Levelling Up and Zeroing In

How Net Zero can revitalise the UK's industrial heartlands

BY JAMES HEYWOOD AND EAMONN IVES

WITH A FOREWORD FROM ALEXANDER STAFFORD MP

Centre for Policy Studies

About the authors

James Heywood is the Head of Welfare and Opportunity at the Centre for Policy Studies. He previously worked as a Senior Parliamentary Adviser on Treasury and Work and Pensions issues for the Conservative parliamentary party. His work on tax and welfare has been concerned with improving work incentives for the lowest paid, lifting the poorest out of tax, and tackling in-work poverty. He led the CPS's research on reform of the social care system, working with the Rt Hon Damian Green MP, and the team working with the Rt Hon Sajid Javid MP on his proposals for post-pandemic recovery.

Eamonn Ives is the Head of Energy and Environment at the Centre for Policy Studies. His research focuses on how free market principles can be used mitigate environmental challenges. He is also a Research Adviser at The Entrepreneurs Network, and previously sat on the advisory panel of Climate Assembly UK. Eamonn features frequently in the national media, and has written for The Times, The Telegraph, The Independent, CapX, CityAM, and ConservativeHome, among others.

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The Centre for Policy Studies is one of the oldest and most influential think tanks in Westminster. With a focus on taxation, economic growth, business, welfare, housing and the environment, its mission is to develop policies that widen enterprise, ownership and opportunity.

As an independent non-profit think tank, the CPS's work is supported by likeminded individuals and companies, but it retains full editorial control of all output to ensure that it is rigorous, accurate and unbiased.

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Acknowledgements

Special thanks to Stonehaven for their generous support of this research. The authors would also like to thank Elizabeth Dunkley, for her help with the case studies, and to Robert Colvile for his careful editing of the final text. We also want to thank all of those we spoke to while researching this report for their insight, analysis, and evidence. Any errors of fact or judgment are the authors' alone.

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Foreword

It is my pleasure to provide the foreword for this excellent Centre for Policy Studies paper on levelling up and Net Zero. This work is being released at a crucial time for our country, as we emerge from the economic stagnation forced upon us by coronavirus and we now look to revive left behind communities and become a world leader in renewables and green technology.

As Member of Parliament for Rother Valley in South Yorkshire, a Red Wall seat, and a member of the Business, Energy and Industrial Strategy Committee charged with examining Net Zero, I have no doubt that levelling up and Net Zero are inextricably linked.

Our industrial settlements have a great role to play in Britain's green revolution. My constituents have immense technical skill and manufacturing expertise, thanks to the area's coal mining and steel heritage. 'Green clusters' in these regions will bring high quality jobs and opportunities to those who have been left behind by our London-dominated national economy. Rother Valley's transition from the fossil fuel industry to a manufacturing hub for renewables will serve as a powerful symbol of our nation's green renaissance.

At a time when coronavirus has depleted the public purse, the green sector offers job creation which will be fast, sustainable, and which will boost the British economy. The Government has made it very clear that a green recovery is not only beneficial but necessary, with the release of the ambitious *Net Zero Strategy* and the comprehensive measures announced in the Budget.

Of course, the Centre for Policy Studies' policy proposals in this paper complement the Government's ground-breaking actions. I was interested to read their recommendations for greater support for public and private investment in green research and development, making 'full expensing' permanent, and the introduction of a 'green super deduction' after 2023. They also made a strong case for expanding the UK Emissions Trading Scheme to cover more of the economy, creating a carbon border adjustment mechanism, and boosting skills provision in left behind areas to secure the green jobs of the future.

This Government is getting to work doing what no government has done for decades, simultaneously transforming our economy and our communities. I am left in no doubt that levelling up and Net Zero are one and the same. We can turbocharge our economy, level up across the regions, stimulate high-quality employment, and meet our Net Zero target by embracing market-based, pro-enterprise policy-making, coupled with sensible and limited Government support where necessary.

Alexander Stafford MP, Member of Parliament for Rother Valley and Member of the Business, Energy and Industrial Strategy Committee

Executive summary

- With the worst of the pandemic behind the UK, the Government is turbocharging its desire to level up the country. Delivering tangible wins in areas which feel left behind is regarded as a fundamental objective before the next election. A Levelling Up White Paper is due to be published shortly, and the Government must ensure this contains credible and effective policies to meaningfully restore economic opportunities to parts of the country which have been losing out in recent decades.

- Another key priority is to redouble action on climate change. The UK has just hosted the 26th United Nations Climate Change Conference – COP26 – in Glasgow. In addition to the commitment to reach Net Zero greenhouse gas emissions by 2050, the Government has also legislated to cut emissions by 68% and 78% on 1990 levels by 2030 and 2035 respectively. Plans for how to achieve these goals are gradually being developed, with a *Ten Point Plan* published in 2020, and a much more detailed *Net Zero Strategy* launched in October last year.

- These targets necessitate the cleaning up of several key high-carbon industries – from steelmaking, to energy generation, to cement production – which tend to be clustered in exactly the parts of the country which the Government wants to focus its attention on.

- This presents some incredible opportunities for these areas to be simultaneously decarbonised and revitalised. Britain is far from the only country which has Net Zero ambitions, but given its pioneering role in international climate policy to date, it is well placed to continue to lead the way in the future markets for clean goods and services. Moving early and capturing market share of industries which will almost certainly make up an enlarged portion of the future global economy could pay dividends in the form of extra economic growth, more jobs, and higher wages for generations to come.

- But the decarbonisation of the economy also poses potential risks to the levelling up agenda. As we have seen in economic transitions of the past, without careful attention, parts of the country can fall behind, unable to keep up with the pace of change. Ensuring the shift to a Net Zero economy does not result in this happening will require considered policies which are sensitive to how they impact different regions of the UK.

- As the UK reshapes its economic model and assumes a leadership role in clean industries, tough decisions will also need to be made to ensure we are not making choices which take us in the opposite direction – making it harder for local areas to transition to a Net Zero future and seize the opportunities of a cleaner economy over the longer term.

- To help British industry in that endeavour, we recommend a series of policy proposals. Some act as carrots, and others as sticks, but taken together, all combine to serve as a cohesive package which should expedite both levelling up and decarbonisation objectives.

- Specifically, we recommend that the UK should:

  - **Support investment into clean research and development.** To promote innovation in clean research and development, the Government must ensure it delivers on its ambitions for R&D investment, especially after having delayed its investment target by two years at the Budget in October last year. It should also look to better regulate emergent industries which could help deliver new innovations to cut greenhouse gases from sectors such as agriculture or in the energy supply. Having these industries – which only look set to grow and grow – establish themselves in the UK will be a boon for workers in sectors which will dwindle as we shift away from fossil fuels.

  - **Make full expensing permanent, ideally with some additional capital allowances for specific 'clean capital' investments.** Many of today's high-carbon industries will still play a critical role in the future British economy, but do so in a zero-carbon manner. Getting them to that point, however, will often require significant investment – for instance in new equipment, machinery, and plants. The Government can make this process cheaper by making 'full expensing' permanent when the current 'super deduction' runs out in 2023, plus legislating for a new 'green super deduction' of 120% for investments in clean technologies.

  - **Extend carbon pricing to more of the economy.** Carbon pricing acts as a constant incentive for businesses to adopt cleaner methods of production – while also stimulating new opportunities for clean businesses. But its application in the UK is currently inconsistent and incomplete. To rectify this, the UK Emissions Trading System should be broadened out to include more of the economy – for instance, bringing agriculture, transport, and heating into its scope.

  - **Adopt a carbon border adjustment mechanism.** A carbon border adjustment mechanism (CBAM) would provide a level of insurance against 'carbon leakage', and give British industries the reassurance they need that taking steps to decarbonise will not mean they are unfairly undercut by cheaper yet dirtier imports. At the next World Trade Organization Ministerial Conference, the Government should work collaboratively with other nations to advance the idea of CBAMs as a way to decarbonise their economies without compromising on competitiveness.

  - **Use carbon revenues to help local areas with the economic transition.** It would be naïve to think that just because the right incentives are in place for markets to drive down emissions, the Net Zero transition will be smooth and painless. Since the climate policies we are proposing could raise substantial amounts of revenue for the Exchequer, it is both sensible and fair that those revenues should be used to support those areas where those carbon policies are likely to impact the most. For example, a new programme of technical universities for areas in need of levelling up could help workers to reskill and equip themselves for the future economy. Carbon revenues could also be channelled into economic development funds for local authorities in those areas where the Net Zero transition will be most challenging.

  - **Reform skills provision.** We recommend that the Government should reform how it administers skills provision by broadening the scope of the Apprenticeship Levy and making it much more flexible. There should be more attention paid to integrating employers' needs for future green skills into the technical education system, including T Levels. The Government should also push ahead with its stated goals to improve

and expand lifelong learning, to ensure nobody loses out from decarbonisation in those industries, such as fossil fuel extraction, which will ultimately be phased out entirely.

- The central argument of this paper is that with pragmatic policy choices, levelling up and decarbonisation can go hand in hand, rather than being mutually exclusive objectives, as some have tried to claim. Our policy recommendations should help hasten the move to a cleaner, more prosperous economy, in which opportunities are more equally shared throughout the country.

I. Introduction

Delivering a more economically balanced country has been one of the Government's main priorities since it was elected in 2019.[1] The creation of the Department for Levelling Up, Housing and Communities, and the imminent release of a Levelling Up White Paper, have only underscored how important an agenda it is to the Prime Minister.[2] Ensuring that people feel levelling up is happening by the time the next general election occurs is also regarded as paramount for the success of the Conservative Party.[3]

> **'Ensuring that people feel levelling up is happening by the time the next general election occurs is regarded as paramount for the success of the Conservative Party'**

Another critically important focus of the Government is the fight against climate change. In 2019, the UK became the first major economy to set a legally binding Net Zero target – whereby any residual emissions of greenhouse gases in 2050 need to be fully offset by sequestration measures.[4] This was followed by commitments to reduce emissions of greenhouse gases by 68% and 78% relative to 1990 levels by 2030 and 2035 respectively.[5] There has also been a flurry of green announcements recently, from the *Ten Point Plan for a Green Industrial Revolution* to the *Net Zero Strategy*.[6,7]

Both of these overarching goals will be stretching ambitions. Economic opportunities are highly varied across the country – with London and the wider South East often head and shoulders above other regions on a variety of metrics. And there are pockets of economic disadvantage in every region which will require even more attention to level up.

On tackling climate change, the picture is somewhat rosier, with the UK already having made impressive progress on shedding emissions from its economy. But as we have pointed out in previous Centre for Policy Studies research, future success will be more challenging, with the Government needing to make tough decisions across a range of different domains.[8] This is because, to a large extent, the low-hanging fruit has already been picked. In the power sector, for example, coal – the bête noir of climate-friendly

1 Boris Johnson, *PM statement in Downing Street: 13 December 2019.* Link.

2 Prime Minister's Office, 10 Downing Street, Ministry of Housing, Communities and Local Government and the Department for Levelling Up, Housing and Communities, *Ambitious plans to drive levelling up agenda.* Link.

3 Public First, *Levelling Up Poll.* Link.

4 Department for Business, Energy and Industrial Strategy, *UK becomes first major economy to pass net zero emissions law.* Link.

5 Department for Business, Energy and Industrial Strategy and Prime Minister's Office, 10 Downing Street, *UK enshrines new law to slash emissions by 78% by 2035.* Link.

6 HM Government, *The Ten Point Plan for a Green Industrial Revolution: Building back better, supporting green jobs, and accelerating our path to net zero.* Link.

7 HM Government, *Net Zero Strategy: Build Back Greener.* Link.

8 Eamonn Ives, *Pricing Pollution Properly: How carbon pricing could decarbonise the UK.* Link.

electricity generation – has been substituted for fossil gas and renewables (the integration of which is markedly easier at lower penetrations).[9] Quick wins have also been made through cheap and easy-to-install insulation, and other energy efficiency measures in our homes.[10]

Welcome as these recent trends have been, Britain must now look to grapple with altogether more difficult questions – such as how to keep our homes warm, the transport network moving, and various industries thriving, not just at a lower cost to the environment, but in an entirely climate neutral manner.

Sitting above these two issues is a debate about how these goals interact. Many of the sectors of the economy where the decarbonisation challenge looks most daunting are concentrated in precisely the sorts of localities the Government wants to level up. If Net Zero and levelling up are treated as two complementary agendas, as they should be, then they will be mutually reinforcing. If not, there is a risk that these two great challenges end up working against each other.

