewables and nuclear power, it will deliver climate security. And by creating new green industries, it will deliver economic security.

Rt Hon Grant Shapps MP

Secretary of State for Energy Security and Net Zero

Introduction

One of the foundation stones of thriving economies is access to cheap, abundant and reliable energy. We rely on it to power our homes, our infrastructure, and industry. Affordable and plentiful energy also makes businesses more competitive, generating growth, jobs and prosperity. And it keeps the cost of living down.

When Putin invaded Ukraine in February 2022, it exposed mainland Europe's over-dependence on Russian gas. Despite the UK having very little direct exposure to Russian gas, we have all seen the consequence of his war in our bills. Since the end of February 2022, average wholesale gas and electricity prices have been over three times higher than their average over the preceding four years. Economies have slowed or contracted, inflation has risen, and household energy bills have soared across much of the western world.

As a nation we have stood firmly by the side of Ukraine and will continue to do so. We also stood firmly on the side of families across the UK paying around half of the average household's energy bills over winter and around half of wholesale energy costs for some businesses. However, our collective battle against Putin relies on us transitioning ourselves away from his expensive oil and gas and providing British energy for British homes.

That is why energy security is one of this Government's greatest priorities – and why the Prime Minister created the new Department for Energy Security and Net Zero in February.

After decades of reliance on imported fossil fuels, the new department's mission is to replace them with cheaper, cleaner, domestic sources of energy. We will be powered by renewables including wind and solar, hydrogen, power with carbon capture, usage and storage (CCUS) and new nuclear plants - while recognising the vital role that UK oil and gas will play in the transition. This will make us much more energy independent, to protect us from volatile international energy markets, while underpinning our clean energy transition, so the UK becomes a net zero economy by 2050. It will also help us make sure the UK has among the cheapest wholesale electricity prices in Europe by 2035.

Energy security and net zero are two sides of the same coin. We already have the right strategic approach, and we need to double down on delivery. The energy transition in line with net zero is one of the greatest economic opportunities for this country and we are committed to ensuring that the UK takes advantage of its early mover status. Rapid deployment of low carbon electricity will enable a systemic transformation across the economy working with technologies across the system to deliver cheaper, more secure energy. Further, global action to mitigate climate change is essential to long term

prosperity – the overall costs and risks of global warming are estimated to be equivalent to losing between 5% and 20% of global GDP each year.[1]

The Government has set out a clear and consistent set of strategic objectives and a long-term policy framework. From the *Energy White Paper* in 2020 through the *Net Zero Strategy* in 2021 and in last year's *British Energy Security Strategy*. Our policies are backed by targeted government funding which, together with the policies set out in this package of documents, will leverage around £100 billion of private investment over the period to 2030, and our ambitions will support up to 480,000 jobs in 2030.

We are in a strong position to drive the energy transition ourselves. Between 1990 and 2021, we have cut our emissions by 48%, decarbonising faster than any other G7 country, whilst growing the economy by 65%. We are already in the top three countries within Europe over the past 5 years for clean energy investment in a transition that will see an opportunity worth £1 trillion for British businesses in low carbon products and services by 2030.[2,3] Much of the technology is being developed here, and we have a strong and supportive business environment.

This paper sets out how the government will enhance our country's energy security, seize the economic opportunities of the transition, and deliver on our net zero commitments. To meet this ambition, the Department for Energy Security and Net Zero will deliver:

1. **Energy security:** setting the UK on a path to greater energy independence.
2. **Consumer security:** bringing bills down, and keeping them affordable, and making wholesale electricity prices among the cheapest in Europe.
3. **Climate security:** supporting industry to move away from expensive and dirty fossil fuels.
4. **Economic security:** playing our part in reducing inflation and boosting growth, delivering high skilled jobs for the future.

Achieving these objectives will support us to meet the **Prime Minister's priorities**, in particular to **halve inflation** and get our **economy growing**, to build a strong, stable and prosperous future, thereby **reducing debt** in the medium term, for our country.

Powering Up Britain – Delivering Energy Security and Net Zero

We are taking bold action to achieve our energy security and net zero objectives. This package sets out how we will deliver our plans, including by:

Delivering Great British Nuclear (GBN): We are matching the global competition and scaling-up our nuclear programme by having launched GBN, responsible for driving delivery of new nuclear projects, backed with the funding it needs. The organisation will be initially led by an interim Chair and CEO and will be based in or around the Greater Manchester area. This body will support our ambition to ramp up nuclear capacity in the UK to up to 24GW by 2050. The first priority of GBN is to launch a competitive process to select the best Small Modular Reactor technologies.

Making a world-leading commitment to Carbon Capture, Usage and Storage: We are announcing the eight projects to progress to negotiations to form the first two CCUS clusters, in the North East and North West, and that we will launch a process to enable expansion of those Track-1 clusters later this year. We are also launching the process for confirming the next clusters for deployment in Track-2.

Delivering a Hydrogen economy: Our 2030 hydrogen production ambition could generate enough clean electricity to power all of London for a year. We are announcing a suite of developments that get that ambition underway: confirming the first winning projects from the £240 million Net Zero Hydrogen Fund, naming the two CCUS-enabled hydrogen projects moving forward on the Track-1 clusters, publishing a shortlist of 20 projects we intend to enter due diligence with for the first electrolytic hydrogen allocation round; and announcing our intention to open two further hydrogen funding rounds in 2023.

Accelerating deployment of renewables: Our goal is to develop up to 50GW of offshore wind by 2030 and to quintuple our solar power by 2035. We are opening the latest allocation round of the UK's world leading Contracts for Difference (CfD) scheme to incentivise investment in renewable energy. UK levy funded support for renewable power since 2010 has totalled around £80 billion.[4] The UK is a world leader in offshore wind and floating turbines represent the next frontier. We are launching £160 million of funding for pilots of the Floating Offshore Wind Manufacturing Investment Scheme to build UK port infrastructure to further reduce the cost of offshore wind.

