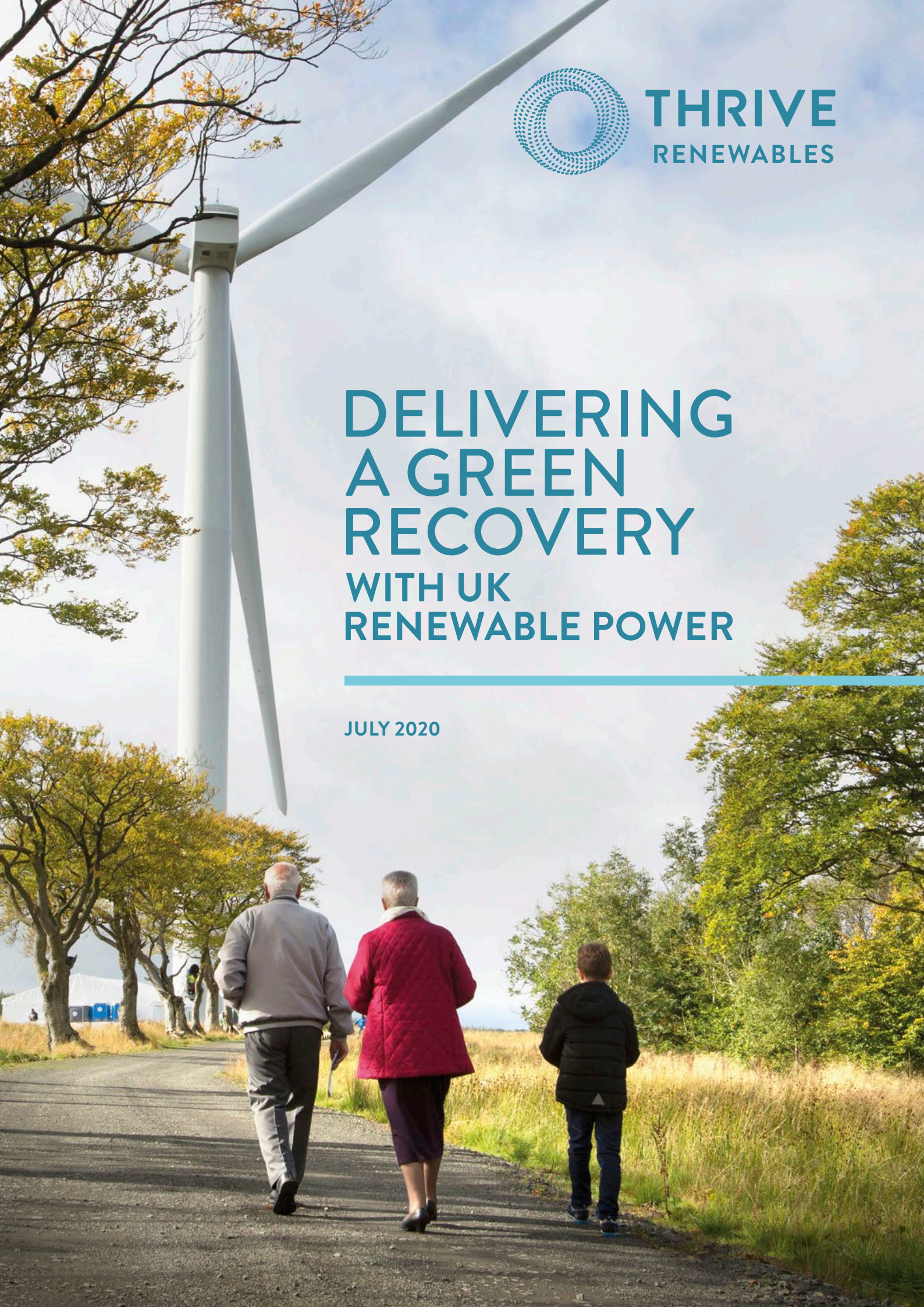


THRIVE
RENEWABLES

DELIVERING A GREEN RECOVERY WITH UK RENEWABLE POWER

JULY 2020



FOREWORD

COVID-19 has turned our world upside down. It is a global tragedy that has done away with business as usual and forced dramatic changes across every part of society. We have a huge job to do in rebuilding society and the economy, using the resilience and strength of our communities, which manifested itself during the crisis.

Individuals, businesses, NGOs and governments around the world have identified that as we rebuild, recovery policy and economic stimulus must be focused on measures and sectors that can accelerate change towards a sustainable, net-zero carbon emission economy. Building and reshaping our national infrastructure to reduce climate change presents an enormous opportunity to create jobs, improve skills and provide attractive investment opportunities for people and institutions.



Fortunately, there's no need to reinvent the wheel or – in this case – the wind turbine and solar panel. Onshore renewable energy infrastructure – principally wind,

solar and hydro – are cost-effective and proven technologies that can help us deliver net-zero, boost the UK economy, develop new supply chains and create green jobs.

This transition doesn't have to be complicated. We already have what we need. The UK has abundant natural resources and shovel ready projects, plus the technology and skills we need. The investment case is there. All we need to do is unblock the blockers and release the potential for onshore renewables to underpin a green recovery.