Done properly, the drive for a cleaner economy will bring jobs, growth and attention towards parts of the country where all of those things have been relatively lacking in recent years. But whether this can be achieved will be determined in large part by how the Government proceeds with its policies and decision-making over the next few years – not in terms of reordering the economy from on high, but in terms of setting the right policies and incentives to enable both agendas to flourish. With enough careful thought, we believe it is eminently possible that the transition to a Net Zero economy will be beneficial not just for the whole of the nation, but in particular for those areas in greatest need of levelling up.

9 Department for Business, *Energy and Industrial Strategy, Energy trends: UK electricity: Fuel used in electricity generation and electricity supplied (ET 5.1 – quarterly).* Link.

10 Department for Business, Energy and Industrial Strategy, *Energy consumption in the UK 2020: ECUK 2020: Consumption data tables.* Link.

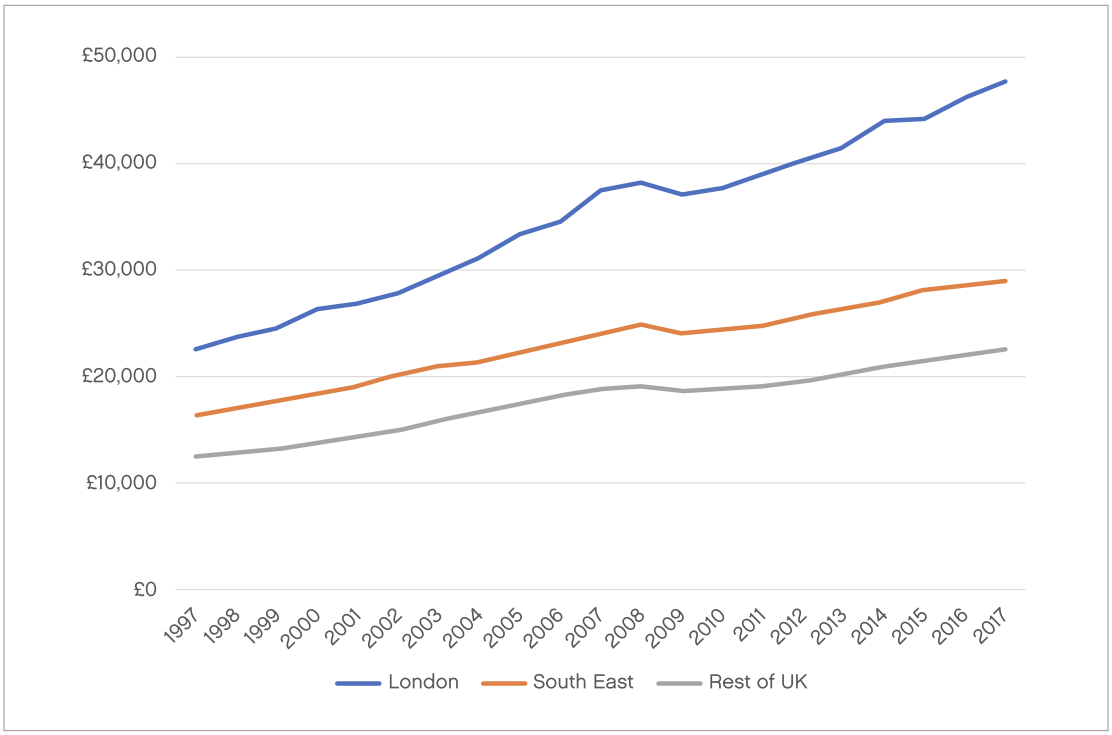
II. Levelling up and cleaning up – current context

Levelling up

Levelling up can mean different things to different people, but perhaps the most common interpretation is that it refers to equalising economic opportunity across the country.[11] All manner of research clearly shows that there is currently a striking imbalance – with London, and to a lesser extent the wider South East, often head and shoulders above other regions of the UK.

As an illustration of this, all of the bottom 30 NUTS3 subregions for Gross Value Added (GVA) per capita can be found outside of London and the South East, whereas over half (16) of the top 30 can be found within them.[12] In other words, the most economically productive areas of the country are heavily concentrated in one corner of the UK. Many areas of the North and Midlands have been losing out for decades on jobs and investment.[13]

Chart 1. GVA per capita, by region



Source: Authors' analysis of Office for National Statistics, Regional gross value added (income approach). Link.

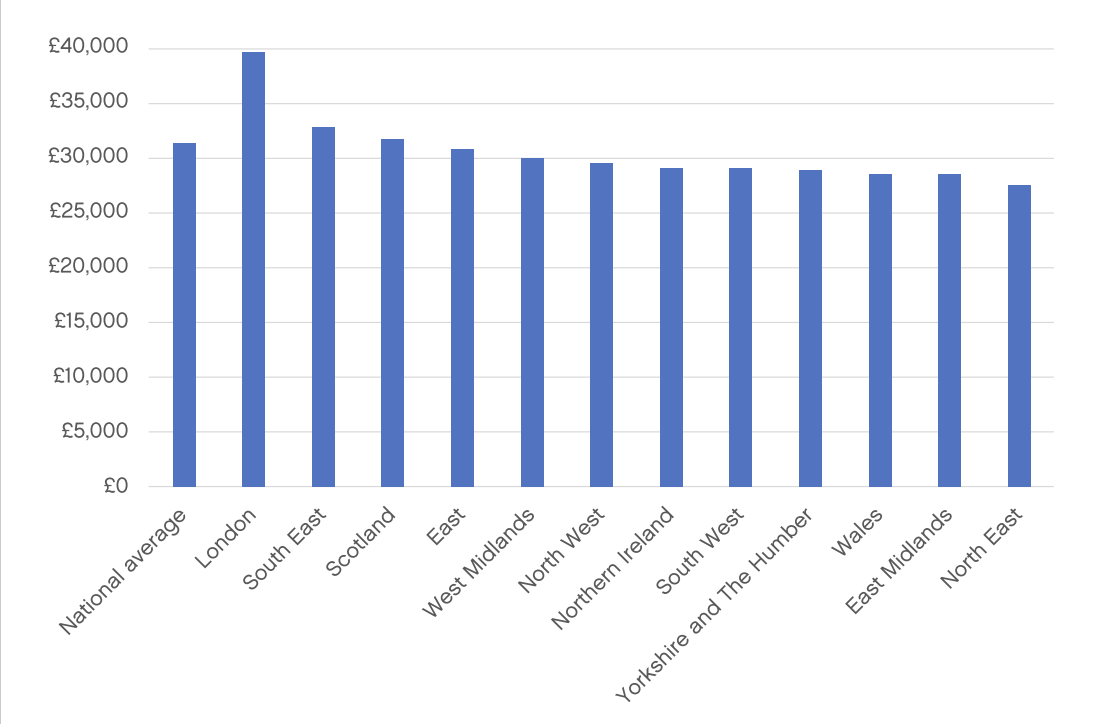
11 Housing, Communities and Local Government Committee, *Oral evidence: Work of the Department 2021, HC 818.* Link.

12 Office for National Statistics, *Regional gross value added (balanced) per head and income components.* Link.

13 Robert Zymek and Ben Jones, *UK Regional Productivity Differences: An Evidence Review, Industrial Strategy Council, February 2020.* Link.

This all feeds through into a materially worse standard of living for people in these areas, as well-paid, high-quality employment is concentrated in the Greater South East. Average annual salaries in London are nearly £40,000, while across all regions of the North of England average earnings are less than £30,000 a year.

Chart 2. Median gross annual earnings, by region (2021)

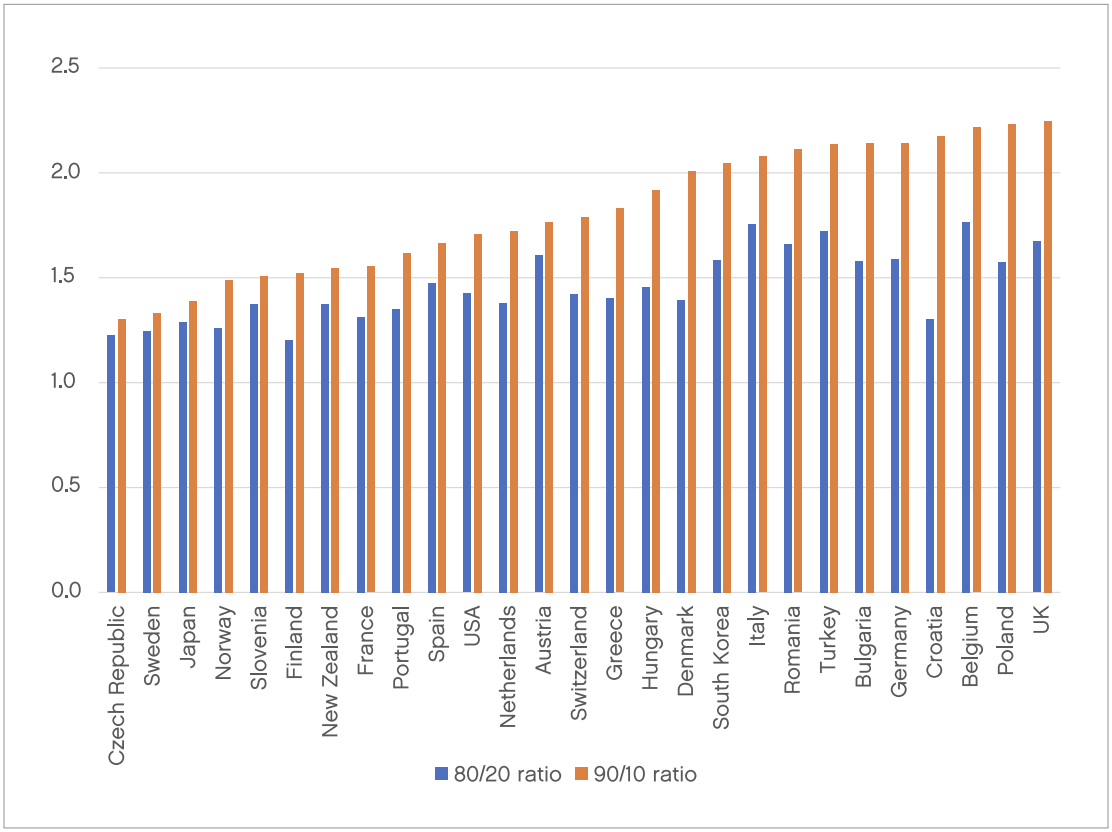


Source: Office for National Statistics, Annual Survey of Hours and Earnings time series of selected estimates. Link.

Partly this is the consequence of the natural tendency of economic activity to agglomerate and cluster. But as the Centre for Policy Studies set out in its previous report *A Rising Tide*, this tendency has been exacerbated in the UK by decades of government decisions which privileged richer areas.[14] As a result the UK is, on some measures, the most regionally unequal country in the whole of the OECD. For example, when local areas in each country are ranked from least to most productive based on per capita GDP, the ratio between the regions at the 10th percentile and the 90th percentile is highest in the UK.

14 Nick King and Eamonn Ives, *A Rising Tide: Levelling up left-behind Britain.* Link.

Chart 3. Ratio of GDP per capita between regions at different percentiles, by country



Source: Alex Davenport and Ben Zaranko, Levelling up: where and how? Link.

This tendency has also been exacerbated by the transition from a manufacturing to a services-based economy. In the last 30 years, the proportion of UK employment made up by the manufacturing sector has declined by half, from around 15% of all jobs to 7.6%. Jobs in coal mining have seen a dramatic decline of 98%.[15] In steel, on the narrow definition of steel industry jobs (in other words, not including the processing of steel) more than 300,000 people were employed in the industry in the 1970s, falling to 44,000 by 1991 and only around 23,000 today.[16] And these and other sectors were obviously far more important for areas such as the North and the Midlands.

We are not, of course, going to see a renaissance in the coal industry – but as the Prime Minister said in his recent speech on the levelling up agenda, a key part of ensuring that geography does not turn out to be destiny is strengthening our regions and addressing areas of deprivation, by ensuring people have access to good jobs and opportunities.[17]

This paper argues that, for the communities that rely on such industries, there is a real opportunity for growth via investment in the green economy. The UK is well placed to take advantage of the economic opportunities which will spring from the drive to a Net Zero future – a transition which every nation and industry will have to face.