Reducing our reliance on fossil fuels to heat our buildings: The Government has an ambition to phase out all new and replacement natural gas boilers by 2035 at the latest and will further consider the recommendation from the *Independent Review of Net Zero* in relation to this. People's homes will be heated by British electricity, not imported gas. The Heat Pump Investment Accelerator will mean heat pumps are manufactured in the UK at a scale never seen before. We want to make it as cheap to buy and run a heat pump as a

gas boiler by extending the Boiler Upgrade Scheme by three years, and by rebalancing the costs of electricity and gas.

Reducing household bills by increasing energy efficiency: We are confirming plans for our new Energy Company Obligation scheme the Great British Insulation Scheme, extending help to a wider group of households. This will mean that around 300,000 of the country's least energy efficient homes could save £300-£400 each year as part of a £1 billion energy efficiency programme by March 2026. This will form part of our work to meet our 15% demand reduction target by 2030 which will not only help lower bills, but also support our net zero objectives.

Decarbonising transport: We are signalling our long-term plans for decarbonising road and air travel - continuing to provide strong market signals and incentives to drive supply chain development. We have published a final consultation on the Zero Emission Vehicle mandate: requiring that from 2024 an increasing percentage of manufacturers' new car and van sales are zero emission. We are announcing more than £350 million investment in electric vehicle charging infrastructure. We are also consulting on a long-term trajectory for Sustainable Aviation Fuel uptake in the UK through a mandate to be introduced from 2025.

Speeding up planning and networks: Alongside this document we have published a revised set of energy national policy statements for consultation, covering overarching energy, renewables, electricity networks, gas generation, and pipelines. On 23 February 2023 the Government published our Nationally Significant Infrastructure Project (NSIP) Action Plan, which sets out how the government will reform the consenting process to ensure the planning system can deliver for the future, to meet the demands of a greater number and complexity of cases and deliver against government's ambitions. The Electricity Networks Commissioner, Nick Winser, has been tasked to advise government on what more can be done to accelerate grid delivery, and will present recommendations to Ministers in June. We will respond with an action plan this year.

Mobilising private investment: Our updated 2023 *Green Finance Strategy*, will strengthen the UK's position at the forefront of the growing global green finance market while supporting the investment needed to meet our targets. This includes maximising the impact of the UK's public financing institutions, for example through the UK Infrastructure Bank with its £22 billion of financial capital. It also sets out our pathway for the UK to become the world's first Net Zero Aligned Financial Centre – equipping the market with the information and tools necessary to meet this goal.

Building on our COP26 Presidency: The UK will continue to lead internationally, building on our COP26 Presidency. Two of the documents we are publishing today – the 2030 Strategic Framework for International Climate and Nature Action and the HMG International Climate Finance Strategy – show what this leadership will look like in practice. We are delivering on our promises – including our £11.6 billion contribution to the

$100 billion global climate finance goal. Our international work delivers on the UK's domestic agenda – improving energy security by accelerating the energy transition, bringing down costs of new technologies for our own net zero plans, and opening up huge economic opportunities for trade and investment.

Taking advantage of the energy transition

Investment is the key to delivering our energy security, carbon targets and seizing the economic benefits – the jobs, exports, and productivity gains – of the transition. We need investment at scale across a range of sectors to rapidly rollout existing technologies and bring through transformative new ones. Established technologies, such as offshore wind turbines, need to be deployed at pace to meet our ambitions for decarbonising power and delivering wholesale UK electricity prices that rank among the cheapest in Europe by 2035. Meanwhile, a significant proportion of technologies we will need for 2050 are currently at the demonstration or prototype phase.[5]

The UK has demonstrated green and growth go hand in hand. Thanks to the Climate Change Act (2008) and Environment Act (2021), we have a strong legal framework for reaching net zero emissions by 2050, and we are doing the same for energy security through the Energy Bill, providing a clear signal to industry and investors. Over the last decade, the UK has developed a tremendous record for attracting investment into green industries through a range of financing mechanisms, and we are determined to build on this. Between the first CfD renewable allocation round in 2015, and the fourth in 2022, the per unit price of offshore wind fell by almost 70%.[6] We have delivered the second highest amount of recorded low-carbon investment cumulatively across Europe over the last 5 years.[7]

Further, as the Prime Minister set out at COP27, 'there can be no solution to climate change without protecting and restoring nature'. In January this year, we set out our vision in the Environmental Improvement Plan, providing a blueprint not just to halt the decline of nature in our country, but to reverse it.

Government policy and funding commitments are already leading to real outcomes. Government committed £30 billion of domestic investment for the green industrial revolution at Spending Review 2021, £6 billion for energy efficiency for 2025-8 at the Autumn Statement 2022, and up to £20 billion for CCUS at Spring Budget 2023. This is supported by investments from across the UK's public financing institutions - the UK Infrastructure Bank (UKIB), British Business Bank (BBB), and UK Research and Innovation (UKRI) – as outlined in our refreshed 2023 *Green Finance Strategy*. The UKIB alone has £22 billion of financial capacity and a central mission to tackle climate change and promote economic growth across the UK, with clean energy expected to be the largest sector in its portfolio.[8] Since November 2020, over 80,000 green jobs are currently being

supported or are in the pipeline across the UK economy as a result of new government policies and spending. [9]

Our vision for a transition to a green and sustainable future will provide new opportunities to grow and level up the UK economy and support hundreds of thousands of green jobs. The low carbon transition should be fair and affordable and not negatively impact businesses. In fact, world leading hydrogen hubs in places like Teesside, are bringing back investment to areas that experienced significant decline during the 20th century. Through our North Sea Transition Deal, we're helping to decarbonise oil and gas and protecting thousands of existing jobs. If we don't support the economy wide net zero transition, not only will we miss our carbon targets, but we will miss out on the opportunities green growth presents to business and consumers.

