

# Rebuilding the UK economy: fairer, cleaner, more resilient

How the energy transition can drive the economic recovery

June 2020





“

Only a crisis – actual or perceived – produces real change. When that crisis occurs, the actions that are taken depend on the ideas that are lying around.

Milton Friedman





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## strategy&

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We call this strategy that works, and it delivers immediate impact and lasting value for you. As part of the PwC network, we combine 100 years of strategy consulting experience with PwC's deep industry and functional capabilities.

PwC has more than 250,000 people in 158 countries committed to delivering quality in assurance, tax, and advisory services.



Energy UK is the trade association for the GB energy industry with a membership of over 100 suppliers, generators, and stakeholders with a business interest in the production and supply of electricity and gas for domestic and business consumers. Our membership covers over 90% of both UK power generation and the energy supply market for UK homes. We represent the diverse nature of the UK's energy industry – from established FTSE 100 companies right through to new, growing suppliers and generators, which now make up over half of our membership.



# Foreword from Energy UK



**Audrey Gallacher**  
Chief Executive  
Energy UK

People and businesses have been significantly impacted by the COVID-19 pandemic and many turned to their energy supplier and government for support. The sector responded rapidly to assist customers and ensure the secure operation of the system. While the crisis has highlighted some of complexities across the sector on issues such as the allocation of risk and cost recovery, it has also provided us with an insight into the future energy system and the role that energy can play in our economic recovery.

We now need to rebuild our economy with a long-term vision. I strongly believe that a successful recovery needs to be based on actions and policies focussed on re-growing the economy and labour market while decarbonising all sectors, delivering clean energy, jobs and resilient supply chains.

We already know many of the challenges we need to address such as the need for a government-funded National Energy Efficiency Programme and the development of a Heat Sector Deal in partnership with industry. We also need to see a serious switch to electric vehicles to preserve some of the key positives from this crisis – cleaner air and reduced noise pollution.

The energy sector invests £14bn per annum and has dramatically reduced our carbon emissions over the last ten years. We need to maintain reliable and affordable energy supplies while continuing to deploy clean energy and low carbon infrastructure, all supported by solid supply chains and jobs. There are many opportunities out there and we need to seize them.

Energy UK will work closely in partnership with Government to seize these opportunities, to promote economic growth and to ensure that our net-zero target by 2050 remains a priority when we envision our future.

I would like to thank the Energy and Utilities team at PwC for this informative report on the role of the energy sector in the economic recovery and in continuing to tackle climate change.

# Foreword from PwC Strategy&



**Steve Jennings**  
Energy & Utilities  
Sector Leader  
PwC



**Janine Freeman**  
New Energy  
Strategy & Deals  
PwC

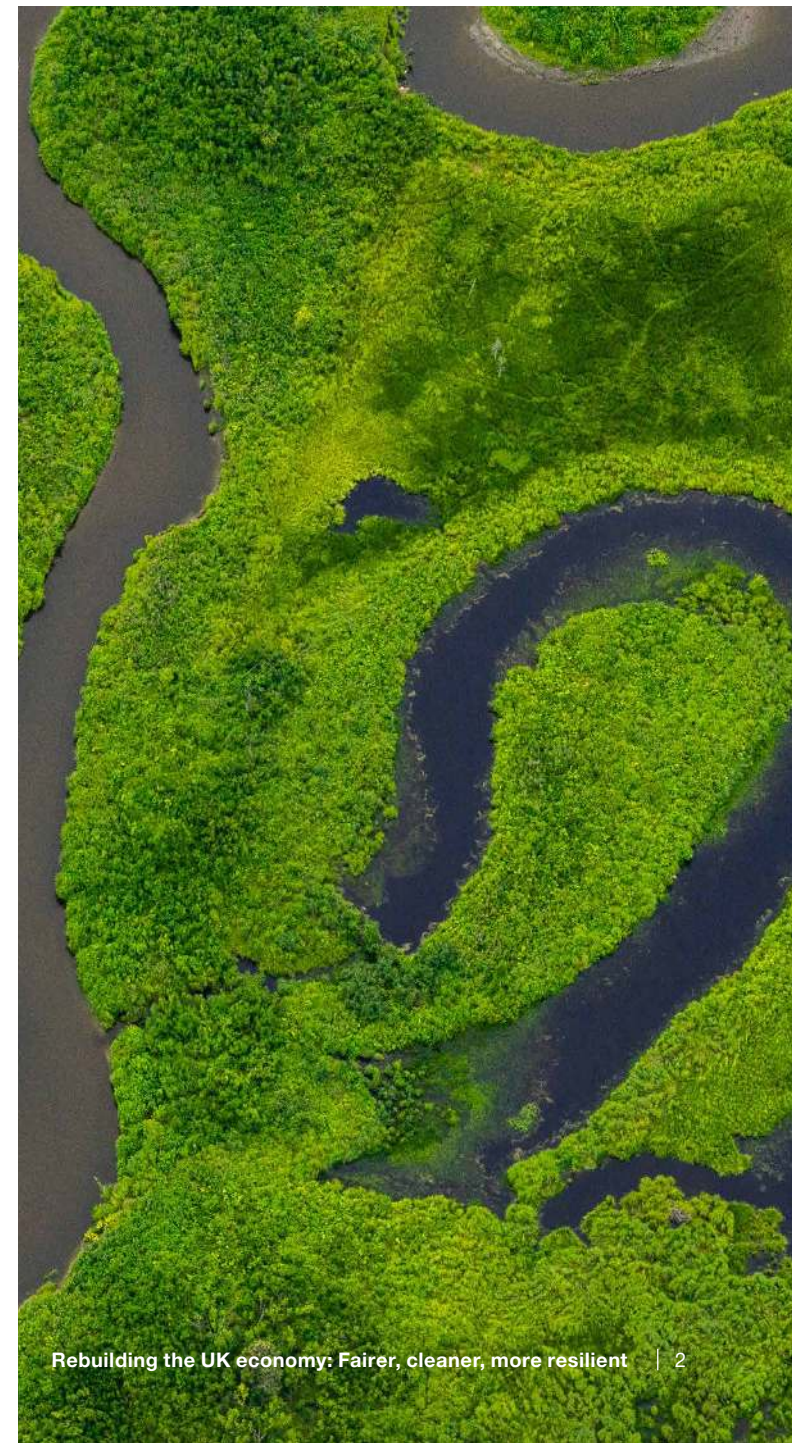
## How to “Build Back Better”

The COVID-19 crisis is having a terrible impact on our society. From personal well-being to the health of the economy, the ramifications of this pandemic are varied, deep and painful. However, as we emerge from this crisis there is an opportunity to take advantage of the energy sector’s strategic importance and use it as a cornerstone to “build back better”.

We have seen hundreds of business leaders united in a call for economic stimulus plans to be aligned with the UK’s net zero targets. This report, which we have developed in partnership with Energy UK, provides the UK government with a toolkit of policy interventions to help identify the actions that will have maximum impact in creating jobs and “levelling up” the economy.

We know that while the government has a central role in orchestrating and stimulating an economic recovery, the private sector, especially in energy, also has a critical and enabling role to play. The UK energy sector is a global leader on decarbonisation and the opportunity to invest in new, clean infrastructure means that the industry has great potential for creating mass employment across the length and breadth of the country.

We look forward to seeing this partnership between government and the private sector evolve to provide a better future for all.



# Executive summary

The UK energy sector has one of the cleanest and most innovative energy systems in the world, attracting private investment and creating jobs as we accelerate through the energy transition towards net zero. Underpinning the entire UK economy, the sector employs more than 750,000 people (directly and indirectly). In 2019, it invested over £14 billion in the UK and generated £95 billion in value-added economic activity.

The existing partnership between government and the energy industry provides a strong platform to meet upcoming net zero infrastructure challenges, such as renovating the building stock and decarbonising heat, providing an opportunity to create a significant number of jobs across the UK.