15 Nomis, *Official Labour Market Statistics, ONS.* Link.

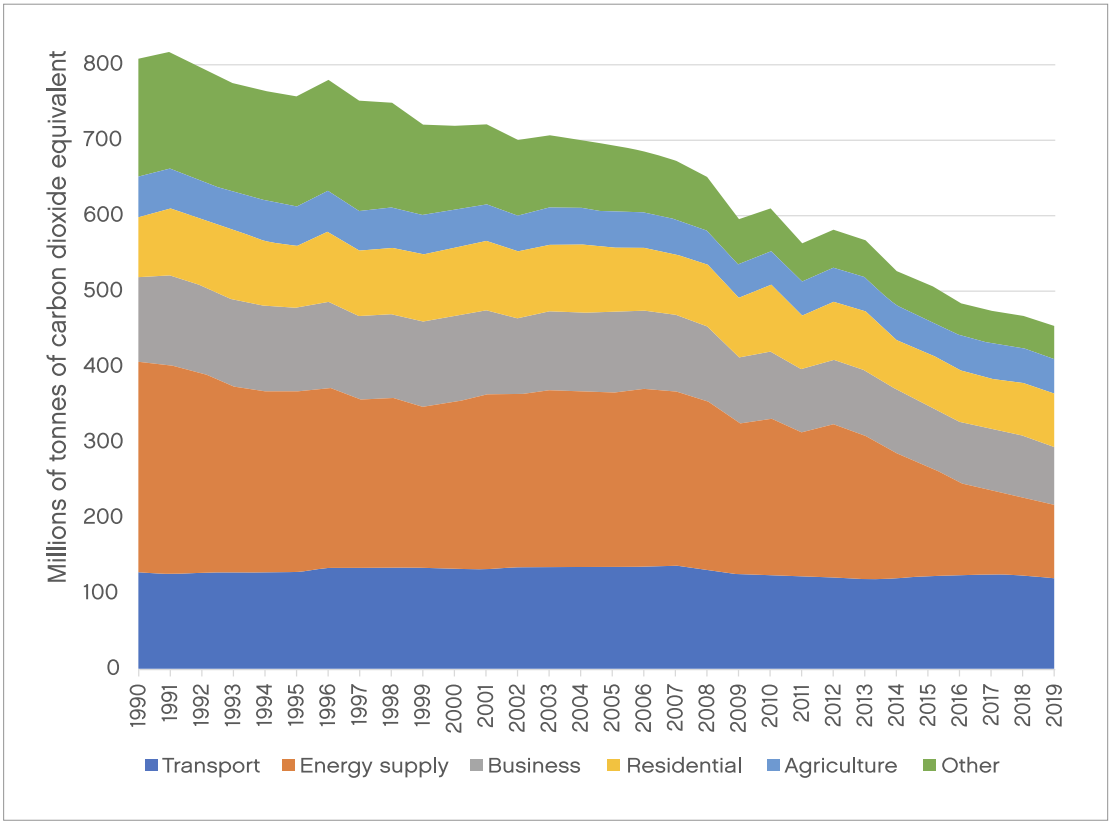
16 House of Commons Library, *UK steel industry: statistics and policy.* Link.

17 Boris Johnson, *The Prime Minister's Levelling Up speech: 15 July 2021.* Link.

Cleaning up

In contrast to its track record in addressing geographical disparities, the UK has been extremely successful in terms of cutting emissions from its economy in recent decades, with overall greenhouse gas emissions down by 44% from 1990.[18] This rapid rate of cleaning up has been achieved while the economy has grown by 78%.[19]

Chart 4. UK domestic greenhouse gas emissions, by sector



Source: Authors' analysis of Department for Business, Energy and Industrial Strategy, Final UK greenhouse gas emissions national statistics: 1990 to 2019. Link.[20]

Yet as impressive as the reductions in emissions have been, there are good reasons to believe that future decarbonisation will not be as easily achieved. This is because, to a significant degree, the decarbonisation which has taken place since 1990 has largely come through reasonably quick wins in cleaning up electricity generation and niche sectors of the economy – such as landfill and certain industrial processes, as well as better stewardship of the natural environment.[21,22] In fact, the decarbonisation of the energy supply (which mainly refers to emissions associated with power generation, plus those from fossil fuel extraction and refining) accounts for more than half of the emissions reductions in the UK over the last three decades.[23]

18 Department for Business, Energy and Industrial Strategy, *Final greenhouse gas emissions national statistics: 1990 to 2019.* Link.

19 World Bank, *GDP (constant 2010 US$) - United Kingdom.* Link.

20 Other includes emissions from Waste management, Industrial processes, Public, and Land use, land use change, and forestry (LULUCF).

21 Department for Business, Energy and Industrial Strategy, *Final greenhouse gas emissions national statistics: 1990 to 2019.* Link.

22 Eamonn Ives, *Pricing Pollution Properly: How carbon pricing could decarbonise the UK.* Link.

23 Ibid.

A significant amount of the rest is accounted for by reductions in industrial combustion – though this has chiefly been driven by the closure, rather than the decarbonisation, of industrial sites.[24] For example, industrial closures are the main factor in explaining why end-user carbon emissions fell more in the North East between 2005 and 2019 than any other region.[25]

Some of these 'saved' emissions have been genuinely forgone, as we have shifted towards a more services-oriented economy, typified by intangible capital, as opposed to its resource-intensive, tangible counterpart.[26] But some will have just been offshored – with the emissions-intensive goods we used to produce simply imported back into the UK, doing nothing to help the global climate.

'A step up in ambition counts for little if policy does not follow suit. It is therefore incumbent upon the Government to consider what more it could be doing to not only ensure that emissions cuts continue to be made, but also that the overall policy landscape is responsive to the new sorts of challenges with which we are faced'

What is particularly striking is that very little decarbonisation has come through individuals deliberately changing their behaviour – for example, consciously reducing the amount they fly, or shifting to more sustainable diets. Rather, the majority of cleaning up has taken place 'behind the scenes', with little awareness or engagement from the general public.[27] To refer back to the decarbonisation of the electricity grid, people can still reliably switch on their lights – but the power they use to do so is far cleaner than it was even just a few years ago.

Future emissions reductions will also in all likelihood get harder as residual emissions per sector get closer to zero. This is because while it might be possible to shave emissions off certain industrial processes through efficiency gains or switching to marginally cleaner fossil fuels, transitioning to completely zero-emission methods is another question completely. Many factories and assembly lines will need to be entirely retooled to be Net Zero compliant, which will probably be significantly more disruptive. Sequestration technologies are also not yet advanced enough, or rather cost-effective enough, to offset or claw back emissions, although there is scope for considerable progress on this front.

The Government was nevertheless right to step up its ambition to reach Net Zero greenhouse emissions by 2050, given the new scientific understanding which had emerged since the UK set its first decarbonisation objective of an 80% reduction on 1990 levels by 2050 through the Climate Change Act 2008.[28,29] But a step up in ambition counts for little if policy does not follow suit. It is therefore incumbent upon the Government to consider what more it could be doing to not only ensure that emissions cuts continue to be made, but also that the overall policy landscape is responsive to the new sorts of challenges with which we are faced.

24 Lukas Hardt et al., *Untangling the drivers of energy reduction in the UK productive sectors: efficiency or offshoring?* Link.

25 Department for Business, Energy and Industrial Strategy, *UK local authority and regional carbon dioxide emissions national statistics: 2005 to 2019.* Link.

26 Nicholas Stern, Chunping Xie and Dimitri Zenghelis, *Strong, sustainable and inclusive growth in a new era for China: Paper 2: Valuing and investing in physical, human, natural and social capital in the 14th Plan.* Link.

27 Brett Meyer and Tim Lord, *Planes, Homes and Automobiles: The Role of Behaviour Change in Delivering Net Zero.* Link.

28 Climate Change Act 2008, c. 27. Link.

29 Committee on Climate Change, *Net Zero - The UK's contribution to stopping global warming.* Link.

III. Levelling up and cleaning up – where and what

In the bid to reach Net Zero and its earlier climate goals, parts of the UK economy will have to confront some big challenges. Many industries will need to decarbonise by switching to cleaner processes which are less reliant on fossil fuels. For these industries, there must be a clear and viable path to help them decarbonise – whether that is by electrifying production methods, or using clean hydrogen, or sequestering any emissions with carbon capture technology before they enter the atmosphere.

'Overall, around 85% of all UK emissions come from sectors which make up only around 15% of UK employment'

It must also be recognised that a select handful of industries will almost inevitably close down – thanks to a mixture of policy signals from Government, but also due to changing patterns of market demand. Coal mining, for instance, realistically shows little promise of being able to decarbonise, because its end use necessarily involves such high emissions as to be incompatible with achieving Net Zero. Workers in those industries will therefore need alternative opportunities to move into.

For statistical purposes, the Office for National Statistics (ONS) groups economic activity in Britain into 129 distinct subdivisions known as 'Standard Industrial Classifications' (SIC). These subdivisions are granular and varied, and range from businesses involved in 'textiles' to 'veterinary services' to 'mining of coal and lignite'. Figures are also available which show each SIC subdivision's contribution to greenhouse gas emissions, the most recent data for which comes from 2019.[30]

Using these data, we can see that there are a handful of industrial sectors which contribute a hugely disproportionate amount towards emissions. In percentage terms, the average contribution is 0.78% per SIC subdivision – and yet 11 sectors contribute at least three times that proportion, and some far more. These include 'products of agriculture, hunting and related services' (11.8% of emissions), 'electricity production – gas' (11.3%), 'air transport services' (10.6%), and 'waste collection, treatment and disposal services; materials recovery services' (5.6%).

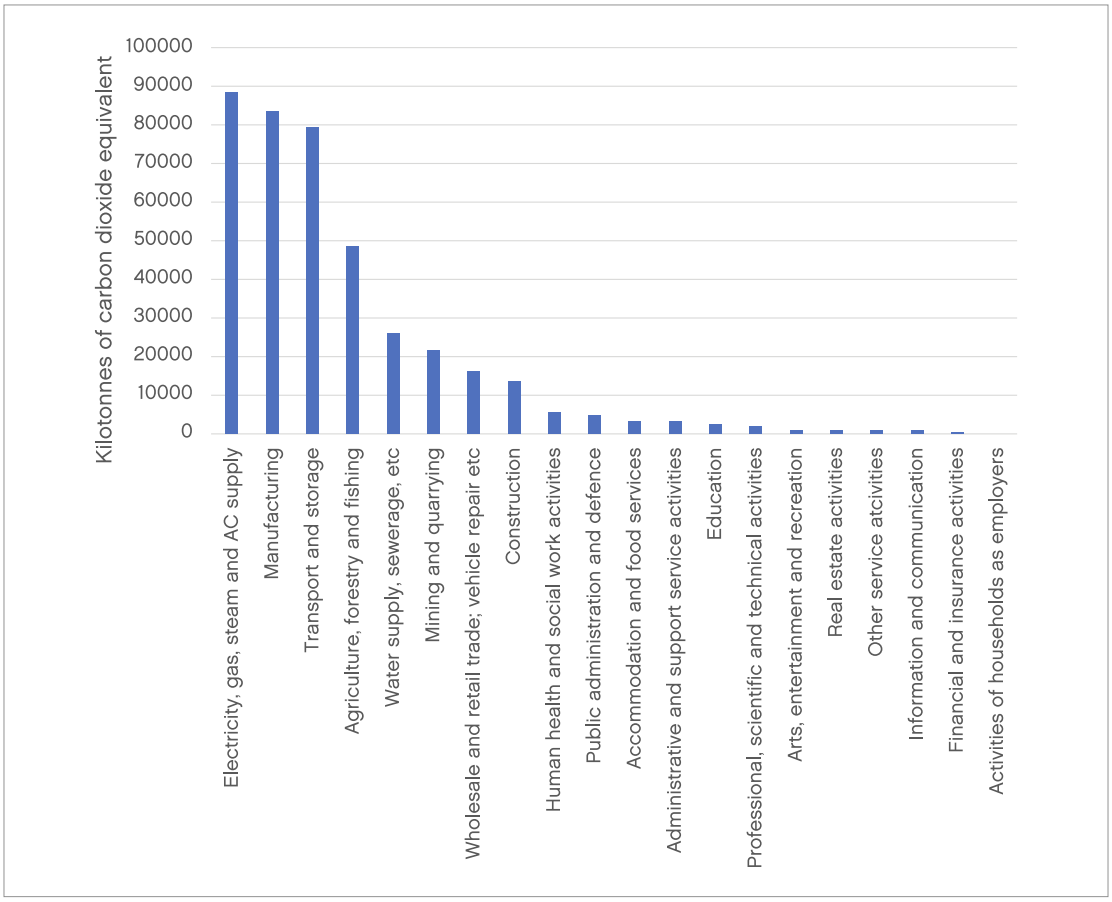
The ONS also group these industrial subdivisions into wider 'industrial sections'. We can see from the latest data that the most emitting industrial sections make up a significant proportion of overall emissions. The top three (excluding emissions attributed to consumer expenditure) are 'electricity, gas, steam and air conditioning supply' (16%), 'manufacturing' (15%) and 'transport and storage' (14%). These make up almost half of total greenhouse gas emissions.[31] Overall, around 85% of all UK emissions come from sectors which make up only around 15% of UK employment.[32]

30 Office for National Statistics, *Atmospheric emissions: greenhouse gases by industry and gas.* Link.

31 Ibid.

32 Chrystalla Kapetaniou and Charles McIvor, *Going Green: preparing the UK workforce for the transition to a net zero economy.* Link.