Securing UK investment in the race to develop green industries

Many countries have now recognised the economic benefits the transition will bring. Through our COP26 presidency, we encouraged an increase in net zero pledges from countries covering 30% to more than 90% of global GDP.[10] Since the publication of the *British Energy Security Strategy* and *Net Zero Strategy* we have seen others follow the UK's lead in increasing their ambition on clean energy and supporting the net zero transition. The US has taken decisive action through the Inflation Reduction Act, and the EU has set out its plans to grow green industries through the Green Deal Industrial Plan.

The UK welcomes this increased global ambition on climate change. Alongside our partners and allies, we remain convinced that a multilateral approach is necessary to tackle climate change. All economies will need to take decisive steps to reduce global emissions. Increased investment in net zero technologies globally will unlock innovation and drive costs down, as well as create opportunities for UK exports. We will continue to work with partners to ensure that the clean transition does not come at the expense of our trusted global supply chains and the rules-based international system. We do not wish to participate in a discriminatory subsidy race, which will be harmful to many nations' intentions to transition. Our focus is on responding to investor and industry calls to provide the long-term certainty, strategic de-risking, and confidence that they need to invest in the technologies and infrastructure necessary to deliver our energy security and net zero objectives.

We will continue to stay at the forefront of the economic transformation to net zero and retain our edge to unlock further opportunities to invest in and grow green industries in the UK. This plan delivers both policy and funding measures to cement the UK as a prime destination for long-term investment, growing our green industrial base and unlocking export opportunities for British businesses. The measures in the 2023 *Green Finance Strategy*, along with measures announced at Spring Budget 2023, include reforms

to the pensions and insurance sector that will leverage the UK's deep capital markets to invest in the net zero transition and green industries in the UK. For example, through our package of reforms to Solvency II, we will support insurers to increase investment in long-term productive assets, including innovative green assets and renewable energy infrastructure.

The UK continues to be well placed to secure the economic benefits of the transition. The UK is among the most exciting countries in the world for green industries with one-in-six of all Foreign Direct Investment (FDI) backed cleantech projects in Europe in 2020.[11] This plan will see us build on our strengths and our comprehensive track record across a range of sectors:

- **Offshore wind** – We currently have the world's largest operational offshore wind farm project, Hornsea 2, and the second, third and fourth largest operational offshore wind farm projects in the world. Our innovative policy instruments like the CfD scheme make the UK a world leader in offshore wind.
- **Nuclear** – Nuclear energy has been used reliably and safely in the UK for over 60 years and we have extensive experience of the full nuclear life cycle, from front-end design through to decommissioning. One of the world's most advanced nuclear technologies is being developed here in the UK, with up to £210 million awarded to Rolls-Royce SMR Ltd in November 2021 to develop further their design for one of the world's first Small Modular Reactors (SMRs). We are matching the global competition and scaling-up our nuclear programme by having launched GBN, responsible for driving delivery of new nuclear projects, backed with the funding it needs.
- **CCUS** – The UK has one of the greatest CO2 storage potentials of any country in the world, the UK Continental Shelf, with potential storage capacity estimated at 78 billion tonnes providing substantial opportunities for growth through international trade.[12] The Government will provide up to £20 billion of funding for early deployment of CCUS to unlock private investment and jobs. Government is making an ambitious series of announcements on CCUS, following the £20 billion funding announced at Spring Budget 2023, including announcing the eight projects to progress to negotiations to form the first two CCUS clusters, in the North East and North West. These projects are not the extent of our ambition. Later this year we will set out a process to launch the next expansion of Track-1, and we have now launched Track-2. A major CO2 storage licensing round was launched last year, and we are developing a longer-term vision to set out how CCUS will support net zero.

- **Hydrogen** – The UK's natural assets and technical expertise means we can be an early mover in both electrolytic 'green' hydrogen and CCUS-enabled 'blue' hydrogen production. There are over 200 companies working on hydrogen and fuel cell technologies in the UK, and we consistently feature in the top ten countries globally for hydrogen technology patent rates. We are announcing a shortlist of projects for due diligence and confirming further details on electrolytic hydrogen allocation rounds.
- **Electric Vehicle uptake and infrastructure** – In 2022, the UK had the second highest battery electric car sales in Europe, bringing the total number of plug-in vehicles on UK roads to over one million licensed, of which around 60% are battery electric.[13] Charging infrastructure is also speeding ahead: public charging devices have more than tripled from 10,300 devices in January 2019 to over 38,700 in March 2023. We are building on that by publishing a final consultation on an ambitious Zero Emission Vehicle mandate, requiring an increasing percentage of new car and van sales to be zero emission.
- **Green Finance** – Behind every new net zero investment, sits a team of financial, legal, data and accountancy experts, presenting a huge opportunity for the UK financial sector and professional services. The UK's financial sector already leads in green project financing and investment analytics. We set out how we will capture this opportunity in the 2023 *Green Finance Strategy*.
- **Research and Tech sector** – The UK is a leading science superpower. We are widely recognised as global leaders in cutting edge areas like the most promising fusion energy technologies, and boast a world-class research base, with three of the top 10 universities globally.[14] This means we are one of the best places to conceive, develop and deliver green technologies, putting us in a strong position to capitalise on the opportunities of a net zero economy.