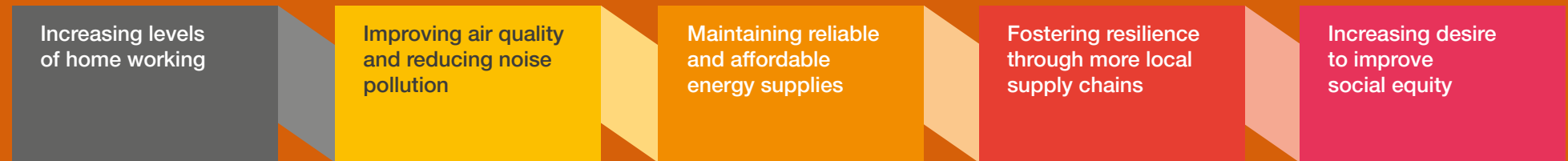
COVID-19 has caused disruption to the entire energy value chain, from generation to retail, but it has also given us an insight into the energy system of the future. It has shown us how people might live differently and how this could impact on the production and consumption of energy. It is critical that we build on this insight and on the momentum of change brought about by the pandemic.

In this report, we identify several broad, energy-related societal themes that will shape our lives in the future and that can inform government policy making. Based on these themes, we have set out five stimulus priorities that are underpinned by specific policy interventions. All five have been identified as major opportunities to drive job creation through growth in new markets and the development of new supply chains.

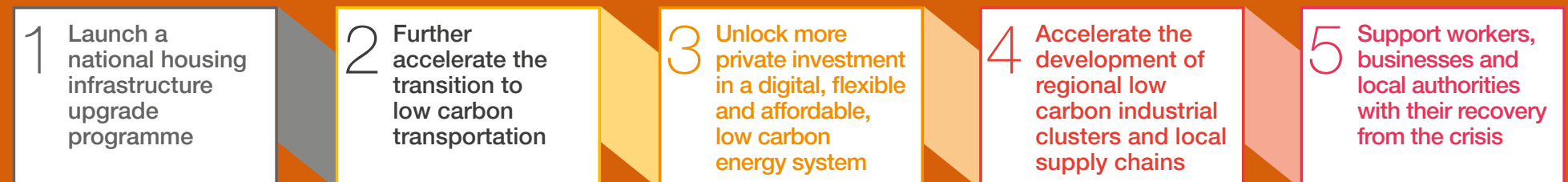
The energy sector must look to create long term, sustainable jobs in the clean economy. Crucially, we should ensure that these jobs create prosperity across all regions of the UK – leading us towards a fairer economy and society. By adopting these policies, the government can use the devastating experience of COVID-19 to catalyse a change for the better: to build a fairer, cleaner and more resilient UK economy.

## How to “Build Back Better”

Emerging societal themes post COVID-19



Stimulus priorities for a fairer, cleaner, more resilient recovery





Policy initiatives		Timing	Summary impact
Housing	Launch a centrally funded, long-term national energy efficiency, low carbon and smart building-retrofit programme	S	By making it easy and cheap to access domestic energy efficiency solutions, the government can quickly create thousands of local jobs, whilst lowering energy bills and carbon emissions
	Initiate scaled rollouts or pathfinder projects across key low carbon heat technologies	M	Finding the best way to provide clean heat is vital. Investment in scaled trials will help supply chains to mobilise, creating jobs as well as insight into the best solutions for all buildings
	Government and industry to work on a new approach to support greater take up of smart meters	SR	Smart meters are vital for keeping bills down, helping consumers access the best tariffs and transitioning to a smarter energy system; their deployment employs thousands of people
Transport	Incentivise the electric vehicle market by increasing grants and supporting broader investment in charging infrastructure	SR	Increasing the uptake of EVs will drive investment in supporting infrastructure – especially charge points – creating thousands of jobs
	Develop incentives to attract the EV industry and supply chain to locate manufacturing and other jobs in the UK	S	This is an opportunity for UK businesses to become global leaders in battery technology and EV infrastructure and to protect automotive jobs
	Accelerate the rollout of Clean Air Zones and expand funding for low carbon public and active transport infrastructure	M	Clean Air Zones encourage the uptake of EVs, reducing emissions and benefitting our health, at the same time as driving jobs and innovation in the supply chain
Energy system	Accelerate the development of GB markets, incentives and network charging to drive investment in efficient flexibility solutions	S	Flexible power solutions keep the lights on and bills down. However the pace of development of investment signals is slow and is delaying the innovation and investment which could be creating new jobs
	Develop funding mechanisms to accelerate efficient investment in more low carbon power generation	SR	There are “shovel-ready” projects in low carbon technologies which could go ahead with the right policy interventions
	Incentivise networks to prioritise investment in digitalisation and enable efficient anticipatory investment	M	Making grids smarter will enable new, clean technologies to transform energy and keep bills down. In some instances, investing in ‘hard’ assets ahead of need will also speed up the energy transition
Industry	Accelerate development of CCUS and low carbon hydrogen solutions and launch long-term planning for the decarbonisation of industry through regional industrial clusters	S	It is vital that we attract new industries and manufacturing to the UK, but we need a solution to decarbonising heat for industry. CCUS and clean hydrogen production in clusters will help to solve this and create jobs
	Foster greater supply chain resilience and reduce imported carbon emissions by incentivising greater levels of on-shoring of supply chain manufacturing and production	S	COVID-19 has highlighted the fragility of global supply chains. Through greater on-shoring we can increase supply chain resilience, reduce imported (and global) carbon emissions and create new UK-based jobs
Business & local	Work with industry to launch a training programmes to support unemployed workers into permanent employment	SR	Thousands of new jobs are required to achieve net zero, but as we transition, it is important to upskill our workers in high growth sectors
	Provide funding support for small and medium sized businesses to transition their operations to net zero	SR	Investment in SME buildings (as well as homes) can also create jobs, support small businesses and move the UK towards net zero
	Develop a mechanism to make it easier for local authorities to benefit from funding of decentralised energy projects	M	Supporting local authority funding of distributed energy schemes can provide new sources of council income and create a greater sense of engagement of communities with the energy they use

SR

“Shovel-ready” (&lt;1 year)

S

Short term (1-2 years)

M

Medium term (2-5 years)

## Policy priorities

This list of policy interventions has been developed to help the government identify the areas where policy levers can have maximum impact. It provides a tool-kit for the government to work in partnership with industry to drive new job creation and unlock private investment in a fairer, cleaner and more resilient economy.

The energy sector has a strong record in investing to ensure a clean and reliable energy system, investing over £14bn per annum. This suite of measures is designed to ensure that the frameworks are in place to continue to attract private capital and that any public money that is spent has the maximum impact and supports a low carbon transition while supporting the economic recovery.

While the focus of these policies is on job creation, we have also factored in the broader benefits of moving towards a cleaner, net zero economy, of improving social equity and of driving investment in high growth areas where the UK can retain, or take a leadership position.

Each initiative has a different timing consideration. Some provide a more immediate benefit to jobs and supporting society, while others are more likely to accrue over the short to medium term.