Chart 5. Greenhouse gas emissions, by industrial sector (2019)



Source: Authors' analysis of Official for National Statistics, Atmospheric emissions: greenhouse gases by industry and gas. Link.[33]

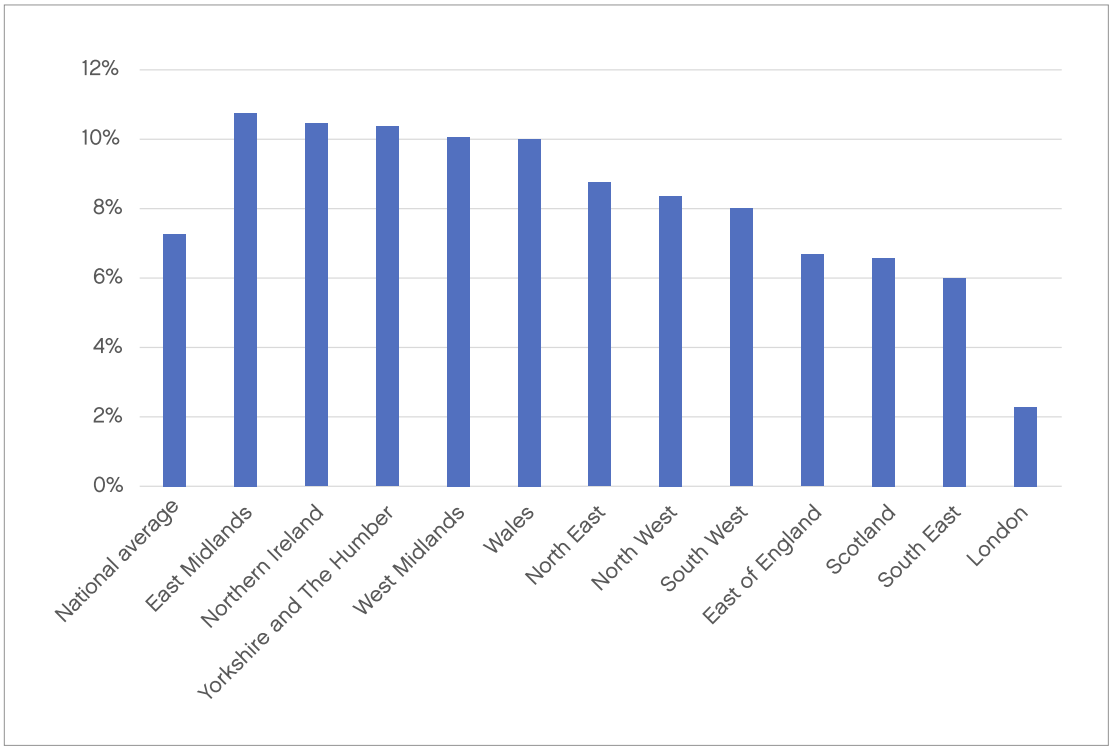
This presents a policy challenge. We do not want to punish firms in these sectors, make their lives harder or drive them overseas. But without making progress in these particular areas, Britain will not reach Net Zero. And while Net Zero will entail economy-wide decarbonisation, targeted emissions reductions in particular sectors could bring big dividends.

This scenario has another interesting overlap with the levelling up mission, too. This is because many of the most carbon-intensive industries happen to be found in parts of the country which the Government is keen to level up. In fact, industry in general, including light industry, tends to be more concentrated outside of London and the South East. The decarbonisation of these sectors could provide many opportunities for new investment and long-term jobs in local areas most in need of levelling up.

Reflecting the regional disparities illustrated in the previous chapter, the sectoral profile of employment across regions varies greatly. London's economy is heavily skewed towards the services sector, particularly professional services, finance and IT – in other words, sectors which have been the main drivers of economic growth for the UK in recent decades. In regions outside the South East, other sources of employment are more common. For example, the manufacturing sector is still a significant part of many regional economies, making up more than one in 10 jobs in the East Midlands, West Midlands, and Yorkshire and the Humber. The regions with the lowest proportion of jobs in manufacturing are London and the South East, with the sector accounting for less than one in 40 jobs in London.

33 Excludes consumer expenditure.

Chart 6. Proportion of jobs in manufacturing, by region (September 2021)

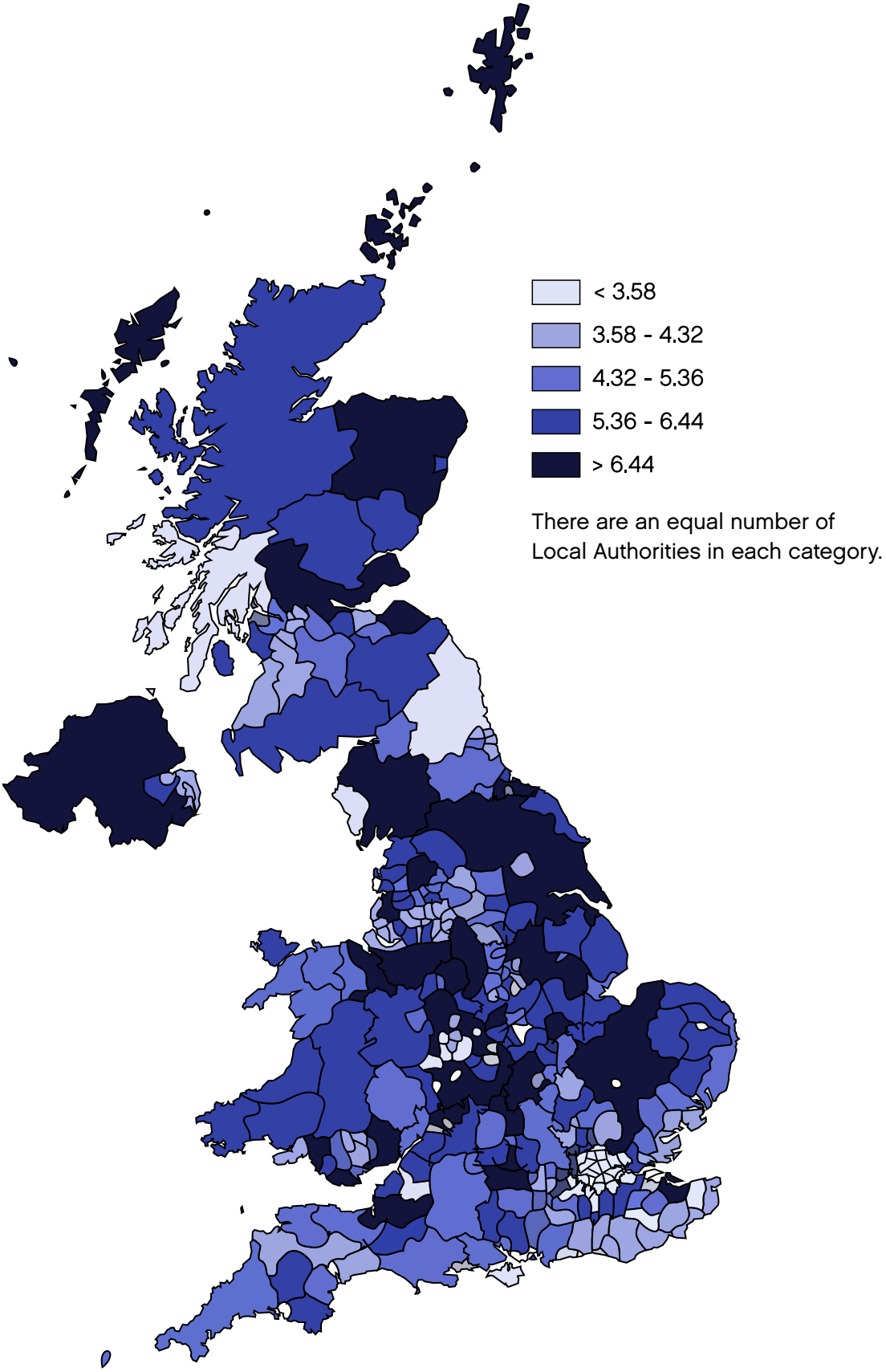


Source: Authors' analysis of Office for National Statistics, Workforce jobs by region and industry, September 2021. Link.

Due to the economy of London and the South East being largely services-based, these regions have relatively low carbon per capita emissions relative to the rest of the UK. Most of the local authorities with the highest per capita carbon emissions are located in other regions of England – especially the North and Midlands, as the map below illustrates. When specifically looking at industrial emissions, London's per capita emissions are by far the lowest of any region.[34]

34 Department for Business, Energy and Industrial Strategy, *UK local authority and regional carbon dioxide emissions national statistics: 2005 to 2019.* Link.

Map. Net emissions by tonnes of CO_2 per capita by local authority, 2019



Source: Department for Business, Energy and Industrial Strategy, UK local authority and regional carbon dioxide emissions national statistics: 2005 to 2019. Link.

It is important to mention here that the UK's emissions reduction targets are currently based on UK-produced emissions, and do not factor in consumption emissions – which include emissions from imported goods. This means there is a risk that the UK takes the short-sighted decision to allow some UK industries – and their associated jobs and GVA – to fail and move overseas, and chalk this up as a win for meeting Net Zero.

'The fact that the geographic focus of both the levelling up agenda and Net Zero overlap significantly should be seen as an opportunity for the Government – with many of these areas well placed to benefit from well-paid, high-skilled green jobs in the future, if the right policies are in place to support that transition'

Not only would that simply amount to offshoring our emissions, but it would cause enormous economic damage in some communities. It would also throw away the opportunity to get ahead in the global market for clean products which could provide thousands of good jobs, particularly in areas of the North and Midlands.

These are precisely the sorts of skilled, high-quality jobs which the Government should be seeking to promote in these areas, as part of its levelling up agenda. The average steel industry salary is around a third higher than the average UK salary, and even higher when compared to average earnings in the sorts of areas we are talking about.[35]

All of this means that a disproportionate amount of the decarbonisation process in the UK will be heavily focused on precisely those areas which the Government wants to level up. This presents some exciting opportunities for some areas and industries to be simultaneously decarbonised and revitalised. This is not simply hopeful thinking or speculation – PwC's 'Green Jobs Barometer' already shows that green jobs make up a lower proportion of jobs advertised in London than any other region, while regions in the North are among the highest.[36] The fact that the geographic focus of both the levelling up agenda and Net Zero overlap significantly should be seen as an opportunity for the Government – with many of these areas well placed to benefit from well-paid, high-skilled green jobs in the future, if the right policies are in place to support that transition.

35 MakeUK, *UK Steel Key Statistics Guide 2021.* Link.

36 PwC, *Green Jobs Barometer.* Link.

Case study – Steel industry in Scunthorpe

The iron and steel industry in Scunthorpe dates back to the mid-19th century. While significantly reduced from its heyday, around 4,000 people in Scunthorpe are still employed in the steelworks.[37] Other major sites in the UK include Port Talbot, with a further 4,000 workers. Overall, the steel industry in the UK employs 32,500 people and supports a further 40,000 or so jobs through its supply chains.[38] The industry is worth around £2 billion annually to the UK economy.[39]

'Overall, the Humberside industrial cluster emits far more CO_2 than any other in the UK, pumping out 12.4 million tonnes of CO_2 each year'

The British Steel works at Scunthorpe is an integrated site where a series of different processes take place to prepare the raw materials, make iron, and eventually produce and cast high-quality steel – and virtually all of these steps require incredibly high temperatures. There are coke ovens onsite, where coal is heated at high temperatures for extended periods (18 hours) to produce coke. The four blast furnaces then use the coke to extract iron from iron ore, at temperatures of 1,000C. The liquid iron is then made into steel, again requiring huge amounts of heat and energy, before the metal is cast. British Steel produce a range of rail products, including rails and railway sleepers. Network Rail, which manages and maintains Britain's railway infrastructure, sources 95% of its rails from British Steel.[40] Liberty Steel also operates the UK's largest hot rolled steel manufacturing site in Scunthorpe, producing steel bar products which are used extensively in the construction industry.