There are significant opportunities for UK industry the whole way through the supply chain. We want UK companies to continue playing a key role in green supply chains, from nuclear to CCUS and electric vehicles. For example, nuclear power station Hinkley Point C has spent over £4.1 billion with suppliers in the Southwest to date and EDF anticipate that 64% of the construction value of the project will be spent with UK firms, with over 22,000 people nationwide currently working on the project.[15]

We are supporting the development and growth of resilient UK supply chains and targeting public funding strategically for key industries. Our Floating Offshore Wind Investment Scheme will provide up to £160 million to kick start investment in port infrastructure projects, supporting the growth of wind power manufacturing in the UK. To secure the economic opportunities of the transition to clean heat, £30 million will be provided through the Heat Pump Investment Accelerator, leveraging up to £270 million of private investment into manufacturing and associated supply chains.

The Government has already committed to supporting the automotive sector in its transition to electric vehicles with over £800m capital funding made available at the last spending review. We want the UK to be one of the best locations in the world to manufacture electric vehicles, with an end-to-end zero emission vehicle supply chain. Our ambitious ZEV mandate will put UK manufacturers at the forefront of the electric revolution, supported by delivery of charging infrastructure that government is funding in partnership with industry to boost demand and by our capital allowances reforms to boost investment with the introduction of full expensing for 3 years. In addition, the Automotive Transformation Fund and the long-term Advanced Propulsion Centre R&D programme are supporting the development and commercialisation of cutting-edge automotive technologies. In the coming months, after engagement with industry, the Government will build on these interventions to take decisive action to ensure future investment in zero emission vehicle manufacturing.

We are also supporting UK industry to increase their exports. The global transition to net zero creates a major market opportunity with exports within low carbon and renewable energy industries growing significantly faster than exports from the broader economy. In 2021, it is estimated exports from these sectors increased by 67% from 2020, compared to total exports which increased by 6%.[16] In 2021-2022 alone, the economic impact of the new loans, insurance and guarantees provided by UKEF across the whole economy was up to £4.3 billion of UK Gross Value Added (GVA) and an estimated up to 72,000 UK jobs – 40,000 directly employed by exporters and a further 32,000 jobs supported indirectly through the UK supply chain. We are increasing UK Export Finance's maximum exposure limit from £50 billion to £60 billion. This provides additional capacity for UKEF to support exporters, including in green industries, to win contracts, fulfil orders and get paid.

To secure the investment we need, we use a range of different levers from tax to regulation through planning reform, targeted spending and international collaboration. These will play to the unique strengths of the UK. We are delivering:

- **A strong and supportive business environment:** the government is committed to making the UK the best place in the world to start and grow a business and we are ensuring the UK's tax system is one of the most competitive of the world's major economies. At Spring Budget 2023, we announced reforms to capital allowances which give the UK the joint most generous capital allowance regime in the OECD. We introduced full expensing for three years to support business investment, with a commitment to make the reform permanent when the fiscal conditions allow, and increased tax reliefs for R&D intensive Small and Medium Enterprises (SMEs). Together, these ensure the UK business tax system is one of the most competitive of the world's major economies.
- **Long-term policy certainty and agile and smart regulation to drive investment:** we are setting a clear policy framework on energy security and net zero, so

businesses can plan and invest with confidence. Smart and agile regulation, including the Zero Emission Vehicles mandate, the consultation on the Sustainable Aviation Fuels mandate as well as in areas such as building efficiency and heat pumps, will help drive demand for new products and services and accelerate innovation and investment. Sir Patrick Vallance's Pro-Innovation Regulation of Technologies Review on green industries demonstrates we can move quickly to ensure regulation supports innovation and investment. Government will break down the barriers to deployment, to allow projects and investment to happen more quickly.

- **Revenue models, financing mechanisms and market frameworks:** in emerging sectors we are establishing clear market frameworks (including through the Energy Bill), so the private sector can invest with confidence. This includes revenue models that give investors more certainty about the returns they will make: from CfDs and business models for hydrogen, through to the Nuclear Regulated Asset Base (RAB) model and models for CCUS. To complement this, our green finance policy framework seeks to ensure sufficient private capital is available to finance our net zero objectives.
- **Targeted public investment:** Public spending has a role to play where industry and households cannot, for instance making our schools and hospitals greener through the Public Sector Decarbonisation Scheme (PSDS). Further, in areas where investors face greater risk due to the novelty or scale of a project, government can co-invest alongside the private sector to ensure good projects happen. Government does this directly, for example through the Advanced Fuels Fund, or through our major public finance institutions, including the £22 billion UKIB. We have set out the role of these institutions in detail in our updated 2023 *Green Finance Strategy*. We also continue to provide significant public investment in research and innovation, with £4.2 billion in net zero research and innovation over the period from 2022-25.

Our international approach

We are securing energy supplies by ensuring that where the UK is dependent on imports those imports are built on diversified sources of supply and relationships with strong, trusted partners and allies. We are working with the EU and bilaterally with our connected countries on winter preparedness and energy security, involving our respective system operators and regulators. Beyond the EU we work with strong trusted partners and allies including through our Strategic Energy Dialogues to help tackle national and global energy challenges.

It is essential that we work internationally to drive the global transition to clean technologies. This will bring down emissions, protect and restore nature, improve energy security, and realise the huge economic and growth opportunities for the UK.

Complementing our domestic plans and our successful COP26 Presidency, we are therefore also publishing:

- the *2030 Strategic Framework for International Climate and Nature Action* – setting out the role the UK will play in driving progress against six global climate and nature challenges.
- the *International Climate Finance Strategy* – outlining how the UK's high-profile commitment to spend £11.6 billion on ICF in 2021/22-2025/26 is being spent and is delivering results. The strategy also shows how we are delivering on the ICF sub-targets we have announced publicly, on nature, adaptation, and innovation.