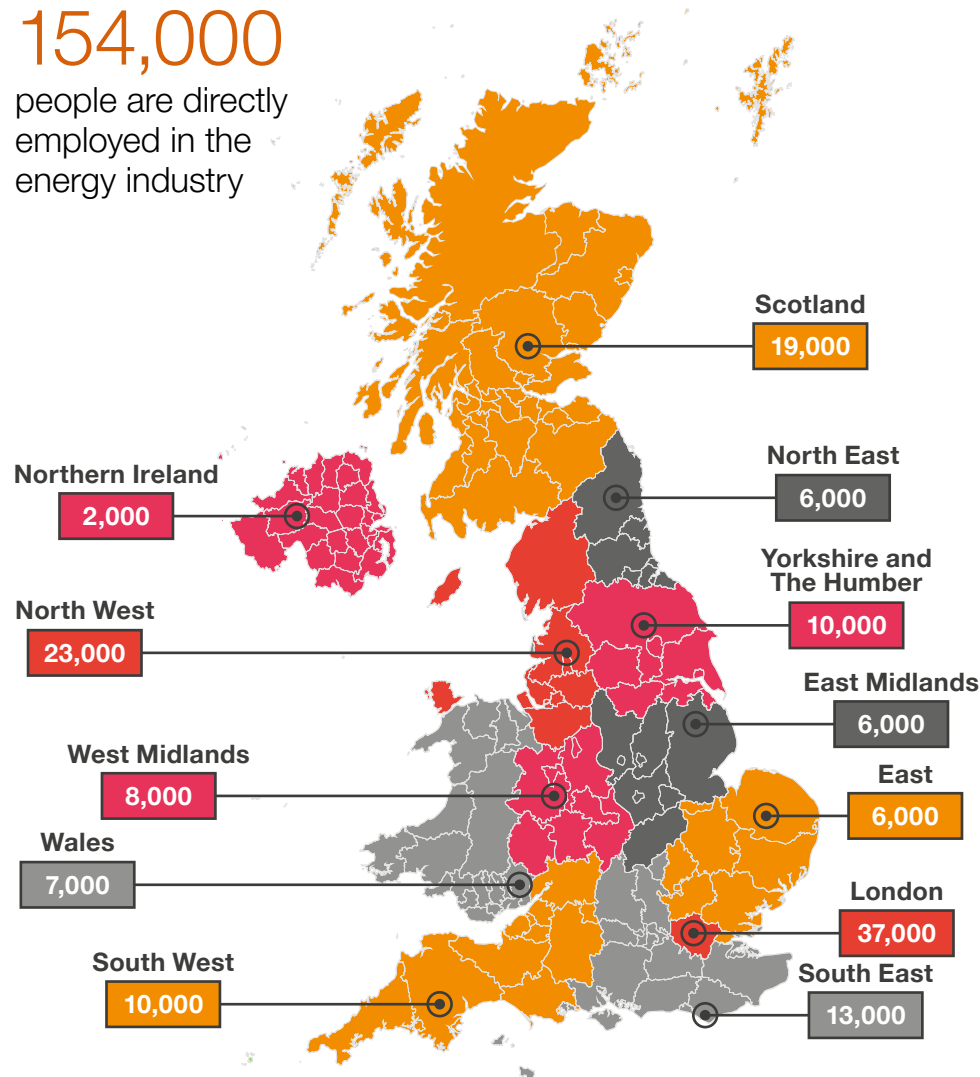
Recent events, in particular, the European Recovery Package, give an indication of specific policy measures that could also be of benefit to the UK economy. In particular, for home energy efficiency and low carbon heating, low carbon power generation and low carbon transportation.

**We recommend that the UK government delivers this stimulus package suited for growth across all regions, launching a green, resilient economic recovery for the UK.**

# Energy in the UK in 2020

## 154,000

people are directly employed in the energy industry



**Note:** may not sum due to data rounding or regional estimations

**Source:** ONS, JOBS05 Workforce jobs by region and industry (seasonally adjusted)

In every part of the country, the energy industry provides reliable heat and light for our homes, powers our businesses, connects and transports us to meet our every day needs.

The energy sector underpins all sectors of the UK economy. It is a national employer, with jobs spread across all parts of the UK, employing 154,000 people directly and a further 620,000 indirectly across the supply chain.

The sector continued its growth trend in 2019, directly creating £30.9bn in value for the UK economy, up from £28.1bn in 2018. The industry also contributed its share to funding public services, with around £6.5bn paid in taxes the last financial year.

Energy is a key part of UK national infrastructure. Private investment in the sector acts as a catalyst for broader economic growth by creating a multiplier effect to boost sales, jobs and incomes.

For businesses and households, it is vital that the energy sector continues to:

- 1 Operate a consistent, reliable and resilient service, so businesses can plan with certainty and customer service continue to improve
- 2 Offer the lowest prices possible to ensure fairness for consumers and competitiveness for businesses in a global market
- 3 Decarbonise, as reducing carbon emissions in energy decreases the carbon footprint of every home and business in the UK

In 2019, the energy sector...



Invested £14.4bn  
in the UK



Ranked as a top 3  
sector for employee  
productivity



Generated £95bn in  
economic activity,  
including supply chain

Source: ONS



# World leader in energy

The UK energy sector has one of the most advanced energy systems in the world. It is at the forefront of the transition to decarbonise power generation and it attracts significant private investment in innovative, start-up businesses, both relative to other sectors in the UK and internationally.

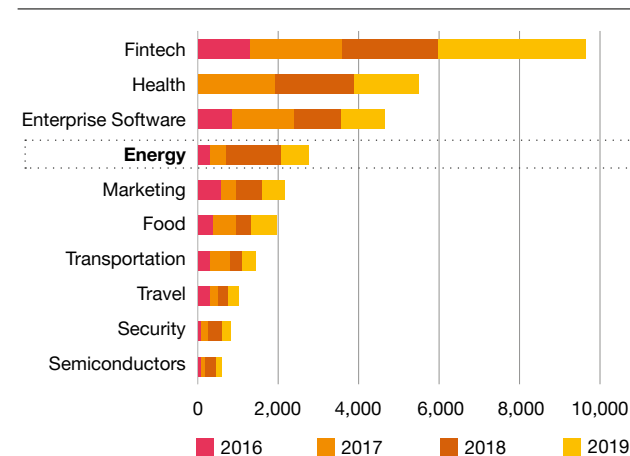
Over the last five years, relative power emissions in the UK have fallen faster than any other G10 nation. So far in 2020, 57% of generation has come from low

carbon sources, with the average carbon intensity falling 21% in April and May 2020 compared to the same period last year.<sup>1</sup>

The decarbonisation of the UK's energy mix has been driven by forward-thinking policy, stimulating private investment in clean technology, and by a skilled workforce willing to innovate to capture value from policy incentives and driven to solve imminent net zero challenges.

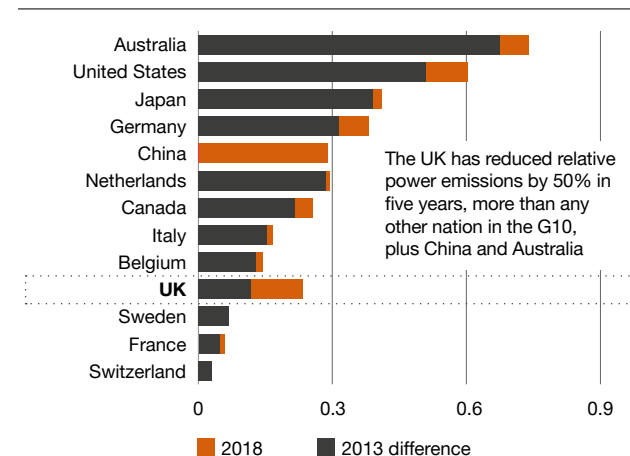
The UK's energy economy is expanding to encompass 'low carbon and renewable energy' across many spheres such as energy efficiency and low emission vehicles. This is now responsible for a turnover of £47bn<sup>2</sup> and due to the expansion, future employers will deliver a wider range of energy related services and technology enabled solutions.

Figure 1  
Investment in UK start-ups by sector (£m)



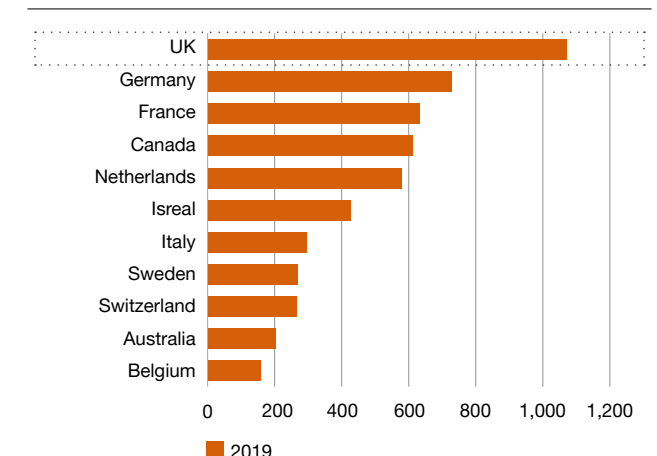
Source: Dealroom

Figure 2  
Power emissions per capita (t CO<sub>2</sub>/capita)



Source: Dealroom

Figure 3  
Number of energy start-ups



Source: Dealroom

1. National Grid ESO, PwC Strategy& analysis

2. ONS

# Opportunities for job creation

While the UK energy system has rapidly transformed, with great progress on clean generation, much more is needed. Significant progress elsewhere is also required to meet net zero. Our housing infrastructure is one of the poorest in Europe and the pathways to decarbonise buildings and transport are still uncertain.