'Network Rail, which manages and maintains Britain's railway infrastructure, sources 95% of its rails from British Steel'

More than 80% of all UK steel is currently produced using blast furnaces in Scunthorpe (British Steel) and Port Talbot (Tata Steel).[41] According to the Department for Business, Energy and Industrial Strategy (BEIS), 95% of all CO_2 emissions from the UK's iron and steel industry – and 15% of total UK industrial emissions – come from just these two sites.[42] Overall, the Humberside industrial cluster emits far more CO_2 than any other in the UK, pumping out 12.4 million tonnes of CO_2 each year.[43] The decarbonisation of steel production at Scunthorpe alone will be an incredibly important part of the drive to Net Zero. It could also be a fantastic opportunity for new jobs and growth in the area, if UK steel can steal a march on its international competitors in the market for green steel. This process will need to include methods for decarbonising the production of virgin steel as well as the established methods of processing scrap using electric arc furnaces. If the only green steel is recycled steel, it will be limited by both the supply of scrap and the potentially lower quality compared to virgin steel, restricting the scope for its use. Decarbonised virgin steel production at scale will require further significant work in research and innovation.

37 House of Commons Library, *UK steel industry: statistics and policy.* Link.
38 HM Government, *Net Zero Strategy: Build Back Greener.* Link.
39 Office for National Statistics, *GDP output approach – low level aggregates.* Link.
40 British Steel, *British Steel wins major Network Rail contract extension.* Link.
41 MakeUK, *UK Steel Key Statistics Guide 2021.* Link.
42 HM Government, *Industrial Decarbonisation Strategy.* Link.
43 Department for Business, Energy and Industrial Strategy, *What is the Industrial Clusters mission?* Link.

At the moment, though, as UK Steel stated in their evidence to the Committee on Climate Change: 'Currently, there is no demand for low-emission steel, and steel producers, therefore, cannot supply higher-cost, lower emission steel, as they compete on price rather than carbon'.[44] This will be a major barrier to Britain's decarbonisation objectives, unless the cost of carbon emissions as a negative externality are effectively integrated into the price of steel, including imported steel.

> **'Currently, there is no demand for low-emission steel. Steel producers therefore cannot supply higher-cost, lower emission steel, as they compete on price rather than carbon'**

Operations are relatively geographically concentrated in this part of the country, and this, coupled with its proximity to the North Sea, means it could be well placed to decarbonise with a mixture of carbon capture, usage and storage (CCUS) and clean hydrogen energy. This is the aim of the Zero Carbon Humber Partnership of 12 major companies, which aims to create the UK's first Net Zero industrial cluster.

44 UK Steel, *Call for evidence on the Sixth Carbon Budget.* Link.

Case study – Ceramics industry in Stoke

The Staffordshire potteries have become synonymous with the area, and Stoke-on-Trent in particular has a strong tradition in the industry. Stoke hosts a number of major ceramics manufacturers, such as Portmeirion, Churchill China and Steelite. The British Ceramics Confederation (BCC) is headquartered in the city, representing 90% of overall manufacturing capacity in the sector, with its members generating annual sales of £1.6 billion in 2019.[45] Overall, around 22,000 people are employed in the UK ceramics industry – 7,000 of them in Stoke alone.[46]

Most ceramics are fired at very high temperatures, typically over 1,000C. At the moment, 85% of energy used in the ceramics sector is natural gas.[47] There is potential for processes to be decarbonised through a switch to hydrogen. With future innovation, there may also be potential for electrification to play a role, though at the moment a switch from gas to electricity (where it is possible to do so) can cost a producer around five times more in energy costs.

Unlike the steel industry, ceramics is relatively dispersed, with a larger number of smaller factories. Stoke and its environs are not within one of the hydrogen or CCUS clusters – in fact, almost all of the manufacturing sites operated by BCC members are 'off-cluster'.[48] This means manufacturers are going to find it much more difficult to access CCUS or low-carbon energy. The industry recently called for the Government to support the establishment of a Ceramics Sustainability Hub, based in Stoke.

> **'With a focus on innovation and investment, Stoke-on-Trent can look forward to a prosperous future as a world centre for advanced and high-quality ceramics manufacturing'**

Research and development efforts, for example via the Government's Industrial Energy Transformation Fund, will have to play a crucial role in decarbonising industry in areas such as Stoke. For example, finding ways to facilitate a switch to hydrogen fuel will require extensive innovation (and capital expenditure) to make this cost-effective, as well as work on systems changes, such as the feasibility of repurposing the gas grid. But with a focus on innovation and investment, the area can look forward to a prosperous future as a world centre for advanced and high-quality ceramics manufacturing, with companies such as Lucideon showing the potential for new high-end, high-skill jobs based in Stoke.

45 British Ceramic Confederation, *Ceramic Sector Representation for Budget 2021*. Link.
46 Jonny Williamson, *The Manufacturer: British Ceramics*. Link.
47 British Ceramic Confederation, *Committee on Climate Change: Call for evidence on the Sixth Carbon Budget*. Link.
48 British Ceramics Confederation, *Ceramics sector calls for support to meet challenge of Net Zero*. Link.

Case study – Coal mining in Whitehaven

Whitehaven is a town on the west coast of Cumbria. For much of its history, coal mining has been a lucrative source of income, and records of coal mining in the area can be traced back to the 13th century. Today, no mining takes place in Whitehaven, although there are plans to develop a new mine nearby known as the Woodhouse Colliery – which would be the first new deep coal mine in the UK for 30 years.[49]

The plans for Woodhouse Colliery have been extremely contentious. Supporters of the mine argue that opening it will provide 500 jobs for the area.[50] Opponents, meanwhile, have stated that any possible economic benefits would only be temporary, given that initial approval for the mine was made on the basis it will have to close in 2049.[51]

It is not our place to comment on individual projects and the exact form the economy should take. However, the logic behind the colliery does appear dubious – from a levelling up and environmental perspective, and in terms of the wider political implications.

'At present, the economy is experiencing a near unprecedented level of turbulence – thanks to exogenous shocks such as the coronavirus pandemic and Brexit, but also the need to pivot towards a cleaner future'

Some have made the case that Britain will still need coal for some years to come, to power industrial processes such as steel-making until they can transition to lower-carbon methods, as outlined above. And if we are going to use coal, why not use British coal – especially if the emissions from it are lower than from other sources? However, with the vast majority of the new mine's production due to be exported, others argue it will simply act to reduce international coking coal prices through increased supply.

While the potential for new jobs and investment into areas should be welcomed, if these are necessarily time limited, and due to expire in less than 30 years, it is questionable whether this is the sort of sustainable, long-term growth which many might reasonably expect the levelling up agenda to deliver. Indeed, it would not be unthinkable that the new opportunities which will be created in Net Zero industries in the coming years – such as renewable energy, new nuclear, or CCUS – will dwarf those potentially on offer with the mine, and can be a far more permanent fixture for the Whitehaven economy. The pattern so far has also been of low-carbon energy sources becoming cost-competitive far more rapidly than predicted, suggesting that the time horizon for coal may be shorter than current estimates.

As we outline below, a focus on technical education, training and skills, with particular regard to the needs of the future green economy, will be incredibly important for helping people in an area such as Whitehaven to benefit from sustainable new jobs and industries.

49 Chris Tighe, *UK's first deep coal mine in over 30 years given go-ahead in Cumbria.* Link.

50 Andy Bounds and Jim Pickard, *UK coal mine plan pits local needs against global green ambitions.* Link.

51 Neil Hulme, *Warning of damage to UK leadership on climate change from new colliery.* Link.

At present, the economy is experiencing a near unprecedented level of turbulence – thanks to exogenous shocks such as the coronavirus pandemic and Brexit, but also the need to pivot towards a cleaner future. To meet our climate goals, we will need to leverage the power of markets and take the private sector along with us – and for that to happen, investors need certainty. Approving a new coal mine, even for coking coal, risks sending the wrong messages to business and investors, which only makes the economic transition more challenging for local communities such as Whitehaven.

'To meet our climate goals, we will need to leverage the power of markets and take the private sector along with us – and for that to happen, investors need certainty'

On the climate side of the equation, opening up a new coal mine quite obviously clashes with the ambition to decarbonise. It would also contravene the International Energy Agency's call last year for no new coal mines (or extensions to existing ones) to be approved,[52] and perhaps most damningly, it would put the UK in a strange position of having just been the host of COP26, with a slogan for the world to take action specifically on coal, while doing the exact opposite at home.[53]

52 International Energy Agency, *Net Zero by 2050: A Roadmap for the Global Energy Sector.* Link.

53 Boris Johnson, *PM speech at the UN General Assembly: 22 September 2021.* Link.

Case study - Oil and gas sector in Aberdeen

Aberdeen has been considered as the oil capital of Europe since it first struck oil in the mid-20th century. However, oil is also one of the UK's most polluting sectors, with oil and gas extraction from the UK Continental Shelf being responsible for around 3.5% of the UK's greenhouse gas emissions.[54]

In terms of employment, the oil and gas sector directly supports an estimated 23,500 people in Aberdeen – or 10.3% of the workforce – with many more indirectly employed.[55] In the transition towards a Net Zero economy, much less energy will need to come from fossil fuels such as oil and gas. But with the right policy frameworks in place, many of these jobs could survive, and there would be additional opportunities for new jobs in growing clean industries. Fossil fuels will be replaced by technologies such as offshore wind, which provides a natural segue for oil and gas workers to move into. Meanwhile, new opportunities in, for example, CCUS potentially lie in wait. Due to the geology of the North Sea, these opportunities could accrue disproportionately in places such as Aberdeen – and elsewhere on Britian's eastern coastline.

There is good reason to believe that much of the existing workforce should be able to pivot towards a cleaner future, as many of the skills needed to work in renewable energy are similar to the jobs that they carry out now. *Indeed, the UK Offshore Energy Workforce Transferability Review* found that more than 90% of those currently working in the oil and gas sector have 'medium to high skills transferability' which will allow them to switch to roles.[56] To underline the switch from traditional oil and gas businesses into renewables, the Review also predicted that by 2030 the majority of UK offshore workers would be involved in the delivery of low-carbon energy.[57]

'The UK Offshore Energy Workforce Transferability Review found that more than 90% of those currently working in the oil and gas sector have 'medium to high skills transferability' which will allow them to switch to roles'

This is not to say that the Government should rest on its laurels, however. In many high-carbon sectors, not least oil and gas, workers will need to reskill, even in those cases where they are broadly staying in the same industry. Employers should be expected to shoulder some of this burden, but the Government certainly has a role to play in terms of its policy offering on skills, and how employers can access funds, for instance, through the Apprenticeship Levy. To its credit, the Government has already given considerable thought here – a lot of which can be evidenced by the *North Sea Transition Deal*, which 'seeks to maximise the advantages for the UK's oil and gas sector from the global shift to clean growth'.[58] The Government should keep a close eye on how successfully this Deal is being delivered upon, to ensure that both

54 Department for Business Energy and Industrial Strategy and the Office of the Secretary of State for Scotland, *North Sea deal to protect jobs in green energy transition*. Link.

55 Scots Jobs, *Aberdeen The Scottish Capital Of Growth & Employment*. Link.

56 Robert Gordon University, *The UK Offshore Energy Workforce Transferability Review*. Link.

57 Ibid.

58 Department for Business, Energy and Industrial Strategy, *North Sea Transition Deal*. Link.

businesses and workers in the sector are able to smoothly move from the energy industries of the past, into the energy industries of the future. In the specific case of the North Sea industry, the very significant potential of CCUS also strengthens the case, as outlined below, for ensuring polluters are accounting for their emissions, such as through trading of carbon credits, so that pioneering investors know they have a sympathetic policy environment.

'If we are to achieve our Net Zero targets, these carbon-intensive industries must decarbonise quickly. And more broadly, there are opportunities for low-carbon innovation to boost manufacturing and other sectors'

If we are to achieve our Net Zero targets, these carbon-intensive industries must decarbonise quickly. And more broadly, there are opportunities for low-carbon innovation to boost manufacturing and other sectors.

There therefore needs to be a clear and viable path to 'clean up' these sectors (for example, moving from fossil fuelled processes to ones based on electricity or clean fuels); to promote green innovation within them; and for alternative industries to fill the jobs gap for those sectors which cannot realistically be decarbonised (for example, coal mining).

