



HM Government

The Ten Point Plan for a Green Industrial Revolution

Building back better, supporting green jobs, and accelerating
our path to net zero

November 2020





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Foreword from the Prime Minister



This year has taken a very different path from any we expected, but I have not lost sight of our ambitious plans to unite and level up our country.

Just as science will enable humanity to rout Coronavirus, so we will use the UK's extraordinary powers of invention to repair the economic damage and build back better. Now is the time to plan for a green recovery – with high-skilled high-paid jobs that offer the extra satisfaction of helping to make our nation cleaner, greener and more beautiful.

Imagine how our Green Industrial Revolution could transform life across our United Kingdom. You cook your breakfast using hydrogen power before getting in your electric car, having charged it overnight from batteries made in the Midlands. Around you the air is cleaner, and the trucks and trains, ships and planes are running on hydrogen or a synthetic fuel. British towns and regions — Teesside, Port Talbot, Merseyside and Mansfield — have become synonymous with green technology and the jobs they bring. This is where Britain's ability to make hydrogen and capture carbon pioneered the decarbonisation of transport, industry and power.

This Ten Point Plan to get there will mobilise £12 billion of government investment, and potentially three times as much from the private sector, to create and support up to 250,000 green jobs. There will be electric vehicle technicians in the Midlands, construction and installation workers in the North East and Wales, specialists in advanced fuels in the North West, agroforestry practitioners in Scotland, and grid system installers everywhere. And we will help people train for these new green jobs through our Lifetime Skills Guarantee.

We will turn the UK into the world's number one centre for green technology and finance, laying the foundations for decades of economic growth by delivering net zero emissions in a way that creates jobs and allows us to carry on living our lives. And we will harness Mother Nature's ability to absorb carbon by planting 30,000 hectares of trees a year by 2025, and restore the abundance of nature by rewilding 30,000 football pitches worth of countryside.

The UK was the first major economy to embrace a legal obligation to achieve net zero carbon emissions by 2050. I will establish Task Force Net Zero to take forward this national priority, and through next year's COP26 Summit, we will urge countries and companies around the world to join us in delivering net zero globally.

We long ago proved that green and growth can go hand-in-hand. So let us meet the most enduring threat to our planet with one of the most innovative and ambitious programmes of job-creation we have known

The Rt Hon Boris Johnson MP

Prime Minister

Foreword from the Secretary of State for Business, Energy & Industrial Strategy



As the world looks to recover from the impact of coronavirus on our lives, livelihoods and economies, we have the chance to build back better: to invest in making the UK a global leader in green technologies.

If we apply the same zeal and ingenuity to stopping climate change as we have to tackling coronavirus, we can do so while transforming our economy, delivering jobs and growth across the country.

Our Ten Point Plan sets the firm foundations to do just that. The plan brings together ambitious policies and significant new public investment, while seeking to mobilise private investment. This has the potential to deliver up to an estimated £42 billion of private investment by 2030 across energy, buildings, transport, innovation and the natural environment. In doing so, we will position the UK to take advantage of export opportunities presented by low carbon technologies and services into new, global emerging markets – providing jobs and reinvigorating our industrial heartlands.

The Ten Point Plan demonstrates the UK's significant and continuing commitment to tackling greenhouse gas emissions. We have led the G7 countries in cutting emissions since 1990. As President-Designate for the United Nations Framework Convention on Climate Change Conference of the Parties 26 (COP26), I am committed to ensuring we also use our leadership role so that all countries, businesses, cities and investors adopt a greener, more resilient, sustainable path for the future.

This will build on a Conservative track record of addressing the climate challenge. From helping to secure the Paris Agreement, to legislating for net zero, and setting out the greenest manifesto in the UK's history, this plan delivers on our commitments to present a vision for the UK that is greener, more prosperous and at the forefront of global industry. We will continue to build on this plan.

Over the next year we will bring forward ambitious proposals across the economy to cut emissions and secure long-term growth for the whole country, starting with the Energy White Paper before the end of the year. I look forward to working with businesses, organisations representing the interests of UK citizens, the Devolved Administrations and Governments across the world to make this a reality.

The Rt Hon Alok Sharma MP

Secretary of State for Business, Energy and Industrial Strategy, President COP 26

Introduction

Two centuries ago the UK led the world's first Industrial Revolution. Powered by innovation and private investment, this transformation gave birth to many of our great cities and effectively created the modern world. Today we will mobilise the same forces to level up our country and enable our proud industrial heartlands to forge the future once again. By investing in clean technologies – wind, carbon capture, hydrogen and many others – Britain will lead the world into a new Green Industrial Revolution.