A national effort to bring UK housing up to appropriate energy efficiency and low carbon standards can create mass employment. The Committee on Climate Change estimates that investment of £50 billion per annum is required to cover not just power generation and housing but all sectors of the economy. Investment on this scale could be transformational in creating a truly low carbon economy based on sustainable economic and job growth, helping build a fairer, more resilient economy. Many experts<sup>3</sup> have identified that measures to cut emissions and stimulate the economy have the potential to be more effective in supporting jobs and growth.

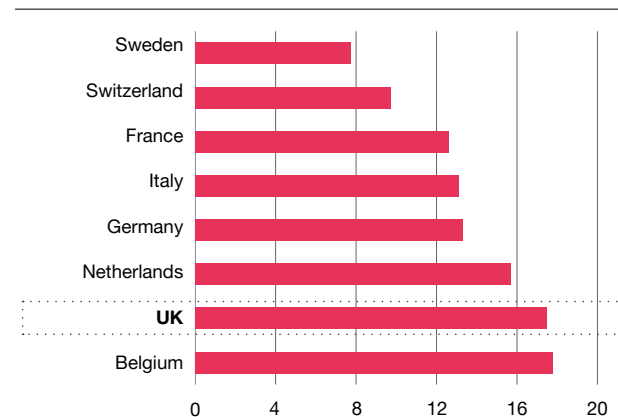
On job growth, the latest report from the Local Government Association estimates that the 'low carbon workforce' will have to roughly treble by 2030. While further out to 2050, job creation is also more regionally diverse with London and the South East accounting for roughly a quarter of jobs compared to over a third today.<sup>4</sup>

In addition, a study in the Oxford Review of Economic Policy highlights that a post-crisis green investment can help drive a superior economic recovery. It suggests a priority set of policies with high potential on economic multiplier and climate metrics, including physical infrastructure, building retrofits, education and training and clean R&D.

3. Committee on Climate Change, HM Government

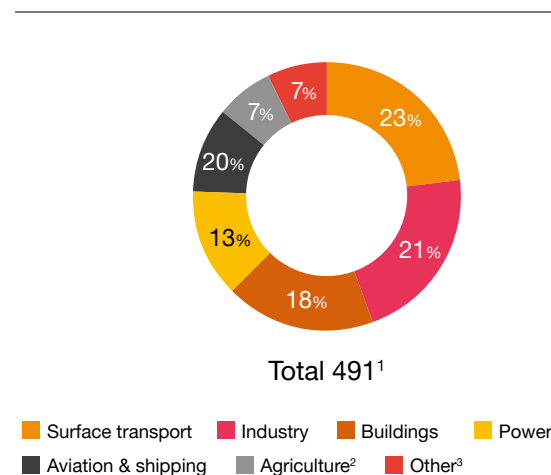
4. Local green jobs accelerating a sustainable economic recovery, Local Government Association

Figure 4  
percentage of population living in a house with a leaking roof, damp or rot



Source: EuroStat

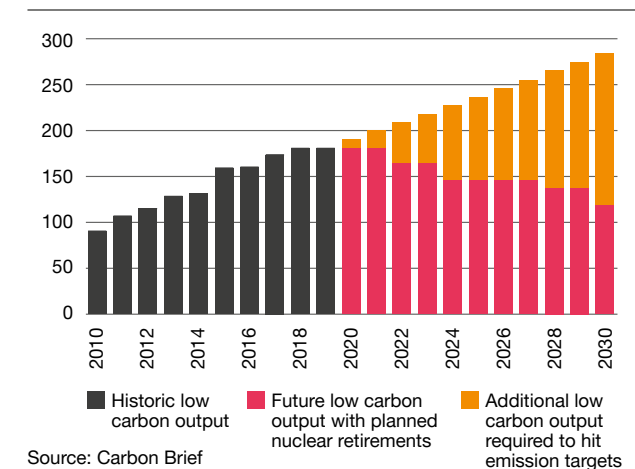
Figure 6  
UK emissions in 2018 (MtCO<sub>2</sub>e)



1) Total includes Aviation and Shipping; 2) Includes LULUCF;

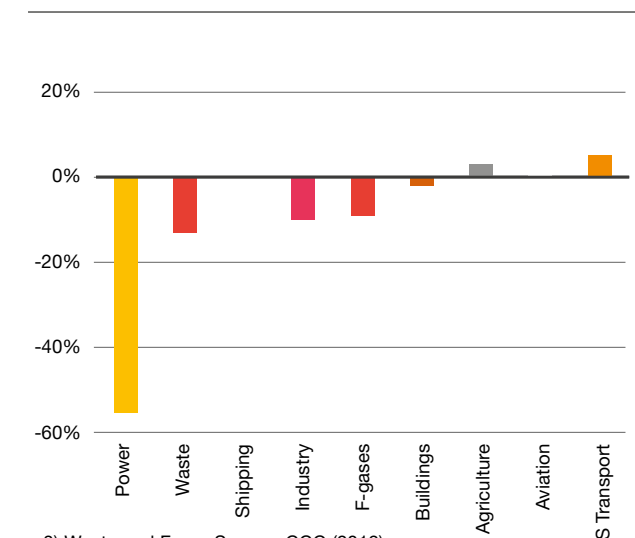
3) Waste and F-gas Source: CCC (2019)

Figure 5  
Required generation from low carbon sources in order to meet the UK's 2030 target<sup>2</sup> (TWh)



Source: Carbon Brief

Figure 7  
UK change in emissions, 2013-18 (%)



3) Waste and F-gas Source: CCC (2019)







# Energy insights from COVID-19



## Generators

### Increased renewable generation

Reduced demand meant ~40% of energy supply came from variable renewable generation in April.

### Falling wholesale prices

The reduction in demand combined with high penetration of renewables resulted in lower power market prices and increasing periods of negative wholesale power prices. This has shone a light on how the system is financed.

**Increasing renewable deployment and falling wholesale prices create signals for the need for greater investment in flexible power solutions that can extract value from low power prices at certain times of day**



## Energy system operator

### System balancing innovations

In order to manage periods of low demand, National Grid ESO were required to take action, in particular, downward management services used to turn down embedded generation (solar and wind) resulting in higher than normal system balancing costs.

**The system operator has a better understanding of the need to have strong visibility and influence beyond transmission level assets, and the need to find new solutions to avoid wasting renewable power**



## Distribution network operators

### Sources of flexibility

COVID-19 led to the shutdown of many traditional providers of demand side response, such as industrial sites and commercial offices, impacting DNO's ability to manage local networks.

### Deferral of network charges

Responding to a request from the regulator, DNO's have used their borrowing powers to allow some suppliers a deferral of up to £350m of network charges as the COVID-19 crisis continues.

**The crisis has emphasised the need for a greater focus on national energy security at distribution level as distributed resources and demand side assets rise in volume**



## Energy suppliers

### Increased trust

PwC research has found trust in energy suppliers has increased as suppliers responded to affected customers and provided significant amounts of direct financial support to those most vulnerable.

### Increased costs

Suppliers are facing increased non-commodity costs and bad debt risks as a result of changes in demand and customers' financial situations, with little ability to recover any additional costs from customers.

### Digital service models

Suppliers have adapted to increased home working and encouraged customers to self-serve online.

**Suppliers can build on the success of the digital service platforms that have delivered well through the lockdown. More low and negative power prices should lead to the development of new time of use tariff options**



## Customers

### Reduction in energy demand

Energy demand has reduced by 15-20% during lock down compared to the same period in 2019.

### Change in energy usage patterns

The shift to home working, along with business closures, has led to greater domestic energy demand and the spread of energy use throughout the day; flattening day time peaks.

### Rising consumer engagement during lockdown

PwC research found 30% of customers are now paying more attention to their energy usage, and a majority have considered making a change such as lowering their usage.