IV. Policies for a cleaner, more levelled up economy

To successfully level up the economy while cutting greenhouse gas emissions, new policies will be required. The Government has already made a good start on this front, with a flurry of white papers and strategies having been released, including the detailed *Net Zero Strategy* published in October, and the *Industrial Decarbonisation Strategy* earlier this year. Soon, a Levelling Up White Paper will be published.[59]

> **'Our proposals to level up and decarbonise Britain seek to vest power in private sector businesses to effect meaningful change while minimising economic costs, and maximising the potential for job creation, growth, and prosperity'**

Many of these announcements have been welcome and the direction of travel is encouraging. However, there are still major areas where the policy substance does not match the scale of ambition needed, or where the details of the Government's approach are yet to be ironed out. For example, the Government has stated its belief that carbon pricing is an 'effective tool' for decarbonisation,[60] but carbon pricing across the UK economy remains patchy and disjointed,[61] and other than a pending consultation of the UK ETS there has been little detail as to how this will be addressed.[62]

In this chapter, we set out various policy recommendations which we believe can complement the Government's existing approach to sustainably level up the country. The recommendations we make are both credible and practical, and seek to work with the grain of the market, rather than unduly bend it to their will. Importantly, the proposals seek to vest power in private sector businesses to effect meaningful change while minimising economic costs, and maximising the potential for jobs creation, growth, and prosperity.

Before introducing the policies, however, it is important to first set out our principles for levelling up while cleaning up the British economy. Broadly speaking, two guiding principles underpin our recommendations. These are:

- **A preference for market-based policy making**

The market economy has delivered unprecedented prosperity across multiple generations. Through the way in which it fosters healthy competition, it has lifted billions from poverty and made previously unimaginable technologies and conveniences a fact of everyday life.

59 Prime Minister's Office, 10 Downing Street and the Cabinet Office, *Government to publish Levelling Up White Paper.* Link.

60 HM Government, *Net Zero Strategy: Build Back Greener.* Link.

61 George Day and Danial Sturge, *Rethinking Decarbonisation Incentives: Future Carbon Policy for Clean Growth.* Link.

62 Department for Business, Energy and Industrial Strategy, *UK Emissions Trading Scheme free allocation review: call for evidence.* Link.

While often climate policy and regional policy have been seen as antithetical to market-based economics, policies which harness market forces, either by using price signals, or creating new markets entirely, have a proven track record of delivering admirable results.

Though the recent attention from Government on levelling up and cleaning up the economy is of course welcome, we would caution against the mindset which implies 'government knows best' with regards to favouring certain technologies or projects. Adopting as agnostic a stance as possible – which focuses on outcomes rather than inputs – should give the Government a better shot at delivering on its goals.

- **Acknowledging a legitimate role for government**

Faith in market-based policy-making does not preclude any role for government, however. To use the economic jargon, climate change is a market failure, caused principally by the lack of pricing of greenhouse gases, which leads to their emission in greater quantities than is socially optimal. Other market failures – as we shall discuss in the policy recommendations – also exist, which legitimate government intervention.

We have to accept that economies are dynamic and ever-changing, and seldom work at their best when politicians try to override market forces for political ends. To that end, any intervention by government should be limited and transparent, as opposed to overreaching and uncertain. In particular, businesses should have a clear picture of the regulatory landscape before them, and then be allowed to get on with flourishing within it.

'Economies are dynamic and ever-changing, and seldom work at their best when politicians try to override market forces for political ends. To that end, any intervention by government should be limited and transparent'

Now that we have set out our broad principles for policy action to level up and decarbonise the economy, we shall turn to our specific proposals on how to do just that:

Recommendation 1. Support investment in clean research and development

By and large, decarbonisation depends on cleaner technologies being able to replace dirtier ones. Some emissions reductions have come through people voluntarily making changes to their lifestyles, but the big cuts have occurred mainly through the replacement of fossil fuels with cleaner alternatives – whether that is switching coal-fired power stations for offshore wind turbines, or petrol cars for electric vehicles.

Many of the technologies which will be required to deliver Net Zero do already exist. But others will still need to be developed – and even existing clean technologies need to be made cheaper and better if they are to be adopted as the natural first choice by a mass market, and not weigh as heavily on living standards.

This point cannot be overemphasised – especially with relation to levelling up. Successfully delivering the Net Zero transition will be made all the easier if the technologies needed to do so are less expensive and more accessible not just for affluent households, but also those in the more economically deprived areas of the UK.

In this whole equation, the Government is not powerless to play an influencing role.[63] The choices and decisions it makes can either foil or foster innovation. If we are to meet Net Zero, we need to ensure it is doing more of the latter when it comes to research and development (R&D), and less of the former.

Support for R&D can come in different forms. An obvious example is through providing direct financial support – either through grant funding, subsidies, or tax credits. Governments need to be involved in supporting R&D because it creates 'spillovers'. This phenomenon refers to the fact that successful R&D requires one company to invest resources into it, although the benefits of it can be captured by its competitors.[64] This is itself a market failure, and results in less investment in R&D than is socially optimal.

To its credit, the current Government appears to fully appreciate the need for providing support for R&D in general, and for clean R&D specifically. This can be seen through the ongoing commitment to raise expenditure on R&D to 2.4% by 2027,[65] the creation of the Advanced Research and Invention Agency (ARIA),[66] and the increase of the generosity and scope of the Research and Development Expenditure Tax Credit.[67] In the recently published *Net Zero Strategy*, 'innovation', 'innovative', and 'innovate' were mentioned on no fewer than 304 separate occasions,[68] while a whole chapter of the *Industrial Decarbonisation Strategy* outlined how the Government intends to accelerate the pace of innovation in low-carbon technologies.[69]

'If spending – both public and private – on R&D appears to be falling short of the 2.4% by 2027 goal, Ministers must consider new policies aimed at leveraging more investment into innovation'

The clear and apparent enthusiasm towards boosting R&D has been one of the most encouraging trends in policymaking of late. Ensuring it continues is therefore our primary recommendation here. In particular, if spending – both public and private – on R&D appears to be falling short of the 2.4% by 2027 goal, Ministers must consider new policies aimed at leveraging more investment into innovation. This possibility should not be underestimated – at the October Budget last year, the Chancellor pushed back the target of £22 billion of R&D investment by two years, to 2026-27.[70]

Spending on R&D is of course important, but it is far from the whole story when it comes to realising successful innovation. Another side of the same coin is ensuring that regulatory policy is as conducive to R&D as possible. Crucially, this side of the debate has a tendency to be ignored – indeed, while the *Industrial Decarbonisation Strategy* was littered with promises for funding for R&D, the chapter on innovation made only a solitary remark about how regulatory frameworks influence innovation.[71]

63 Nicholas Stern and Anna Valero, *Innovation, growth and the transition to net-zero emissions.* Link.

64 Sam Bowman and Stian Westlake, *Reviving Economic Thinking on the Right: A short plan for the UK.* Link.

65 HM Government, *Industrial Strategy: Building a Britain fit for the Future.* Link.

66 Department for Business, Energy and Industrial Strategy, *Advanced Research and Invention Agency (ARIA): policy statement.* Link.

67 HM Treasury, *Budget 2020.* Link.

68 HM Government, *Net Zero Strategy: Build Back Greener.* Link.

69 HM Government, *Industrial Decarbonisation Strategy.* Link.

70 HM Treasury, *Autumn Budget and Spending Review 2021: A stronger economy for the British people.* Link.

71 HM Government, *Industrial Decarbonisation Strategy.* Link.

The extent to which rules hold back climate-friendly innovation differs from sector to sector, but some are more obvious than others – for example around gene editing and novel proteins (such as cultured meat), which could help to decarbonise the agricultural sector.[72]

If Britain is to decarbonise as quickly as possible, it cannot ignore the need to support innovation. As mentioned above, delivering emissions reductions without compromising on expected levels of living standards will be critically dependent on the pace at which new and better technologies can come to the fore. Moreover, as Net Zero necessarily causes some industries to close down, it is imperative that emergent sectors are allowed to take their place, rather than being suffocated by red tape and establishing themselves in other countries instead. This obviously creates an economic opportunity for Britain as well as a challenge.

'If Britain is to decarbonise as quickly as possible, it cannot ignore the need to support innovation. Delivering emissions reductions without compromising on expected levels of living standards will be critically dependent on the pace at which new and better technologies can come to the fore'

Finally, it is worth considering how a greater focus on innovation could help level up the economy. From Manchester to Newcastle, or Glasgow to Birmingham, many of Britain's elite universities can be found close to the parts of the country the Government is most keen to level up. In fact, there is at least one Russell Group university in every region of the UK.[73]

If we assume that it will be institutions such as these universities, and the academic spinouts associated with them, which will be undertaking much of the additional R&D, it logically follows that such areas stand in good stead to benefit from positive economic spillovers that we might expect to occur too.

Moreover, when it comes to clean innovation, evidence suggests that the UK is rather more balanced (at least relative to other economic metrics), with a disproportionate amount of clean innovation taking place in Yorkshire, parts of the Midlands, Scotland, and the North East.[74] Therefore, if the Government focuses more investment into specifically climate-oriented R&D, it would not be unreasonable to think this uplift would particularly benefit parts of the country which already have a pedigree in clean innovation.

Previous research has shown how public investment in innovation is highly concentrated in already prosperous parts of the UK – with the regions containing London, Oxford and Cambridge receiving 46% of public and charitable R&D spend, despite accounting for 21% of the population.[75] Now is the time to reappraise how to better and more fairly allocate public R&D spending – so that it can help level up the economy, while also accelerating progress towards Net Zero at the same time.

72 Eamonn Ives, *Green Entrepreneurship.* Link.

73 Russell Group, *Our universities.* Link.

74 Ralf Martin et al., *Innovation for a strong and sustainable recovery.* Link.

75 Tom Forth and Richard Jones, *The Missing £4 Billion: Making R&D work for the whole UK.* Link.

Recommendation 2. Permanently increase capital allowances, particularly for clean capital investments

Innovation will be key to cleaning up the British economy, but we also need to ensure that businesses have the right incentives and ability to actually adopt new low-carbon technologies. As the Government recognised in its *Industrial Decarbonisation Strategy*, in many cases this transition will have a significant up-front capital cost for the companies concerned. It is all well and good highlighting the potential opportunities for competitive clean industries of the future, but it will take billions of pounds of private sector investment to get there. This is true both of our existing industries that need to decarbonise, such as those discussed in the previous chapter, and new clean industries such as hydrogen production.

Regions outside of London and the South East are also the places where companies tend to spend more on physical capital such as plant and machinery. As previously shown in this report, the economy of the Greater South East is heavily focussed on the service sector compared to the rest of the country. As Chart 6 illustrates, London and the South East have the lowest proportion of jobs in the manufacturing sector, while the regions with the most jobs in manufacturing are in the Midlands and the North. Encouraging investment in plant and machinery could be one of the keys to levelling up economic opportunity across the country, improving productivity and helping to drive up wages and employment.

'The Tax Attractiveness Index ranks the UK 98th out of 100 in terms of its depreciation regime for fixed assets'

We must therefore address the fact that the UK has one of the worst corporate tax systems in the OECD in terms of how it treats capital expenditure on plant and machinery. The Tax Attractiveness Index, compiled by the Institute for Taxation and Accounting at LMU Munich, ranks the UK 98th out of 100 in terms of its depreciation regime for fixed assets.[76] The US-based Tax Foundation ranks the UK 33rd out of 36 on weighted average capital allowances available as a percentage of the net present value of a given investment.[77]

The Government does currently have a 'super deduction' in place, but this runs out next year, and the sorts of investment decisions we are talking about are often years in the making. The Office for Budget Responsibility's assessment of the super deduction is that it will mainly serve to shift investment forward, rather than actually increase overall capital expenditure. Companies therefore need to see permanent changes to the capital allowances system if they are to commit to the long-term future of their UK operations.

Outside of the super deduction, the Annual Investment Allowance (AIA) allows companies to write down some of their capital expenditure; but at present, that limit is scheduled to actually fall from a temporary £1 million level down to £200,000 at the same time the super deduction ends. Worse still, in April 2020 the Government removed a specific 'enhanced capital allowance' for investments in energy-efficient plant and machinery, with the revenue set aside to fund the Industrial Energy Transformation Fund. All of this means that when the super deduction runs out in 2023, the tax system will move overnight to treating clean investments far less generously than it has for many years.

If we are to successfully meet our climate targets, we should be going in precisely the opposite direction.

76 Institute for Taxation and Accounting, *Tax Attractiveness Index*. Link.

77 Tax Foundation, *Capital cost recovery across the OECD, 2019*. Link.

The best way to address this would be for the Government to implement 'full expensing', which would allow companies to immediately offset their investments in plant and machinery against their tax bills. This would effectively amount to an unlimited AIA, and would make industry far more able to shoulder the up-front costs of investing in new low-carbon plant and machinery. It could significantly hasten the transition to Net Zero, and give British firms the space they need to get ahead in the global race for the burgeoning market in green products. Suffice to say, this in turn would boost demand for clean machinery and equipment – a boon for British companies involved in producing those goods. Finally, it would also be a hugely positive move for economic growth in general, boosting the UK's overall rate of fixed capital formation, which is the lowest in the G7.[78]

> **'Full expensing could significantly hasten the transition to Net Zero, and give British firms the space they need to get ahead in the global race for the burgeoning market in green products'**

As a long-term proponent of full expensing, the Centre for Policy Studies would argue for these incentives to apply permanently across the economy. But at the very least, permanent full expensing – effectively, a super deduction style investment incentive – should be applied to all green investment and clean capital.