As we increase our efforts to decarbonise domestically, we must ensure production, and the associated greenhouse gas emissions, do not shift to other countries with lower carbon pricing and climate regulation. We are therefore launching a consultation on potential policy measures to address future carbon leakage risk, including a UK Carbon Border Adjustment Mechanism and product standards, which could be deployed from the mid-2020s onwards.

Powering Up Britain – Energy Security Plan

Putin's invasion exposed mainland Europe's over-dependence on Russian gas, with implications for affordability and security. The UK cannot ever afford to be at the mercy of a malign actor like this. The *British Energy Security Strategy* was clear that the long-term solution is to address our underlying vulnerability to international fossil fuel prices by reducing our dependence on imported oil and gas.

Our vision is to power the UK through affordable, home-grown, clean energy:

- ensuring Britain has among the cheapest wholesale electricity prices in Europe by 2035;
- moving towards energy independence through a potential doubling of Britain's electricity generation capacity by the late 2030s;
- maximising the vital production of UK oil and gas as the North Sea basin declines; and
- capturing global early mover advantages and capitalising on the decarbonisation needs of the more than 90% of the global economy that are now signed up to net zero targets.

To succeed in achieving our vision to power the UK through affordable, home-grown, clean energy, we must both manage the short terms risks and act for the

long term. For Britain, a future in which we are more energy independent, more energy secure, means:

- reducing energy demand and increasing the overall share of domestic energy production, building on our ambitions set out in the *Net Zero Strategy* and *British Energy Security Strategy*;
- ensuring that where the UK still needs to import energy, including through interconnectors, that those imports are built on strong relationships with trusted partners and allies and diversified sources of supply, which will also provide access to long term export markets to support our growing clean energy industries;
- building in resilience and mitigations to ensure that if there are disruptions to imports, consumers still have a reliable supply of energy.

***Powering Up Britain – Energy Security Plan* sets out the steps by which the Government will enhance our country's energy security following the publication of the British Energy Security Strategy in April 2022.** This plan:

- **Sets out the actions taken to secure energy supplies this winter** and the next steps in ensuring resilience of our gas supplies;
- **Demonstrates the actions we are taking to ensure more home-grown energy,** by driving investment in renewables, CCUS, and nuclear;
- **Sets out our approach to reforming energy retail and electricity markets** to support businesses and households.

Powering Up Britain - the Net Zero Growth Plan

The transition to net zero will require action across the whole economy fuelled by rapid deployment of low carbon electricity. To thrive, the UK will need to support the growth of new sectors and help others adapt.

The path to net zero outlined in the *Net Zero Strategy* is still the right one; developments in the last 18-months have only reinforced that view. The UK has already made huge progress in decarbonising the economy and decoupling emissions from economic growth. The *Independent Review of Net Zero*, led by the Rt Hon Chris Skidmore MP, concluded that the transition to net zero is the economic opportunity of the 21st century, driving investment, jobs and creating significant opportunity across the UK. The Review was unequivocal in its assessment that the plan set out in the *Net Zero Strategy* was the right one, whilst providing recommendations to strengthen delivery. The Climate Change Committee's 2022 Progress Report to Parliament further confirms our approach.

In the *Net Zero Growth Plan*, we are bolstering our delivery. This plan:

- **Responds to the expert recommendations made in the Independent Review of Net Zero**, which explored how we can achieve net zero in the most pro-growth, pro-business way;
- **Demonstrates the actions we will take to ensure the UK remains a leader in the net zero transition**, by ensuring we drive investment into key green industries like offshore wind, CCUS, and nuclear;
- **Strengthens delivery with a focus on the action we can take today to keep us on track to meet our carbon budgets**, acting as our annual update against the *Net Zero Strategy*, both on a national and local level;
- **Meets our statutory obligations under the Climate Change Act (2008)** to:
    - Respond to the Climate Change Committee's (CCC) *2022 Progress Report to Parliament*; and
    - Provide a Carbon Budget Delivery Update that sets out a package of policies and proposals that will enable us to meet carbon budgets.

Delivering our plans

In these plans we set out our ambitious policies which will ensure we can deliver energy security, increase the UK's international economic competitiveness, while delivering net zero. There are two sides of this: the *Powering Up Britain - Energy Security Plan* is focused on changing decades of reliance on imported fossil fuels, by reducing demand and boosting home grown energy, giving energy resilience the priority it deserves. The *Net Zero Growth Plan* focuses on our long-term decarbonisation trajectory and how it can improve the UK's competitiveness, deliver an industrial renaissance and level up the whole of the United Kingdom. These documents are complementary and should be read together. While comprehensive, they will continue to evolve and be flexible to adapt to changing circumstances.

Together they provide the long-term certainty, business models and frameworks and targeted investment that will accelerate delivery of our departmental objectives. We are acting across all parts of the energy system and economy:

1. Providing a secure, abundant and clean energy supply
    - Power generation
    - New clean energy systems and infrastructure
    - Networks and enablers

2. Reducing demand by increasing energy efficiency for homes and businesses
3. Supporting the rest of the economy through the transition

The following pages outline some of the announcements being made to bolster our delivery of cheap, clean and plentiful energy.

1. Providing a clean, secure energy supply

We have an ambition to fully decarbonise the power system by 2035, subject to security of supply, and we will also need to grow and develop energy sources beyond the power sector. Moving to a power system that relies primarily on low carbon technologies is a crucial step towards delivering, cheaper, cleaner, domestic energy and addressing our underlying vulnerability to international fossil fuel prices. In 2021, the share of generation from renewables reached 40%, including from bioenergy, wind and solar, and 15% from nuclear.[17] Already we have nearly reached 14GW of offshore wind installed; reached 14GW of solar installed; announced up to £20 billion for CCUS at Spring Budget 2023; announced the £120 million Future Nuclear Enabling Fund and will announce a shortlist of applications soon; announced Great British Nuclear to progress new nuclear; invested approximately £700 million to take a 50% stake in Sizewell C in November 2022, and a further £100 million to support project development in January 2023.