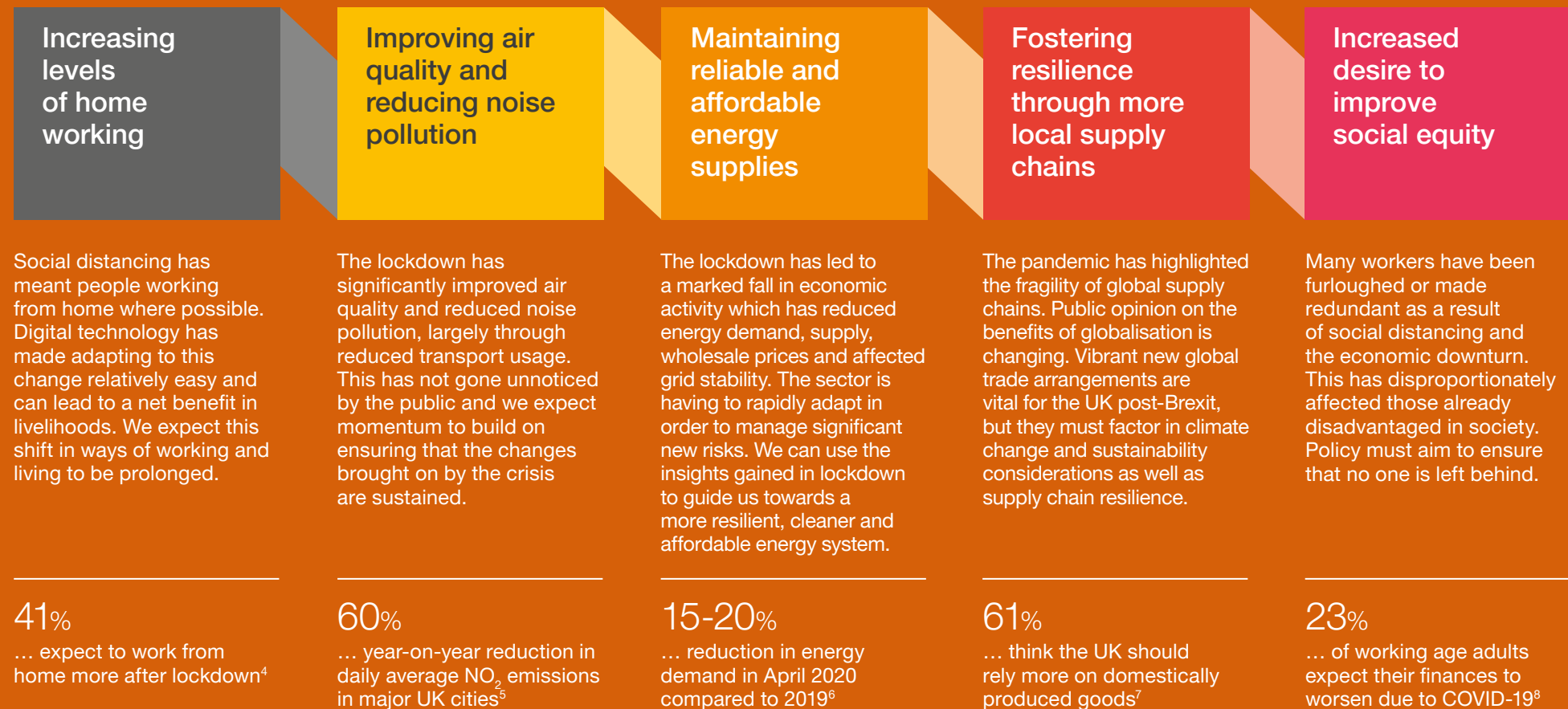
**Given higher engagement levels and financial distress, customers may seek out new ways to reduce bills e.g. energy efficiency measures and smart meters**







# Emerging societal themes post COVID-19



4. O2, CM and YouGov surveys

5. DEFRA

6. O2, CM and YouGov surveys

7. O2, CM and YouGov surveys

8. ONS



# Wider societal needs

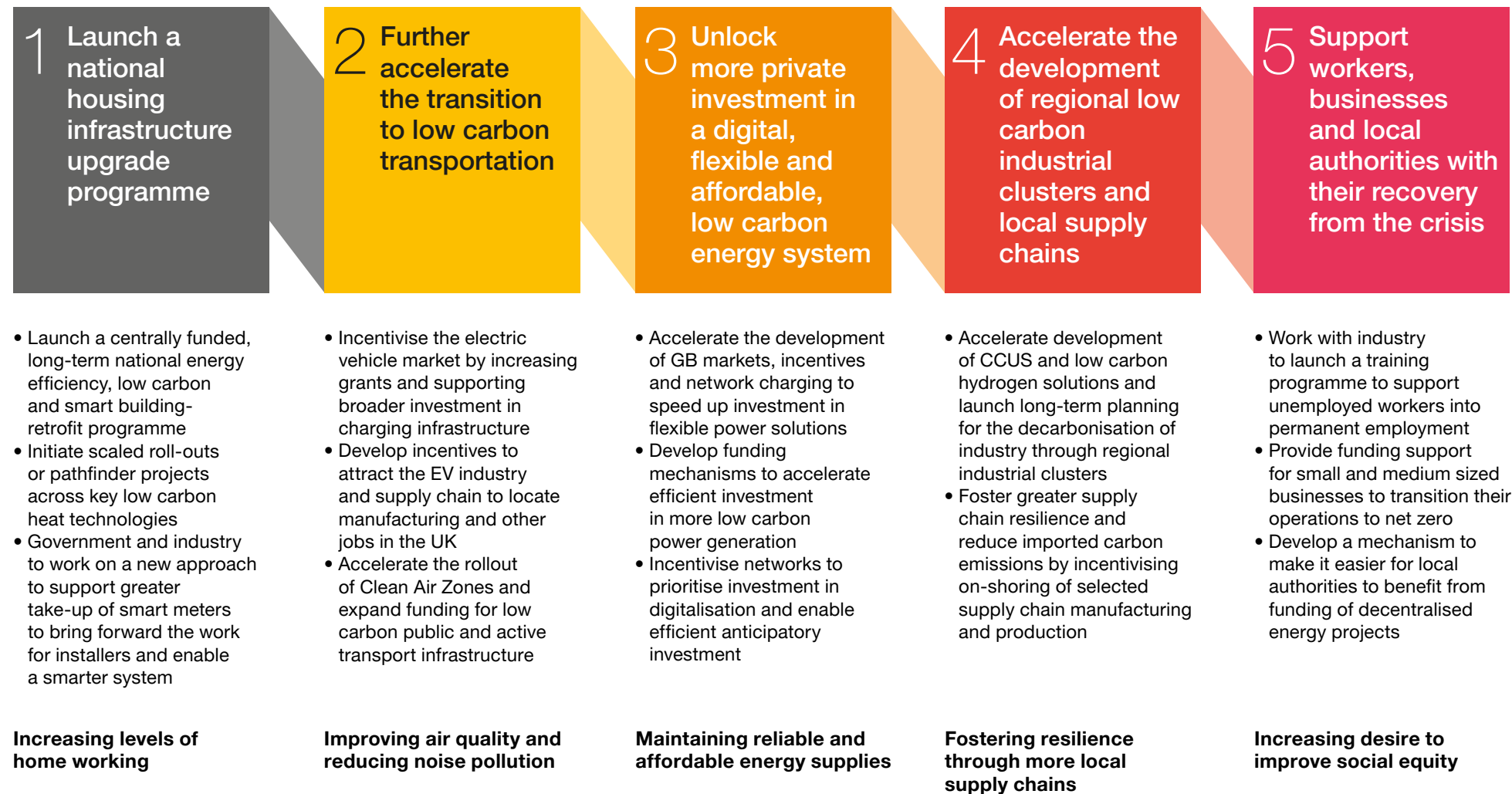
The government has many stimulus policy options to drive a UK recovery. In making choices, it is important to consider other societal needs – as well as jobs. We have identified four “tests” through which government can consider the effectiveness of different interventions in delivering against wider societal requirements.

Chosen policies should deliver against these wider societal objectives to ensure we rebuild a cleaner, fairer and more resilient economy. In our report, the policy recommendations contribute to all of these wider objectives, as well as to jobs growth.