Indeed, considering the years of use companies expect to be getting when they invest in their capital stock, the Government needs to significantly improve investment incentives right now. In the ceramics industry, for example, a kiln can have a total lifespan of more than 40 years, which would already take us past the 2050 deadline for Net Zero.

This is yet another illustration of why action in the 2030s and 2040s will simply be too late if the Government is serious about its climate obligations. Investment decisions being made now will affect what the economy of the 2050s looks like – and, in terms of slowing climate change, every single tonne of CO_2 prevented from entering the atmosphere matters. But in the *Industrial Decarbonisation Strategy,* the Government simply said that it would: 'work together with industry to better anticipate machinery lifecycles, so that major capital investments are replaced with low carbon alternatives'.[79]

In fact, the ideal scenario would be for full expensing to be applied across the economy – but accompanied by additional capital allowances for investments which can be shown to be part of decarbonisation efforts. In some cases, for example, companies may be looking to retire older, dirtier assets earlier than the natural life of the asset, to facilitate their decarbonisation efforts. There is an argument that they should be eligible for more generous allowances, to offset that extra cost to the firm.

Having specific enhanced allowances for green investments would not be unprecedented – as mentioned, until recently there was an enhanced capital allowance for investments in specific equipment listed as energy-saving by the Government.

The Confederation of British Industry has suggested, for example, that there could be a new 120% capital allowance for green capital expenditure.[80] This could be billed by the Government as a new 'green super deduction' – although the list of eligible technologies should be far less restrictive than the old Energy Technology List was for enhanced capital allowances.

78 Tom Clougherty et al., *A framework for the future: reforming the UK tax system.* Link.

79 HM Government, *Industrial Decarbonisation Strategy.* Link.

80 Confederation of British Industry, *Greening the tax system.* Link.

This is also why full expensing should be complemented by the other recommendations set out in this report, for example, effective carbon pricing and a carbon border adjustment mechanism. As British Steel stated in evidence to the BEIS Select Committee earlier this year:

> *The cost of emitting carbon has not yet been even partially internalised for the vast majority of the world's steel production and until this basic market failure is addressed in some form, companies will not invest in decarbonisation because there is no method of receiving a return on the additional CAPEX and OPEX that is required.*[81]

If the true cost of emissions is not factored into investment decisions, or if British companies can be undercut by 'dirty' products from overseas, then the incentives structure will be completely wrong. The last thing we want is for companies to be investing in, for example, new coking furnaces. Such moves would only risk a more costly transition (for businesses, communities and taxpayers) further down the line as the 2050 deadline looms.[82]

'In the Energy White Paper, published in December 2020, and the Net Zero Strategy, published in October 2021, the Government explained how the adoption of the UK ETS would allow it to explore applying carbon pricing to more of the economy'

Recommendation 3. Extend carbon pricing to more of the economy

Climate change induced by greenhouse gas emissions is a classic example of a negative externality. Governments can respond to negative externalities in a variety of ways, but using price signals is generally seen as a more market-friendly approach. Indeed, environmental economists often regard instruments such as carbon pricing or emissions trading schemes as an especially attractive mechanism to ensure economies not only decarbonise, but decarbonise in a cost-effective fashion.[83] In the recently published *Final Report of the Net Zero Review*, the Treasury also noted how such policies 'can support the reorientation of the economy in an efficient way', and that other climate measures are 'best supported by a broad-based carbon pricing policy'.[84]

Pricing carbon – such as through an emissions trading framework – attaches a premium to using, for example, fossil fuels to generate electricity or power transportation. It therefore acts as an incentive for users to reduce their demand for them, and to switch to using cleaner – and ultimately zero-emission – fuels. This also stimulates business opportunities for companies developing the cleaner technologies which will be critical to reducing our emissions without compromising on living standards.

These opportunities will arise across the UK, but there is good reason to believe that they will be found particularly in those areas of the country which the Government wants to level up, owing to their unique geographical features: whether it is proximity to the North Sea making places such as the Humber a good location for renewables manufacturing, or lithium deposits in Cornwall which can be capitalised on in order to go into electric vehicles.

81 British Steel, *Written evidence to the BEIS Select Committee.* Link.
82 Office for Budget Responsibility, *Fiscal risks report: July 2021.* Link.
83 David Klenert et al., *Making Carbon Pricing Work.* Link.
84 HM Treasury, *Net Zero Review: Analysis exploring the key issues.* Link.

Already, the UK has a series of explicit and implicit carbon prices.[85] When it was a member of the European Union, parts of its economy – such as most power generation, and elements of heavy industry – were subject to a carbon price in the form of the European Union Emissions Trading System (EU ETS). On January 1, 2021, the EU ETS was replaced in Britain by the UK ETS.[86]

In the *Energy White Paper*, published in December 2020, and the *Net Zero Strategy*, published in October 2021, the Government explained how the adoption of the UK ETS would allow it to explore applying carbon pricing to more of the economy.[87,88] In its *Industrial Decarbonisation Strategy*, it similarly noted how the UK ETS should be set in such a way as to be in line with emissions targets, and that it provides the 'right long-term signals to incentivise abatement across industry'.[89]

At the moment, still roughly two thirds of emissions are unpriced in the UK economy.[90] We believe that expanding the reach of the UK ETS – for instance, bringing agriculture, transport, and heating into its scope – would be a positive step forward, and recommend that the Government advances this commitment in due course, as indeed the logical consequence of its previous pronouncements might suggest. By broadening the UK ETS, we can be sure that fewer industries are being given a free pass when it comes to the emissions they generate. More emitters would have to take into consideration the damage their pollution causes to the climate, and begin to think about how they can switch to cleaner processes.

'By broadening the UK ETS, we can be sure that fewer industries are being given a free pass when it comes to the emissions they generate'

In the longer term, the UK might wish to more comprehensively reform how it prices greenhouse gas emissions. In a recent report published by the Centre for Policy Studies – *Pricing Pollution Properly* – we mapped out a plan for an upstream carbon price which would uniformly price emissions across the vast majority of the economy.[91] Widening the UK ETS to hitherto exempted sectors would no doubt be a quicker and politically easier way to apply carbon pricing to more of the economy, but this should not preclude the Government thinking about whether a new system, akin to that which we detailed, could be an even better way of doing carbon pricing.

An expansion of emissions trading to more of the economy would generate significant amounts of revenue for the Treasury, through the sale of carbon credits. It is therefore critical to explore how this revenue should be spent. In *Pricing Pollution Properly*, we argued that this must not become a cash grab, increasing the costs to consumers and companies, and thereby alienating the former from the Net Zero agenda and making it harder for the latter to compete.

85 Josh Buckland, *Green money: A plan to reform UK carbon pricing.* Link.
86 Department for Business, Energy and Industrial Strategy, *Participating in the UK ETS.* Link.
87 HM Government, *Powering our Net Zero Future.* Link.
88 HM Government, *Net Zero Strategy: Build Back Greener.* Link.
89 HM Government, *Industrial Decarbonisation Strategy.* Link.
90 Ibid.
91 Eamonn Ives, *Pricing Pollution Properly: How carbon pricing could decarbonise the UK.* Link.

Expansion of the ETS, or any other policies to reform how we price carbon, must therefore be revenue-neutral. For example, in our previous work we have advanced the idea of issuing carbon dividends to rebate any carbon revenues back to citizens.[92] Alternatively, the Government could explore reforming the tax system – to reduce the burden on both businesses and ordinary taxpayers.[93] One possible reform would be to fund making full expensing permanent, as we have already detailed, which would lower the cost of the green transition, while likely boosting growth, wages and jobs. Whatever the Treasury might decide to do with any potential revenues, one primary consideration should be in relation to how it can offset any extra costs for the least affluent areas of the country, which the Government as a whole is focusing on levelling up.

Recommendation 4. Adopt a carbon border adjustment mechanism for energy-intensive goods

A common critique of the UK taking more ambitious measures to lower emissions of greenhouse gases is that they create an unfair imbalance between domestic businesses and foreign competitors.[94] If excessive regulation and taxation in the UK cause consumers to favour cheaper imported goods, the effect on the climate is nil (or perhaps even negative), but jobs and economic growth in Britain reduce all the same.[95] From a levelling up perspective, these negative impacts would likely be concentrated in parts of the country where the Government wants to focus its attention most – given, as we noted earlier in this report, that carbon-intensive industries tend to be found outside of London and the South East.

> **'A UK CBAM would create a level playing field between domestic and foreign firms, and prevent British industry from being undercut by products from countries which are not taking as robust action on emissions as the UK is'**

In truth, there is little evidence that this has occurred on a significant scale in the UK since it has started to take tackling climate change more seriously.[96] Yet that is not to say that it will not occur in the near future as domestic climate policies become more stringent – and if it were to, this would represent a threat to both levelling up and climate action.[97]

One way of squaring this circle which has attracted considerable attention is to introduce something referred to as a 'carbon border adjustment mechanism' (CBAM). The idea behind a CBAM is that it ensures imports of carbon intensive goods account for the negative externality costs associated with their production, at least up to a level accordant with British made goods. So if climate policies in Britain – such as the UK ETS – add £X to the production of a tonne of steel, a CBAM would require an imported tonne of steel to either show that climate policies in the country where it was made either added £X to its production too, or pay the difference between £X and how much they actually did.

92 Ibid.

93 Ibid.

94 Benny Peiser, *Push to be green destroys UK jobs and offshores problem to mega polluter China.* Link.

95 Tony Lodge, *The Great Carbon Swindle: How the UK hides its emissions abroad.* Link.

96 Samuela Bassi and Chris Duffy, *UK climate change policy: how does it affect competitiveness?* Link.

97 Department for Business, Energy and Industrial Strategy, *UK Business Competitiveness and the Role of Carbon Pricing: An assessment of the determinants of business competitiveness and the role of carbon pricing policy in the UK.* Link.

Fundamentally, a UK CBAM would create a level playing field between domestic and foreign firms, and prevent British industry from being undercut by products from countries which are not taking as robust action on emissions as the UK is. It would give producers confidence that they will not lose out if they take action to clean up their operations. To be clear, this is not about protectionism – quite the opposite. It is in fact about ensuring free and fair competition, by ensuring foreign producers are not able to offer artificially cheap goods because they are not accounting for the costs their emissions impose on society and the planet. If industry here in the UK is expected to support the transition to Net Zero and decarbonise production, they need to be secure in the knowledge that this will not simply allow their foreign competitors to price them out of the market.

'If industry here in the UK is expected to support the transition to Net Zero and decarbonise production, it needs to be secure in the knowledge that this will not simply allow their foreign competitors to price them out of the market'

In July 2021, the Board of Trade published a report which briefly set out how the Government intended to proceed with regards to policies such as CBAMs.[98] Its conclusion was essentially that there are earlier steps countries can take to remove the need for CBAMs, not least the wider adoption of carbon pricing to address emissions at their source.

We agree – in an ideal world, this eventuality would transpire, and CBAMs will be irrelevant. But there was no sign from the recent COP26 negotiations of any meaningful international appetite for a multilateral system of carbon pricing.

If wider carbon pricing were to be introduced in the UK unilaterally, we believe CBAMs are a necessary tool to firmly enforce climate policy – as they are the logical extension of a proper national carbon pricing policy.