As the world begins to recover from the devastating impact of the coronavirus on lives and livelihoods, a broader transformation is taking shape. We will create hundreds of thousands of new jobs by investing in pioneering British industries while simultaneously protecting future generations from climate change and the remorseless destruction of habitats.

Britain is already leading the way. Over the last 30 years, we have shown that economic success and environmental responsibility go hand in hand. We expanded our GDP by 75 per cent while cutting emissions by 43 per cent. Our low-carbon industries already support over 460,000 jobs,¹ from electric vehicle manufacturing in the Midlands and the North East to our thriving offshore wind industry centred on the Humber and the Tees. In 2019, we became the first major economy to adopt a legally binding obligation to reach net zero greenhouse gas emissions by 2050.

This year, our Ten Point Plan will lay the foundations for a Green Industrial Revolution. We will start by supporting 90,000 jobs across the UK within this Parliament, and up to 250,000 by 2030. Engineers, fitters, construction workers and many others will be engaged in harnessing British science and technology to create and use clean energy and forge great new industries that export to new markets around the world. Our Lifetime Skills Guarantee will equip people with the training they need to take advantage of these opportunities.

The government has announced over £5 billion to support a green recovery. This plan mobilises £12 billion – and potentially more than three times as much from the private sector – to place green jobs at the heart of our economic revival.

As the world goes green, we will seek to put the UK at the forefront of global markets for clean technology. One measure of the opportunity is that 83 per cent of the \$13.3 trillion of global investment in electricity systems by 2050 could be in zero-carbon technologies.²

We will generate new clean power with offshore wind farms, nuclear plants and by investing up to half a billion pounds in new hydrogen technologies. We will use this energy to carry on living our lives, running our cars, buses, trucks and trains, ships and planes, and heating our homes while keeping bills low. And to the extent that we still emit carbon,

¹ <https://www.ons.gov.uk/economy/environmentalaccounts/methodologies/lowcarbonandrenewableenergyeconomy/creesurveyqmi>

² <https://about.bnef.com/new-energy-outlook/>

we will pioneer a new British industry dedicated to its capture and return to under the North Sea. Together these measures will reinvigorate our industrial heartlands, creating jobs and growth, and pioneering world-leading SuperPlaces that unite clean industry with transport and power. All of these ambitions will be propelled by doubling down on Britain's world-leading expertise in green finance and innovation.

Finally, we will harness nature's ability to absorb carbon by establishing new National Parks and Areas of Outstanding Natural Beauty, and making them even greater havens of biodiversity, with the aim of protecting 30% of England's countryside by 2030. We will use the freedoms we regain by leaving the EU to support Britain's farmers so that, alongside producing high-quality food, we ensure healthy soils which will also retain and – over time – capture carbon. We will restore our peatlands and woodlands, create the Nature Recovery Network and wilder landscapes, generating new jobs in nature and land management. And we will better adapt and protect our communities from the already visible effects of climate change by investing in flood defences and using nature-based solutions to increase flood resilience.

The cumulative effect of this plan will be to reduce UK emissions by 180 million tonnes of carbon dioxide equivalent (Mt CO₂ e) between 2023 and 2032, equal to taking all of today's cars off the road for around two years. But this is only the start. Over the next year we will work with industry to devise further sectoral plans and meet our carbon budgets and target of net zero by 2050. To drive our progress towards this national priority, the Prime Minister will establish a new Task Force Net Zero, putting a systems approach at the heart of our thinking.

But action by the UK alone will not be sufficient to avoid catastrophic climate change. Our Ten Point Plan strengthens our ability to bring other countries with us and positions Britain as a leader in the green technologies we all need to employ. Through our Presidency of the United Nations Framework Convention on Climate Change (UNFCCC) Conference of the Parties 26 (COP26) in Glasgow, the UK will urge ambitious action from countries, businesses, cities, and investors alike. Together we will deliver the promises of the 2015 Paris Agreement and drive progress towards global net zero. And next month, alongside the UN and France, the UK will host a Climate Ambition Summit five years after COP21 in Paris to rally the world behind the goal of a greener, more resilient and sustainable future.