Government policy tests		
	Description	The opportunity
Jobs	The pandemic has created a severe economic fallout and a primary focus of government policy should be to stimulate the economy and create new jobs in growth industries	The scale, geographic coverage and breadth of the energy industry makes it an excellent platform for job creation. There is a huge opportunity to create mass employment across the entire country. In particular, domestic, labour intensive activities can provide work for thousands and the development of other low carbon infrastructure and services can create long term employment in high growth sectors
Net Zero	There is mounting evidence to suggest that investing in low carbon, resilient infrastructure can have a more positive, long term impact on jobs as well as enabling us to deliver on our net zero commitment	The costs of a global natural disaster have been laid bare through the COVID-19 pandemic. It is imperative that we use this crisis to avoid another one – the climate crisis. If we use this opportunity now to create jobs in the development of infrastructure to protect our climate and natural resources, then we can avoid the need to incur additional, perhaps higher costs at a later date
Innovation & Leadership	Policy initiatives should provide the platform for businesses across the UK to be the best at their trade in the world, encourage inward investment and create export opportunities	The UK already has a leadership position on energy. The policy-led development of a low carbon energy system has put us ahead of most countries. We have created an environment for emerging technologies and businesses to succeed. We must build on this as we come out of the COVID-19 crisis and ensure that we drive greater investment in areas where the UK can be world leading – to drive greater exports and growth
Fairness	Social inequity is an increasing challenge for governments across the world. Post-crisis, policy must be focused on supporting those most vulnerable	Even ahead of the current pandemic crisis, social inequity, and a feeling in many communities of being left behind, has become an ever more visible challenge for governments across the world. We must take this opportunity to “level up” our economy in the UK by developing progressive policies that enhance fairness and protect the most vulnerable in our society



# Five steps to “Build Back Better”



# 1. Launch a national housing infrastructure upgrade programme

## Policy opportunity

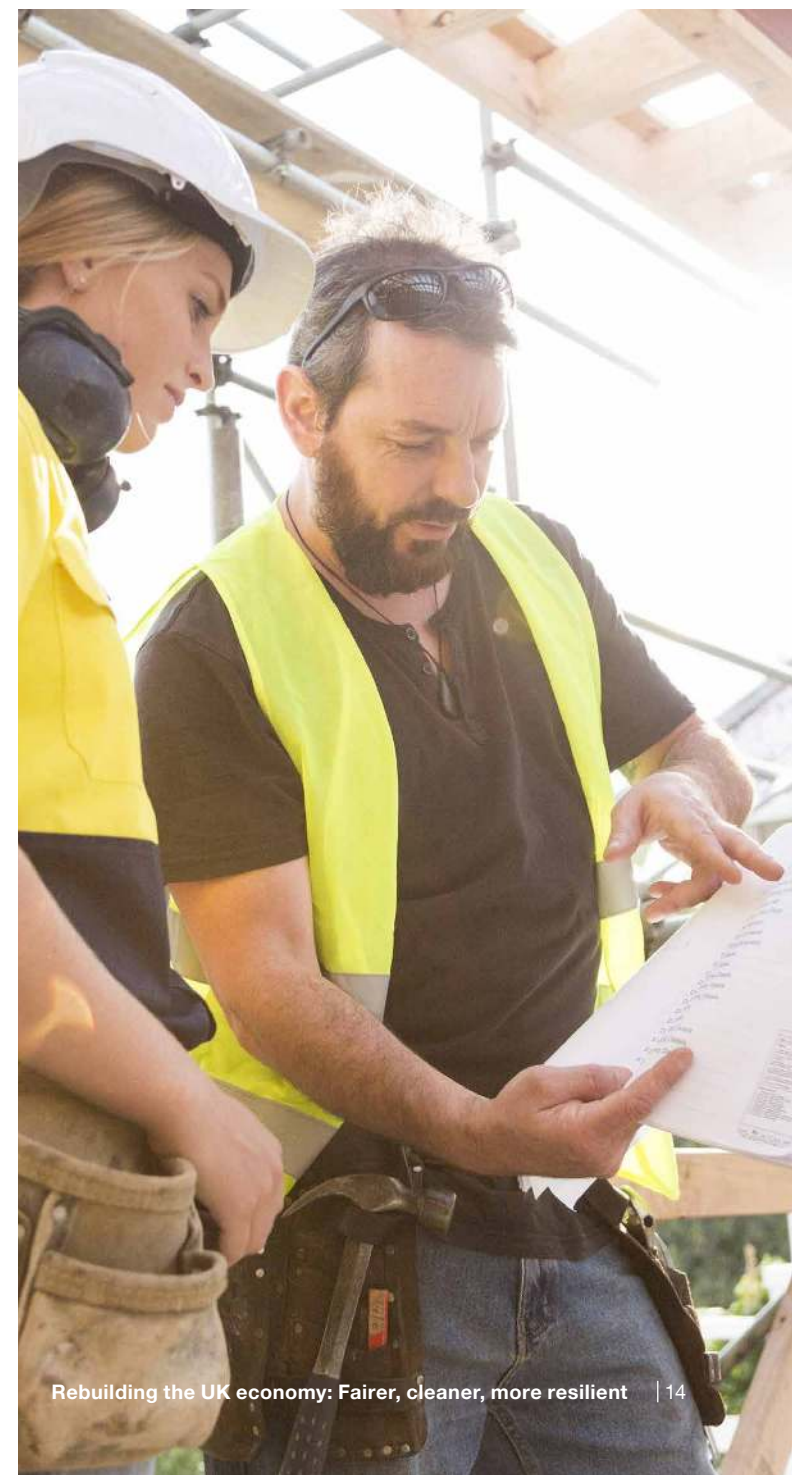
Create mass employment across the regions by initiating an ambitious programme of domestic energy efficiency and low carbon heat retrofit. This centrally funded initiative should focus initially on vulnerable homes in less affluent parts of the UK. By setting clear and ambitious targets, with sufficient scale, the supply chain can gear up to create long-term employment, keep energy bills down and accelerate our understanding of the decarbonisation pathway for buildings.

	Launch a centrally funded, long-term national energy efficiency, low carbon and smart building-retrofit programme	Initiate scaled roll-outs or pathfinder projects across key low carbon heat technologies	Government and industry to work on a new approach to support greater take up of smart meters
Recent examples	<ul style="list-style-type: none"> <li>The Clean Growth Strategy EPC C pledge</li> <li>£6.3bn of funding pledged for Social Housing and the Home Upgrade Grants</li> </ul>	<ul style="list-style-type: none"> <li>The Future support for low carbon heat proposals: biogas, heat-pumps &amp; biomass</li> <li>The Future Homes Standard for 2025</li> </ul>	<ul style="list-style-type: none"> <li>Post 2020 smart meter rollout framework consultation</li> <li>Installations delayed by COVID-19</li> </ul>
Next steps	<ul style="list-style-type: none"> <li>Deliver on the £6.3bn of funding pledged for energy efficiency in the manifesto by developing a long-term plan and for a UK retrofit programme</li> <li>Consider options to support the deployment of other low carbon solutions such as solar and in-home smart technology</li> <li>Deliver the Future Homes Standard by 2024 and create incentives to maximise the local content of materials used in retrofit</li> <li>Roll back VAT on low carbon building repair and renovation activities</li> </ul>	<ul style="list-style-type: none"> <li>Provide grants for large-scale low carbon heat pathfinder projects in homes and businesses across the UK, and in targeted regions to aid “levelling up”, inclusive of heat pumps, hybrid heat systems, district heat networks, hydrogen boilers and solar thermal</li> <li>Work with industry to establish a Heat Sector Deal that supports nationwide job creation and re-training, coupled with immediate carbon and cost reductions. This should include setting clear and ambitious targets such as installing one million low carbon heating systems by 2025 to stimulate an early market response</li> </ul>	<p>Bring forward the smart meter installation work for installers and enable a smarter system:</p> <ul style="list-style-type: none"> <li>Work with industry and consumers so that the default option becomes to have a smart meter installed</li> <li>Mandate the installation of smart meters in non-domestic premises and new build homes</li> <li>Review time-of-use signals to make them stronger and more dynamic</li> </ul>
Rationale	<b>Jobs</b> Every <b>£1</b> spent on energy efficiency... ... could increase GDP by <b>£3.20<sup>9</sup></b>	<b>Net Zero</b> <b>45%</b> ... of the UK's energy consumption is used to heat buildings – only 4.5% of this currently comes from low carbon sources <sup>10</sup>	<b>Jobs</b> <b>&gt;10,000</b> ... smart meter installers and engineers to deal with network incidents at the peak of the rollout <sup>11</sup>

9. Parliament Briefing “Future Energy Efficiency Policy” (2017)

10. Policy Connect: Uncomfortable Home Truths: Why Britain Urgently Needs a Low Carbon Heat Strategy (2019)

11. Energy & Utility Skills and the Skills Academy, DECC: Workforce Planning Model (2015)





## 2. Further accelerate the transition to low carbon transportation

### Policy opportunity

Clean air and quieter streets have been a feature of lockdown. The public now know what a better environment looks and feels like, and they also know what it is like to adapt to new ways of living. By further accelerating our shift to electric vehicles (EVs) and low carbon transportation, across public, private and commercial fleets, and prioritising support for development of a UK supply chain, we can embed this experience; we can protect and grow jobs in the UK automotive sector and in the wider low carbon supply chain.