Next Steps:

Power Generation

Launch of Great British Nuclear (GBN) & the Small Modular Reactor (SMR) selection process	Nuclear is the critical baseload of the future energy system and we are setting out an ambitious programme for increasing generation to match global competition. The Government is committed to a programme of new nuclear projects beyond Sizewell C, giving industry and investors the confidence, they need to deliver projects at speed. With this aim in mind, the Government has launched Great British Nuclear (GBN) which will be funded to lead delivery of our programme of new nuclear projects. GBN will operate through British Nuclear Fuels Limited. The first priority for GBN is to launch a competitive process to select the best SMR technologies. This will commence in April with market engagement as the first phase. The second phase – the down-selection process - will be launched in the summer, with an ambition to assess and decide on the leading technologies by Autumn. We will co-fund the selected technologies through their development and will work with successful bidders on ensuring the right financing and site arrangements are in place, in line with our commitment to take two Final Investment Decisions next parliament. The Government has also launched the Future Nuclear Enabling Fund of up

	to £120 million to provide targeted support for new nuclear to address barriers to entry and will announce a shortlist of applications to begin pre-grant award due-diligence soon.
Floating Offshore Wind Manufacturing Investment Scheme (FLOWMIS)	The UK is a world leader in offshore wind deployment and floating wind represents the next frontier in this green growth story. Floating turbines, which can be deployed in deeper waters than conventional turbines, will boost energy capacity even further by allowing wind farms to be situated in new areas around the UK coastline where wind strengths are highest. We are launching the Floating Offshore Wind Manufacturing Investment Scheme (FLOWMIS), which will provide up to £160 million to kick start investment in port infrastructure projects needed to deliver our floating offshore wind ambitions. This will give investors the confidence to back this emerging sector, which will make a vital contribution to the UK's energy security and net zero targets.
Solar	Solar has huge potential to help us decarbonise the power sector. We have ambitions for a fivefold increase in solar by 2035, up to 70GW, enough to power around 20 million homes. We need to maximise deployment of both ground and rooftop solar to achieve our overall target. Ground-mount solar is one of the cheapest forms of electricity generation and is readily deployable at scale. Government seeks large scale solar deployment across the UK, looking for development mainly on brownfield, industrial and low/medium grade agricultural land. The Government will therefore not be making changes to categories of agricultural land in ways that might constrain solar deployment. Government is seeking widespread deployment of rooftop solar in commercial, industrial and domestic properties across the UK. To support our solar ambitions, we are accepting the recommendation from the *Independent Review of Net Zero* to set up a taskforce to deliver on this ambition.

New clean energy systems and infrastructure

Carbon Capture Usage and Storage (CCUS)	CCUS can capture CO2 from power generation, hydrogen production, and industrial processes – storing deep underground utilising decommissioned oil wells or using it. CCUS is also vital to unleash scale up of key greenhouse gas removal technologies (GGRs), like direct air carbon capture and storage and bioenergy with carbon capture and storage, to balance residual emissions from hard to abate sectors. Government is making an ambitious series of announcements on CCUS, following the up to £20 billion funding announced at Spring Budget. First, we are announcing the initial eight Track-1 capture projects with which we are entering into negotiations, with the full expectation of expanding the Track-1 clusters and project list in future. Second, we will launch later this year a process to bring in further projects within the Track-1 clusters by 2030. This will select additional projects to connect into the HyNet and East Coast Clusters – including the Humber and their associated stores as they become viable, and we will engage the sector shortly on how to deliver this. Third, we will work to identify if any of these additional projects could be potential alternatives to any of the initial Track-1 projects, if any are unable to agree contracts within the criteria and timelines required. The Government will continuously monitor the value for money offered by the Track-1 shortlist, to ensure only the best and most cost-effective capture projects reach Final Investment Decision. Fourth, we remain committed to our ambition of 20-30mtpa of carbon storage and four operational CCUS clusters by 2030, which is why we are announcing today the launch of the Track-2 cluster process. Our initial view is that Acorn and Viking are the leading contenders for Track-2 T&S Systems. Fifth, to meet our sector aims and Net Zero target we are committed to further development of Industrial Carbon Capture, Waste, CCUS-enabled Hydrogen, Power CCUS, and engineered GGRs. As part of this, we will work closely with electricity generators currently using biomass to facilitate their transition to power BECCS, subject to value for money, taking account of energy security on the road to net zero.

	We expect this announcement to crowd-in billions of pounds of additional private capital as our private partners also commit to the programme, putting us on track to deliver up to 50,000 jobs and bringing investment to our industrial heartlands.
Hydrogen	Hydrogen is a potential energy solution for harder to electrify areas like parts of industry, heavier transport such as aviation and shipping, and potentially heating buildings, as well as the important role it can play in the power sector. Our ambition to have up to 10GW of low carbon hydrogen production capacity by 2030 could generate enough clean electricity to power all of London for a year. Today, we are confirming the first winning projects from the £240 million Net Zero Hydrogen Fund. We are announcing a shortlist of projects for due diligence in the first electrolytic hydrogen allocation round, through which we intend to support up to 250MW of new electrolytic hydrogen production capacity, subject to affordability and value for money. Successful projects in this round will be funded by government until the hydrogen levy is in place. Further, we are announcing our intention to launch a second electrolytic allocation round later this year, through which we intend to support up to 750MW capacity, and to publish a hydrogen production delivery roadmap by the end of the year. The first and second allocation rounds are intended to support our ambition of up to 1 GW of electrolytic hydrogen in operation or construction by the end of 2025. We are also naming the CCUS-enabled hydrogen projects moving forward on the Track-1 clusters, intended to support our ambition for up to 1GW of CCUS-enabled hydrogen in operation or construction by the end of 2025. To bring forward hydrogen transport and storage infrastructure business models, we are also aiming to introduce legislative powers when parliamentary time allows, which will be crucial to designing these new business models by 2025. These actions are key to potentially unlocking up to £11 billion in private investment by 2030, accelerating the UK hydrogen economy to bolster energy security and potentially supporting over 12,000 jobs by 2030.