Exactly how a CBAM would function is beyond the scope of this report, and in any case previous research by the Centre for Policy Studies has discussed CBAMs in more detail. In each of *Clean Free Trade* and *The Great Carbon Swindle*, we recommended that the UK should seriously explore the option of introducing a CBAM, at least for more carbon-intensive products, such as steel, fertiliser, cement and fossil fuels.[99,100] In a lecture delivered at the Centre for Policy Studies in June 2021, former Trade Secretary, the Rt Hon Liam Fox MP, reiterated this proposal.[101]

It would be perfectly possible for Britain to unilaterally enact a CBAM, provided it applied it consistently and fairly to abide by World Trade Organization (WTO) rules.[102] But an even better policy outcome might be for a group of nations to club together in adopting linked CBAMs. This would not only simplify how CBAMs work, but it would also ensure that they are applied to more of the globally traded economy. It is worth noting here that in the *Industrial Decarbonisation Strategy*, a specific reference was given to the fact that the EU will be discussing its plans for a CBAM at the WTO Ministerial Conference in December.[103]

98 Board of Trade, *Green Trade*. Link.

99 Tony Lodge, *The Great Carbon Swindle: How the UK hides its emissions abroad*. Link.

100 Eamonn Ives, *Clean Free Trade: Championing free trade, economic growth and the environment*. Link.

101 Liam Fox, *The Case for a Carbon Border Tax*. Link.

102 Sam Lowe, *Should the UK introduce a border carbon adjustment mechanism?* Link.

103 HM Government, *Industrial Decarbonisation Strategy*. Link.

Due to the emergence of the omicron coronavirus variant, this conference has been postponed indefinitely, but when it is rescheduled it would serve as a useful chance for the UK to engage constructively on the matter.[104]

With a CBAM in place, British companies which want to do the right thing by transitioning to cleaner modes of production could be confident that they can do exactly that, without the threat of being undercut by imports from cheaper yet dirtier competitors, whose goods are 'artificially' less expensive, because they have not accounted for their embodied emissions. The upshot of this would be the proliferation of next generation production techniques throughout Britain, all aligned for the Net Zero economy of the future.

> **'Net Zero and levelling up can be complementary, in that the areas where green investment and innovation will happen are likely to be those that are home to existing industries'**

By providing the conditions to foster these green industries, Britain has a better shot at becoming a leader in, for example, green steel. It is not unreasonable to assume this will have a positive impact on job creation, export opportunities, and economic growth – with those benefits accruing particularly to parts of the country which the Government is most keen to level up.

Recommendation 5. Use carbon revenues to help local areas with the economic transition

So far, we have argued that Net Zero and levelling up can be complementary, in that the areas where green investment and innovation will happen are likely to be those that are home to existing industries. But of course, the correlation will never be perfect.

There is a long and ignoble history of the British Government attempting to direct economic activity to particular localities. We have argued in this paper that a better approach is to set out a framework that actively rewards those regions and firms that pursue decarbonisation, via investment incentives and greater growth opportunities.

But it is also true that we need to ensure that those communities that were left behind by the transition from manufacturing to services do not feel neglected by this latest transition. According to survey work by PwC, people in regions most in need of levelling up are more likely to be concerned that their jobs will not exist anymore after the Net Zero transition. In the North East, for example, nearly one in 10 respondents expected their job would no longer exist, compared to the average across the country of one in 20.[105] Of course, these fears may be unfounded – but the fact they exist is telling, and needs to be acknowledged when it comes to policymaking, lest it jeopardise support for decarbonisation measures.

As set out above, if bolder climate policies are to be put in place, such as a broadening of the UK ETS, then the revenues from such policies should be allocated towards mitigating any potential negative impacts. Even before any expansion of the UK ETS's scope, the Office for Budget Responsibility have noted that revenues from the scheme are set to increase substantially thanks to rising prices for carbon credits, with receipts forecast to be £3.2 billion per year higher from 2022-23 onwards, reaching nearly £5 billion annually.[106]

104 World Trade Organization, *Twelfth WTO Ministerial Conference.* Link.

105 PwC, *Green Jobs barometer.* Link.

106 Office for Budget Responsibility, *Economic and fiscal outlook: October 2021.* Link.

A widened UK ETS would bring in even more for the Exchequer. One crucial way which these revenues could be used would be to help firms to capture the full economic potential of transitioning to a cleaner economy.

For example, a common criticism of the way the economic upheaval of the 1980s was handled was that there was a lack of support with regards to education, skills and training to equip displaced workers for new, emerging job opportunities. Some of the revenues from a more comprehensive UK ETS could be earmarked to fund a bold programme of new technical universities in areas without existing local universities, targeted explicitly at delivering the kind of skills that raise wages and productivity.

'Educational institutions can be a major driver of local and regional economic growth. One study from 2019 found that a 10% increase in the number of universities per capita in a region correlates with 0.4% higher GDP per capita'

Having successful local educational institutions can be a major driver of local and regional economic growth. One study from 2019 found that a 10% increase in the number of universities per capita in a region correlates with 0.4% higher GDP per capita.[107] The authors estimated that in the case of the UK, opening ten new universities would cost around £1.6 billion and add an estimated £11 billion to the UK economy, and note that:

> *The relationship between GDP per capita and universities is not simply driven by the direct expenditures of the university, its staff and students. Part of the effect of universities on growth is mediated through an increased supply of human capital and greater innovation.*[108]

Channelling just some of the potential revenues from policies designed to reduce emissions could be used to fund a host of new institutions.

These would not be generic new academic universities – the last thing we need is more people studying poor value degrees which they do not need.[109] Rather, they would be a reimagined version of the old polytechnics, with a specific focus on employability and the skills needed for emerging technologies and sectors. These would complement the new Institutes of Technology which the Government has been championing, 12 of which have already been set up around the country.[110]

Many of the skills gaps which these new technical universities would help to fill would be in precisely the sorts of green jobs which are already beginning to emerge, and which the other policies outlined in this report would stimulate the creation of. The purpose of using carbon revenues in this way would be to ensure government was not simply implementing policies to incentivise decarbonisation without supporting workers and employers with that transition. The specific issue of supporting green skills is explored further in the following sections of this report.

107 Anna Valero and John Van Reenen, *The economic impact of universities: evidence from across the globe.* Link.
108 Ibid.
109 Conor Walsh, *The value of university.* Link.
110 Department for Education, *Institutes of Technology.* Link.

Another option for ensuring carbon revenues are channelled into supporting places and people with the Net Zero transition would be to distribute them to local authorities for economic development funds. These funds could be allocated based on a formula which seeks to reflect the likely impact of climate policies on different localities – such as looking at the relative carbon intensity of employment.

This would mean, for example, that a greater level of funding would go to a local authority where there are a large number of jobs in those industries being brought within the scope of an expanded UK ETS. Allocating funds in this way would help to ensure that areas which will face bigger challenges from the need to decarbonise their local economies will get more support to aid with that transition – giving them the best shot at securing well-paid jobs and sustainable economic growth.

Local authorities should have a reasonable amount of autonomy over how these funds could be used, as long as they can demonstrate that their usage relates to economic development. Funds could be used, for example, to provide investment incentives for those investing in the local area and to leverage in private sector capital. They could be directed towards funding local training and skills, or employment programmes. They could even fund local infrastructure projects to boost productivity and improve connectivity in the area. As well as being a vital quid pro quo to more stringent climate policies, using revenues in this way would also allow the Government to demonstrate the material benefits of its Net Zero efforts for local people concerned that their area will lose out from the transition.

'The transition to Net Zero will require the swift development of a whole range of new roles and industries, opening up thousands of high-end jobs'

A final remark here is to note how funding of this sort – in other words, linked to carbon pricing – could increase the acceptability of an expanded UK ETS among the general public. A wealth of academic evidence exists which points to people being much more receptive to carbon pricing when they know the revenues it is raising will be used to fund programmes which help ease the transition to a cleaner economy.[111] If this is the necessary bargain to broaden carbon pricing to more of the economy, then it may well be one worth making.

Recommendation 6. Reform skills provision to accelerate the transition to a green collar workforce

The transition to Net Zero will require the swift development of a whole range of new roles and industries, opening up thousands of high-end jobs. As we have argued above, many of these should be in precisely those parts of the country which the Government is keen to level up. The decarbonisation of some existing industries will also require reskilling of the workforce to fit new technologies and processes.

To achieve this, the UK needs to be doing far more on both adult learning and technical education and apprenticeships. Apprenticeships are the single most common route that manufacturers expect to use to train their workforce for a Net Zero future, with 67% agreeing they are a good way to build green skills, according to MakeUK's *Green Skills Survey.*[112]

111 Stefano Carattini, Maria Carvalho and Sam Fankhauser, *How to make carbon taxes more acceptable.* Link.

112 MakeUK, *Unlocking the Skills Needed for a Digital and Green Future.* Link.

The Government's current approach to apprenticeships, however, is not delivering the hoped-for increases in both quantity and quality of apprenticeships. In the 2020-21 financial year, employers paid in £2.3 billion to their levy funds, but in that same period, £1.3 billion of funds expired because employers had not used them within the two year time limit.[113] Again, this will be an area which should be key to any attempts to level up economic opportunities – technical education and training are particularly important to areas outside of London and the South East, where local economies are less service-based. In London almost half the working age population have a university degree, compared to only around three in ten in regions across the North and Midlands.[114]

'In London almost half the working age population have a university degree, compared to only around three in ten in regions across the North and Midlands'

The Centre for Policy Studies will shortly be publishing a report on the future of skills which looks more closely at how the Apprenticeship Levy is working and how it might be reformed, but at the very least we believe that the Government should look to significantly broaden the types of training which can qualify for funding. This could even involve turning the levy into a much more flexible Skills Levy, as the Centre for Policy Studies has previously called for.[115] This could go some way to helping, for example, the roughly one third of manufacturing employers who say they currently do not have the skilled workforce they need to decarbonise.[116]

The establishment of a Green Apprenticeships Advisory Panel by the Institute for Apprenticeships and Technical Education is a welcome step. The Government should be going further to embed the needs of industry for green skills into the technical education system by, for example, establishing an ongoing mechanism for employers to feed into the new T Level curriculum.

For those workers in industries which will need to eventually cease operations, such as coal mining, there must be a realistic offer on the table for retraining and adult learning. The Government set out its ambitions for lifelong learning earlier this year in a white paper, but the proposals remain vague.[117] The proposed new Lifelong Loan Entitlement, for example, has the potential to provide significant support for those needing to reskill for the Net Zero economy of the future. These reforms must have a specific focus on green skills and green jobs, with decisions on funding allocations, and the qualifications eligible for loan support, being led by employers.

113 Gillian Keegan, *Apprentices: Finances: Question for Department for Education.* Link.

114 Economic Research Council, *UK Regions: Percentage of Degree-Educated Population vs GVA Growth.* Link.

115 Sajid Javid and the Centre for Policy Studies, *After the Virus: A plan for restoring growth.* Link.

116 MakeUK, *Unlocking the Skills Needed for a Digital and Green Future.* Link.

117 Luke Sibieta, Imran Tahir and Ben Waltmann, *Big changes ahead for adult education funding? Definitely maybe.* Link.

V. Conclusion

Levelling up and taking action on climate change will be the primary focuses of this Government as the UK emerges from the worst of the coronavirus pandemic. There is a fear from some quarters that the two are at odds with each other – and if the Government fails to act properly, this eventuality could well transpire. Indeed, as we have shown in this paper, many of Britain's most polluting industries – which must decarbonise if they are to be able to operate in the future Net Zero economy – are clustered in parts of the country where the Government is most keen to generate new jobs and economic growth.

> **'With the right support mechanisms and policies, levelling up and robust climate action can be turned into mutually reinforcing agendas'**

However, with the right support mechanisms and policies, levelling up and robust climate action can be turned into mutually reinforcing agendas. By catering to new demands for clean versions of the building blocks of economies around the world, opportunities lie in store for many of those areas of Britain which have felt left behind as others – notably around London and the wider South East – have surged ahead.

Realising that transition, however, will not happen overnight, or by itself. For decades, governments of all stripes have tried, and, ultimately, failed to deliver on promises to rebalance economic prosperity. If this Government is to not fall into the same traps, new policies are required, which enable markets and the power of the private sector to flourish along more sustainable lines. There is a hypothetical world in which the UK has made further significant reductions to its emissions, but in the process has allowed successful industries and well-paid jobs to die out in regions which have already been losing out for decades. That would be a huge policy failure. Instead, the Government needs to build a policy framework which provides businesses with both certainty and the right incentives to deliver clean growth, investment and jobs across the UK.

We can already see a flavour of the benefits which could be in store for these areas as the UK seeks to deliver on its Net Zero ambitions. In the North East, the Net Zero Teesside project will build a CCUS cluster and create more than 5,000 skilled jobs. BP have plans for significant investment in clean hydrogen production in Teesside. As the mayor of Tees Valley, Ben Houchen, has said: 'Net Zero is not a fad; it is a unique opportunity to bring industry back to the Red Wall'.[118] With effective policies and concerted effort from both government and the private sector, Net Zero and levelling up can go hand in hand.

In this paper, we have mapped out a series of what those policies could be. They are a mixture of sticks and carrots, but taken together, all combine to serve as a cohesive package to help to put British industry on a cleaner footing, with economic opportunities spread throughout the country, levelling up the whole of Britain.

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57 Tufton Street, London, SW1P 3QL
December 2021
ISBN 978-1-914008-14-6