	Incentivise the electric vehicle market by increasing grants and supporting broader investment in charging infrastructure	Develop incentives to attract the EV industry and supply chain to locate manufacturing and other jobs in the UK	Accelerate the rollout of Clean Air Zones and expand funding for low carbon public and active transport infrastructure
Recent examples	<ul style="list-style-type: none"> <li>• ICE vehicle ban brought forward to 2035</li> <li>• Plug-in Car and Van Grant, and home and workplace charging grant scheme</li> </ul>	<ul style="list-style-type: none"> <li>• Faraday battery challenge £246m to develop battery technology in the UK</li> </ul>	<ul style="list-style-type: none"> <li>• Clean Air Zones mandatory in five cities by end of 2020<sup>14</sup>, now paused due to COVID-19</li> <li>• £5bn for buses, cycling and walking infrastructure</li> </ul>
Next steps	<ul style="list-style-type: none"> <li>• Any financial support must incentivise EV purchases (rather than ICE vehicles) e.g. through a time limited increase to the Plug-in Car Grant and/or a zero-emission scrappage scheme</li> <li>• Implement the adopted recommendation from the EV Energy Taskforce to develop a local and national plan and mechanism to coordinate efficient investment in public charge point infrastructure across the UK, where the market will not deliver</li> </ul>	<ul style="list-style-type: none"> <li>• Develop long-term funding packages for strategic areas of the EV supply chain to develop new and repurpose existing manufacturing facilities. In particular, focus on battery production, fuel cells, powertrain development and smart charging</li> <li>• Ensure any COVID-19 related government support for the industry protects and enhances UK jobs in the EV and wider low carbon transport supply chain</li> </ul>	<ul style="list-style-type: none"> <li>• Provide more clarity for the EV supply chain by obligating all local authorities to develop Clean Air Zones (CAZs) and smart city strategies with a consistent approach and clear targets across the UK</li> <li>• Provide greater support for CAZs and smart cities to encourage public-private investment in decarbonising bus, taxi and commercial fleets and for public investment in cycling and walking infrastructure</li> </ul>
Rationale	Innovation	Jobs	Fairness
	<b>#1</b> ... reason for not buying an electric vehicle in the UK is the fear of lack of charge points <sup>12</sup>	<b>220,000</b> ... jobs could be supported by the EV industry by 2040 with adequate action, compared to 65,000 without <sup>13</sup>	<b>32,000</b> ... deaths per year are caused by long-term exposure to man-made air pollution – which disproportionately impacts lower income communities <sup>15</sup>

12. OVO Energy

13. Faraday Institution

14. Supreme Court order to cut air pollution in 2015

15. Public Health England



### 3. Unlock further private investment in a digital, flexible and affordable, low carbon energy system

#### Policy opportunity

The lockdown has given us a window into the future dynamics of the power grid. To keep energy bills down and to make sure the lights stay on, we need to attract more private capital to invest in flexible and low carbon grid solutions. Not only will accelerating this investment create employment, it will reinforce the UK's position as a leader in innovative new energy technologies that can be exported around the world.

	Accelerate the development of GB markets, incentives and network charging to drive investment in efficient flexibility solutions	Develop funding mechanisms to accelerate efficient investment in more low carbon power generation	Incentivise networks to prioritise investment in digitalisation and enable efficient anticipatory investment
Recent examples	<ul style="list-style-type: none"> <li>National Grid: future of balancing services</li> <li>During the crisis, the system operator has rapidly opened new markets for balancing</li> </ul>	<ul style="list-style-type: none"> <li>Solar and onshore wind back into CfD auctions from 2021</li> <li>New nuclear regulated asset base model in consultation</li> </ul>	<ul style="list-style-type: none"> <li>National Grid, first Gas Markets Plan</li> <li>RIO-2 (the future network's price control framework) business plans are in preparation, including anticipatory investment proposals</li> </ul>
Next steps	<ul style="list-style-type: none"> <li>Incorporate key learnings from COVID-19 on system balancing and the role of flexibility into the energy white paper</li> <li>Accelerate policy development by BEIS, Ofgem and ESO to create mechanisms that support a level playing field and sufficient incentives to speed up investment in a range of flexible power solutions in order to minimise whole system costs for consumer</li> <li>Ensure that reformed network charging arrangements provide cost reflective incentives for flexible power solutions</li> </ul>	<ul style="list-style-type: none"> <li>Build on the success of the CfD scheme by taking forward an ambitious programme and publishing an overall procurement strategy, at least out to 2030</li> <li>Agree consistent, sustainable funding models for efficient investment in strategic large-scale projects, such as new nuclear, low carbon hydrogen and CCUS</li> <li>Provide early clarity on the mechanism to deliver a strong carbon price from 1 January 2021 to promote low carbon development</li> </ul>	<ul style="list-style-type: none"> <li>Prioritise digitalisation of energy network infrastructure to enable more accurate public data on the evolving needs of the system</li> <li>Accelerate efficient anticipatory investment in physical assets whilst also establishing market mechanisms that value flexibility and support the energy transition in areas such as EVs, low carbon heating and low carbon generation</li> </ul>
Rationale	<b>Net Zero</b> <b>2025</b> ... the first year that the National Grid ESO aims to operate a fully zero-carbon electricity system for extended periods of time <sup>16</sup>	<b>Jobs</b> <b>15 TWh</b> ... increase in low carbon generation per year is required for the power sector to meet the 2030 carbon budget <sup>17</sup> , supporting at least 7,500 additional direct jobs <sup>18</sup>	<b>Innovation</b> <b>£39 billion</b> ... the amount that can be saved by future proofing energy networks during the 2020s, ready for 2050 <sup>19</sup>

16. National Grid (2019)

17. Carbon Brief: UK low carbon electricity generation stalls in 2019 (2020)

18. UKERC, PwC Strategy& analysis

19. Committee on Climate Change (2019)





## 4. Accelerate the development of low carbon regional industrial clusters and local supply chains

### Policy opportunity

The COVID-19 pandemic has highlighted the fragility of global supply chains, particularly for essential goods. The UK has a unique opportunity following Brexit and the pandemic to take a leading role in the revitalisation of the World Trade Organisation – to lead the charge on a vibrant, global trade regime that factors in the carbon cost of international production and transportation and the implications for ensuring the resilience of global supply chains. On-shoring of critical energy supply chains through the creation of low carbon industrial clusters will maximise resilience and jobs whilst reducing the carbon content of manufactured components.