Networks and enablers

Grid	Power generators connect to consumers through the grid, which includes the high-voltage transmission lines and lower voltage distribution lines, which ensures that all areas of Britain always have enough power. We need to expand the grid at an unprecedented scale and pace to deliver more clean power and increase our energy security. *Powering Up Britain - Energy Security Plan* sets out plans to accelerate the delivery of strategic transmission upgrades by at least three years, with an ambition to cut delivery times in half. The Electricity Networks Commissioner has been tasked to advise government on what more can be done to accelerate grid delivery, and will present recommendations to Ministers in June. We will respond with an action plan this year. Alongside the focus on accelerating investment in the grid, we are working with industry and Ofgem to reform the grid connections process, at both transmission and distribution levels, which is delaying both generation and demand projects in parts of the country. We will publish a connections action plan in the summer.
Planning	An effective planning system is needed to support both large scale nationally significant infrastructure like offshore wind, nuclear power and CCUS, and support local decisions on renewable and low carbon energy. That is why in order to support our net zero and energy security goals the government is committed to ensuring faster, fairer and more effective planning regimes, including through changes to the National Planning Policy Framework - generally for local plan-making and decisions, the energy National Policy Statements - specifically for nationally significant decisions, and Electricity Act planning. The Government are publishing five revised energy NPS covering Renewables, Oil and Gas Pipelines, Electricity Networks and Gas Generation, and an overarching Energy Statement for consultation. This includes a new requirement for offshore wind to be considered as “critical national infrastructure”. Recognising that onshore wind is an efficient, cheap and widely supported technology, Government has consulted on changes to planning policy in England for onshore wind to deliver a localist approach that provides local authorities more flexibility to respond to the views of their local communities. We will respond to the NPPF consultation in due course.

Electricity Market Reform	Markets underpin the efficient operation of the system and send key signals for long term investment. We will need to reform market frameworks to deliver our 2035 ambitions. The Review of Electricity Market Arrangements (REMA) programme will consult further this Autumn on reforms for the electricity market to ensure it remains fit both for today and future generations.
UK Emissions Trading Scheme (UK ETS)	Since 2021, the UK ETS has placed the power of the market at the heart of the UK's net zero strategy. The Independent Review of Net Zero sets out an enhanced role for the UK ETS as a foundation for a thriving, decarbonised economy through 2050 and beyond. It shows how, with a long-term commitment to an expanded market, we can unlock investment in UK infrastructure; catalyse innovation in the UK's world-leading science and technology; and support UK businesses with the most cost-effective and flexible means to deliver net zero. Government accepts the recommendation that we set out a long-term pathway for the UK ETS. We will work with the ETS Authority to set out one this year.

2. Addressing demand by increasing efficiency for homes and businesses

The low carbon energy system depends on overall energy demands reducing significantly, and increasing efficiency will help with cutting bills. This means homes or businesses becoming far more efficient, through adoption of clean heat technologies, better energy management, and investment in energy efficiency measures. We have already made significant progress, most recently announcing ambition to cut final energy demand from buildings and industry by 15% by 2030 and by launching an Energy Efficiency Taskforce, chaired by Alison Rose, CEO of NatWest, to support energy security and decarbonise buildings and industry. We have also funded 'help to heat' schemes to reduce energy bills and improve energy efficiency; and launched the £450 million Boiler Upgrade Scheme which has already seen over 14,000 voucher applications since it opened on 23 May 2022.[18]

Next steps:

Energy Efficiency	We will introduce a new Energy Company Obligation scheme – the Great British Insulation Scheme – to deliver £1 billion additional investment by March 2026 in energy efficiency upgrades, such as loft and cavity wall insulation. Supporting around 300,000 of the country's least energy efficient homes to save around £300-£400 each year, it will extend help to a wider group of people living in the least efficient homes in the lower Council tax bands as well as boosting help for those on the lowest incomes. We plan to lay legislation by the summer to take it forward. We remain committed to improving energy efficiency performance across different buildings. We are planning to consult by the end of this year on how to improve the energy efficiency of owner-occupied homes. We will publish a summary of responses to the consultation on improving the energy performance of privately rented homes and respond to the consultation on improving home energy performance through lenders. We are also putting in place measures to reduce demand from large businesses and improve the efficiency of industrial processes through announcing extensions to the Industrial Energy Transformation Fund and Climate Change Agreement schemes as well as piloting an energy advice service for SMEs.