The Ten Point Plan for a Green Industrial Revolution



Point 1
Advancing Offshore Wind



Point 2
Driving the Growth of Low Carbon Hydrogen



Point 3
Delivering New and Advanced Nuclear Power



Point 4
Accelerating the Shift to Zero Emission Vehicles



Point 5
Green Public Transport, Cycling and Walking



Point 6
Jet Zero and Green Ships



Point 7
Greener Buildings



Point 8
Investing in Carbon Capture, Usage and Storage

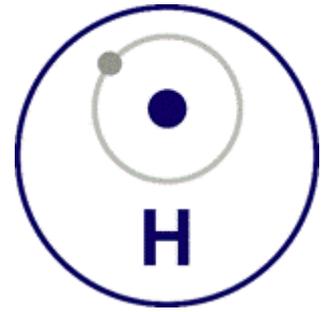


Point 9
Protecting Our Natural Environment



Point 10
Green Finance and Innovation

Point 2: Driving the Growth of Low Carbon Hydrogen



Hydrogen is the lightest, simplest and most abundant chemical element in the universe. It could provide a clean source of fuel and heat for our homes, transport and industry. The UK already has world-leading electrolyser companies, and unparalleled carbon capture and storage sites that we can maximise. Working with industry the UK is aiming for 5GW of low carbon hydrogen production capacity by 2030. Hubs where renewable energy, CCUS and hydrogen congregate will put our industrial ‘SuperPlaces’ at the forefront of technological development. We are also pioneering hydrogen heating trials, starting with a Hydrogen Neighbourhood and scaling up to a potential Hydrogen Town before the end of this decade.

Working **alongside partners in industry, our aim is for the UK to develop 5GW of low carbon hydrogen production capacity by 2030** that could see the UK benefit from around 8,000 jobs across our industrial heartlands and beyond. This will be supported by a range of measures, including a **£240 million Net Zero Hydrogen Fund**, and setting out next year, our hydrogen business models and a revenue mechanism for them to bring through private sector investment.

The UK is already a world leader in investigating the use of hydrogen for heating, replacing fossil fuels like natural gas with hydrogen and hydrogen blends. We are keen to accelerate this work and support industry. For example, Ofgem will publish details later this month on the proposed **network demonstration** in the Levenmouth area of Fife, intended to provide hydrogen to 300 homes over a four-year period. Simultaneously, we are scaling-up the electric heat pump market, ensuring we can exploit a range of low carbon heating options available for UK consumers.

Producing low carbon hydrogen at scale will be made possible by carbon capture and storage infrastructure, and we plan to grow both of these new British industries side by side so our industrial ‘**SuperPlaces**’ are envied around the world. We will also build on our success in offshore wind and other renewables, to bring forward the zero-carbon hydrogen of the future. Together this will develop resilient supply chains, support jobs and position UK companies at the forefront of an exciting growing global market, as well help things like industrial processes, industrial heat, power, shipping and trucking to make the shift to net zero.

Driving the growth of low carbon hydrogen could deliver...

<p>Support for up to 8,000 jobs by 2030, potentially unlocking up to 100,000 jobs by 2050 in a high hydrogen net zero scenario</p>	<p>Over £4bn of private investment in the period up to 2030</p>	<p>Savings of 41MtCO₂e between 2023 and 2032, or 9% of 2018 UK emissions</p>
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Policy impacts

- Aiming for 5GW Hydrogen production capacity by 2030 in partnership with industry.
- Lower carbon heating and cooking with no change in experience for domestic consumers through hydrogen blends and reducing the emissions of the gas used by up to 7%.

Target Milestones

2021	Publish our Hydrogen Strategy and begin consultation on Government's preferred business models for hydrogen
2022	Finalise hydrogen business models
2023	Work with industry to complete testing necessary to allow up to 20% blending of hydrogen into the gas distribution grid for all homes on the gas grid
2023	By 2023 we will support industry to begin hydrogen heating trials in a local neighbourhood
2025	We hope to see 1 GW of Hydrogen production capacity
2025	Will support industry to begin a large village hydrogen heating trial, and set out plans for a possible pilot hydrogen town before the end of the decade

Case study: ITM POWER

ITM Power is a manufacturer of PEM (proton exchange membrane) electrolyzers, a technology which enables the generation of hydrogen from water and are active in projects in the UK and throughout Europe. The company is based in Sheffield. Coupled with a renewable energy supply, this production method is capable of producing zero carbon hydrogen. The Gigastack project explores the potential to scale up electrolyser size and integrate those units with offshore wind facilities. BEIS is currently supporting a consortium led by ITM Power along with Orsted, Phillips 66, and Element Energy through its Low Carbon Hydrogen Supply Programme.



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