	Accelerate development of CCUS and low carbon hydrogen solutions and launch long-term planning for the decarbonisation of industry through low carbon regional industrial clusters	Foster greater supply chain resilience and reduce imported carbon emissions by incentivising on-shoring of selected supply chain manufacturing and production
Recent examples	<ul style="list-style-type: none"> <li>At least £800m committed to a CCUS Infrastructure Fund to establish two or more industrial clusters by 2030</li> <li>BEIS outlined £28m for hydrogen projects</li> <li>Industrial decarbonisation and energy efficiency action plan</li> </ul>	<ul style="list-style-type: none"> <li>The US supported on-shoring post financial crisis<sup>18</sup>, through tax breaks, direct support and the 'Reshoring Initiative'</li> <li>£8bn French bailout for the auto sector, on condition they focus on EVs and base high tech jobs in France</li> </ul>
Next steps	<ul style="list-style-type: none"> <li>Accelerate the creation of commercial and regulatory frameworks for CCUS<sup>16</sup> to provide sufficient visibility and confidence for investors to support projects in the UK's five leading industrial clusters – creating a credible pathway to decarbonisation</li> <li>Commit to a UK low carbon hydrogen strategy and hold pathfinder auctions in 2020 for both green and blue hydrogen production, growing year-on-year, in order to develop large-scale plants in the UK by the mid-2020s and have established a low carbon hydrogen industry in the UK by 2030</li> </ul>	<ul style="list-style-type: none"> <li>As part of the UK renegotiating international trade arrangements, reflect the need to minimise carbon emissions and maximise supply chain resilience</li> <li>Provide incentives to onshore production through tax breaks, active assistance and by supporting the development of the skills base for production through Local Industrial Strategies</li> <li>Task the CCC to review the case to account for imported emissions in the net zero target and create incentives for UK businesses to reduce the carbon content of the goods they procure, e.g. maximising procuring from UK-based suppliers</li> </ul>
Rationale	<b>Jobs</b> <b>850,000</b> ... new green energy jobs could be created this decade if the UK uses recovery stimulus to fast-track decarbonisation <sup>17</sup>	<b>Net zero</b> <b>60%</b> ... the target of lifetime UK content in domestic projects set in the Offshore Wind Sector Deal by 2030 <sup>19</sup> , with the sector targeting a fivefold increase in exports to £2.6 billion per annum <sup>20</sup>

16. Carbon Capture Usage and Storage includes decarbonising fossil fuel power, decarbonising industrial processes, negative emissions from bioenergy generation, CO2 recycling

17. IPPR Environmental Justice Commission

18. 2012 State of the Union

19. BEIS

20. Renewable UK (2018)





## 5. Support workers, businesses and local authorities with their recovery from the crisis

### Policy opportunity

It is critical that opportunities are created to provide new roles for workers to support the transition to a low carbon economy. Local communities and businesses will have a key role to play and can benefit from targeted retraining and wider support for the development of low carbon infrastructure.

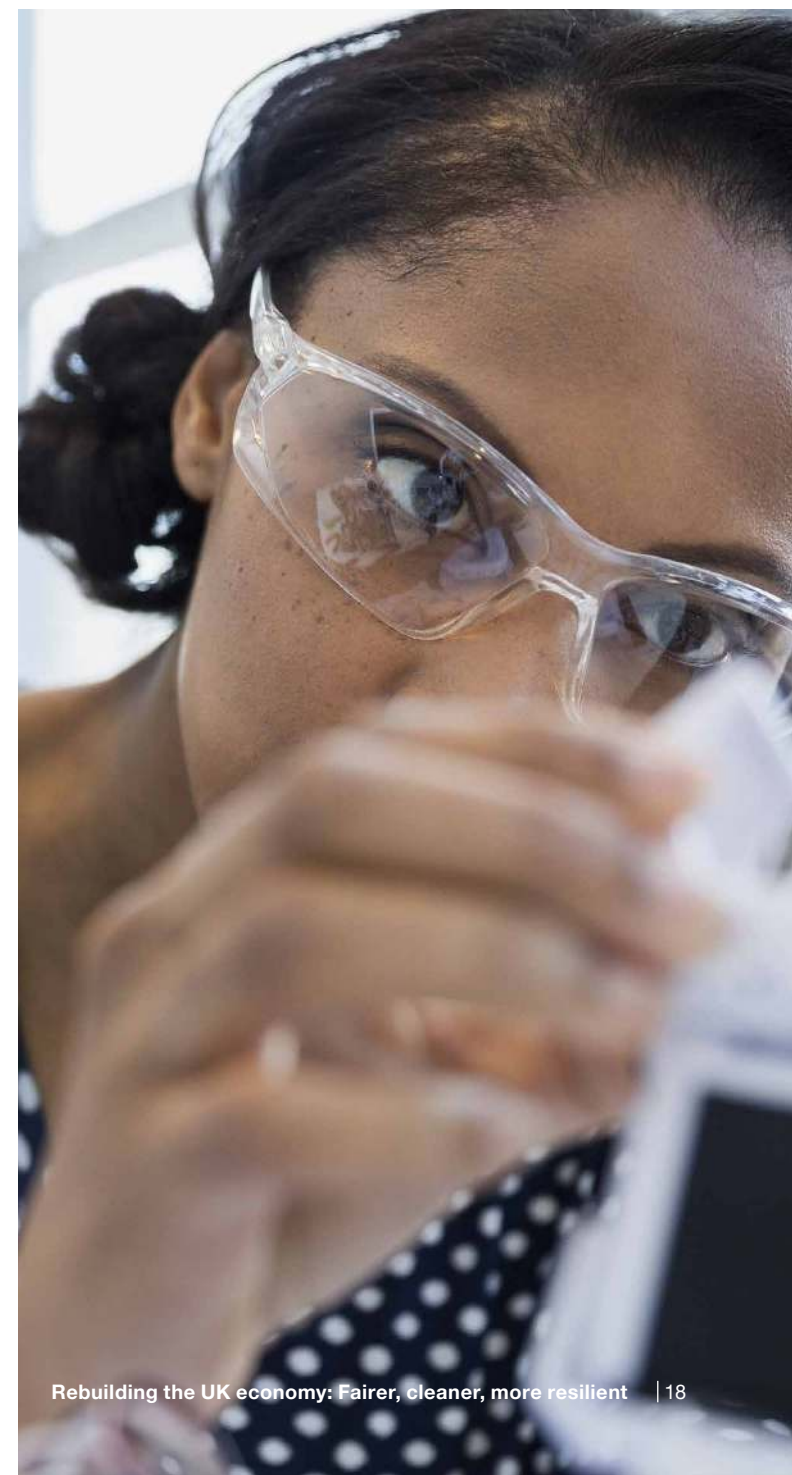
	Work with industry to launch a retraining programmes to support unemployed workers into permanent employment	Provide funding support for small and medium sized businesses to transition their operations to net zero	Develop a mechanism to make it easier for local authorities to benefit from funding of decentralised energy projects
Recent examples	<ul style="list-style-type: none"> <li>The Job Retention Scheme (COVID-19)</li> <li>The Future Jobs Fund, introduced to create subsidised jobs post-financial crisis</li> </ul>	<ul style="list-style-type: none"> <li>Benefit-in-kind tax break for EV fleets</li> <li>Business energy efficiency scheme call for evidence in 2019</li> </ul>	<ul style="list-style-type: none"> <li>Small funding through the RCEF<sup>23</sup> and the Energy Hubs for rural communities</li> <li>Riding Sunbeams community solar-rail</li> </ul>
Next steps	<ul style="list-style-type: none"> <li>Build on work already carried out with the energy industry to identify priority skills gaps, factoring in the impact of COVID-19 to identify redeployment priorities</li> <li>Develop a framework and incentives to redeploy and retrain new workers</li> <li>Ensure sufficient access to training schemes and provide additional funding where necessary for workers to build the right skills in strategic priorities</li> </ul>	<ul style="list-style-type: none"> <li>Provide low cost finance and/or tax breaks to support small and medium sized businesses to transition their operations to net zero, such as by electrifying their fleets or decarbonising their energy usage</li> <li>Accelerate the development of a mechanism to roll-out wider SME energy efficiency measures</li> <li>Consider linking post COVID-19 support packages to energy efficiency measures identified under energy savings opportunity scheme (ESOS) reporting</li> </ul>	<ul style="list-style-type: none"> <li>Improve access to funding for feasibility and development work for local authority led low carbon projects, e.g. solar</li> <li>Provide match funding for a trial of Local Area Energy Planning to deliver rapid holistic decarbonisation of a local area</li> </ul>
Rationale	Jobs	Jobs	Fairness
	<b>400,000</b> ... the number of direct jobs in the energy sector which must be filled to reach net zero (an increase of 250,000) <sup>21</sup>	<b>£69 billion</b> ... the estimated total cost of COVID-19 on small and medium sized businesses in the UK <sup>22</sup>	<b>£1.4 million</b> ... the forecast income for local community organisations, from the community owned Newton Downs solar farm <sup>24</sup>

21. National Grid

22. Simply Business

23. Rural Community Energy Fund

24. Power to Change



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Mitie Design RITM3135405 (06/20).