Heat Networks	Heat networks are vital to making net zero a reality in the UK. In high density urban areas, they are often the lowest cost, low carbon heating option. This is because they offer a communal solution that can provide heat to a range of homes and businesses by capturing or generating heat locally. We are continuing to grow and decarbonise the UK heat network market through the Green Heat Network Fund and the Heat Network Efficiency Scheme. We can now confirm that capital support will be extended to 2028 to facilitate the continued growth of low carbon heat networks, including £220 million for the Heat Network Transformation Programme over 2025/6 and 2026/7.
Clean Heat	Heat pumps are an important part of the future of heating as they are significantly more efficient than traditional boilers, use cleaner energy, and should reduce bills relative to fossil fuel heating. We want to support the manufacturing of heat pumps here in the UK, so we are launching a £30 million Heat Pump Investment Accelerator to leverage up to £270 million of private investment to boost UK manufacturing and supply chain and support our commitment to install over 600,000 heat pumps p.a. by 2028. Alongside this, we intend to implement the Clean Heat Market Mechanism in 2024 to incentivise heating system manufacturers to deploy heat pumps as a proportion of fossil fuel boiler sales. We want to continue to support households with this transition and therefore will be extending the Boiler Upgrade Scheme until to 2028, and we will enhance the current marketing campaign to increase consumer awareness and take-up. The Government has an ambition to phase out all new and replacement natural gas boilers by 2035 at the latest and will further consider the *Independent Review of Net Zero Review*'s recommendation in relation to this.
Fuel price rebalancing	We know that, in the long run, green products are more efficient and cheaper. However, current distortions in electricity and gas prices do not always make this the case. We want to make it easier for consumers to make the switch to green products by rebalancing prices between electricity and gas to remove these distortions. We accept the Skidmore Review recommendation that Government should commit to outlining a clear approach to gas vs. electricity 'rebalancing' by the end of 2023/4 and should make significant progress affecting relative prices by the end of 2024. Rebalancing will generate the clear short-term price signal necessary to shift both households and businesses to lower-carbon, more energy efficient technologies like heat pumps. This is vital to meet Government's existing decarbonisation commitments, including our goal of 600,000 heat pumps installed per year by 2028.

3. Supporting the rest of the economy through the transition

The rest of the economy will need to transition to net zero. A low carbon power sector can support buildings, industry, transport and agriculture to decarbonise with increased electrification. Parts of these same sectors may be harder to electrify and therefore need different solutions to decarbonise. So far, we have completed a technical consultation on the Zero Emission Vehicle mandate, including engagement with 400+ stakeholders; published our *Jet Zero Strategy*; allocated £150 million in support to industry through the Industrial Energy Transformation Fund (IETF) since summer 2020 and more.

Next steps:

Increased support for industry through the IETF	The IETF is designed to help businesses with high energy use to cut their energy bills and carbon emissions through investing in energy efficiency and low carbon technologies We are announcing a £185 million uplift for Phase 3 of the IETF, bringing the total allocation to the IETF to £500m across all phases. We intend to open Phase 3 of the IETF for new applications in early 2024, continuing to provide grant funding to support industry in delivering energy efficiency and GHG emissions improvements.
A consultation on carbon leakage	As we increase our efforts to decarbonise domestically, we must ensure production, and the associated greenhouse gas emissions, do not shift to other countries with lower carbon pricing and climate regulation. We are launching a consultation on potential policy measures to address future carbon leakage risk, including a UK Carbon Border Adjustment Mechanism and product standards, which could be deployed from the mid-2020s onwards.
Zero Emission Vehicles	The transition to zero emission cars and vans is leading the way in our effort to decarbonise transport, and we are already making excellent progress towards our phase out commitments. Between 2030 and 2035, new cars and vans will only be able to be sold if they offer significant zero emission capability. We have published a final consultation on an ambitious Zero Emission Vehicle mandate, requiring an increasing percentage of new car and van sales to be zero emission, to support delivery of all new vehicles being zero emission by 2040.
Sustainable Aviation Fuels (SAF)	Our journey towards zero emission flights will include kick-starting the commercialisation of SAF in the UK. We are making excellent progress towards this goal and go even further, announcing a consultation

	setting out full details of the SAF mandate policy with target trajectories and incentives; a second application window for the up to £165 million Advanced Fuels Fund; and grant awards to Airbus to scale-up research on ultra-low emissions and hydrogen aircraft.
Natural Resources, Waste and F-gasses	We have set out 25 measures that are in the agriculture net zero pathway, many of which have already been developed and introduced through the Environmental Land Management schemes, Farming Investment Fund, and Farming Innovation Programme.
2023 *Green Finance Strategy*	To support the transition to a clean and secure future, we will need to align private sector financial flows with clean, environmentally sustainable and resilient growth, and strengthen the competitiveness of the UK financial sector. We are publishing our 2023 *Green Finance Strategy*, which sets out how we catalyse our world-leading financial services sector to deliver on our ambitious commitments. Alongside this we are also publishing our Nature Markets Framework which sets out government's approach to supporting and accelerating growth in nature markets, a key mechanism to help deliver our joint nature and climate goals.
Supporting Green Skills	The growth of green industries will lead to new jobs, which may require new skills. To support this transformation and help people take advantage of the opportunities the transition will bring, we will produce a Net Zero and Nature Workforce Action Plan in 2024. We are starting with a set of initial actions from the Net Zero Power and Networks pilot working group, followed by a suite of comprehensive actions for these sectors by Summer 2023, which can be used as a template for the other sectoral assessments. Industry have also committed to work with DfE to propose new Skills Bootcamps in FY 2023-24 aimed at addressing immediate workforce skills needs in key low carbon sectors. By the end of 2023, we will have at least 35 different bootcamp courses across England supporting greener construction, transport, and green energy and industry sectors. Further, government will work with partners to ensure that net zero and green careers are considered in all relevant current and proposed careers campaigns across government and industry.

Endnotes

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[4] The figure is presented in 2022 prices as the sum of Renewables Obligation (RO), Feed-In-Tariffs (FiTs) and Contracts for Difference (CfD) levy funding since 2010. Historic data to Financial Year 2021/22 has been compiled from past OBR Economic and Fiscal Outlook (EFO) publications and Ofgem's 2021/22 published Annual Report on the FiTs scheme. For 2022/23, the OBR forecast for CfD and RO payments from the March 2023 OBR EFO publication has been applied. No published forecast for 2022/23 is available for the FiTs scheme and so this has not been included.

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