There are some simple but extremely effective steps that the UK Government can take to unlock real and measurable impact today. By providing policy certainty and removing unnecessary planning blockers, the Government can provide immediate opportunities to fuel the recovery and grow the economy.

THE NEED FOR ONSHORE RENEWABLE ENERGY

Renewable electricity generation – primarily wind, solar and hydro – is one of the great success stories of the decade. The carbon intensity of UK electricity has halved in the last 10 years.¹ A fundamental transformation is underway, costs have come down exponentially and the UK public overwhelmingly supports clean energy.²

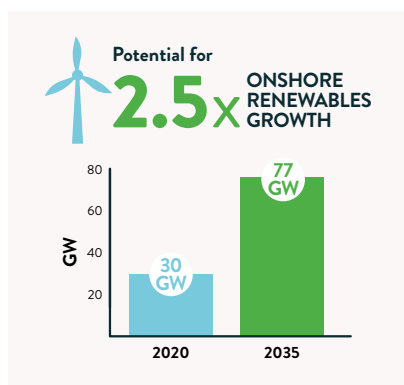
According to a National Infrastructure Commission report in March 2020: “Putting the UK on the pathway to a highly renewable electricity system is the best way to deliver low cost low carbon electricity for the UK.”

The Committee on Climate Change has consistently called for onshore renewable energy to be included in the Government’s decarbonisation strategy. In order to achieve the UK’s legally-binding target of net-zero carbon emissions by 2050, our electricity supply will need to double as we electrify heat and transport, and power from low-carbon sources will need to quadruple.³



UK renewable capacity is currently 47GW,⁴ approximately 40% of total electricity capacity. 29.7GW of this is onshore renewables – wind, solar and hydro. This is nowhere near enough to deliver net-zero. There is an urgent need and a huge latent potential to accelerate new onshore renewable developments and repower existing

assets. Onshore wind, solar and hydro can be built in just a few months. With a supportive regulatory environment, we could invest to deliver cheaper, cleaner electricity almost immediately.



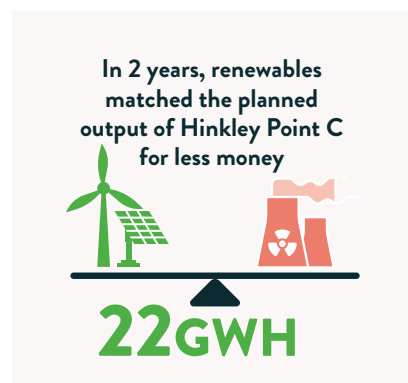
The onshore renewables industry is well established in the UK and costs have fallen dramatically in recent years. Costs for onshore wind technology have dropped by 40% since 2010, and solar by a massive 89%. By 2050, costs are expected to drop by a further 48% and 63% respectively.⁵

£/MWh cost	Today	VS	2035
ONSHORE WIND	£49	▼	
OFFSHORE WIND	£51	▼	
SOLAR	£55	▼	
GAS	£56	▲	
NUCLEAR	£138	?	

New onshore wind can deliver power at £49 per MWh today – 12.5% cheaper than gas generation. This trend is only set to continue with the cost of renewable generation expected to continue its decline.⁶

By proactively supporting onshore renewables, the UK government can set a trajectory today which will:

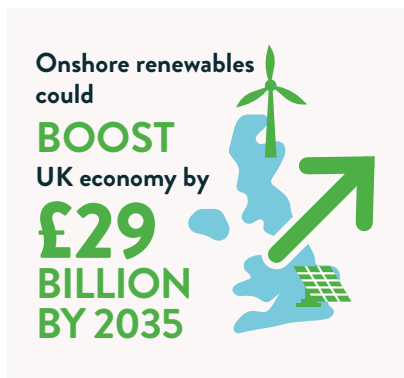
1. Deliver cheaper energy bills for UK homes and businesses.
2. Provide more clean electricity to power a sustainable recovery.
3. Be significantly faster to achieve than other technologies, such as nuclear. In the same two years spent moving soil and laying the foundations of Hinkley Point C, sufficient new renewable capacity was commissioned and had delivered power equivalent to the nuclear site’s total planned generation (22GWh annually).⁷



THE NEED FOR ONSHORE RENEWABLE ENERGY

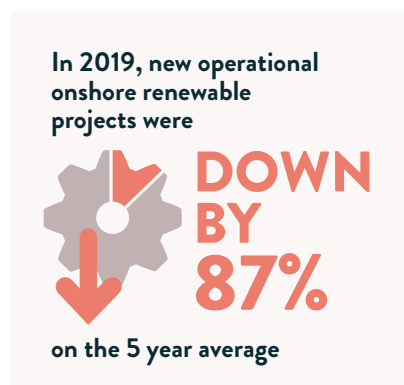
ONSHORE – THE OBVIOUS CHOICE

The Committee on Climate Change implies we will need a three-fold increase in generation capacity in order to meet net zero targets, and that's assuming we'll repower what we already have. Trade bodies for onshore wind, solar and hydro power are suggesting in total between them that 77GW of the required growth can be delivered by onshore renewables by 2035, which will require building 5.5GW of onshore renewable capacity annually. We estimate that could boost the UK economy by £28.9 billion.⁸

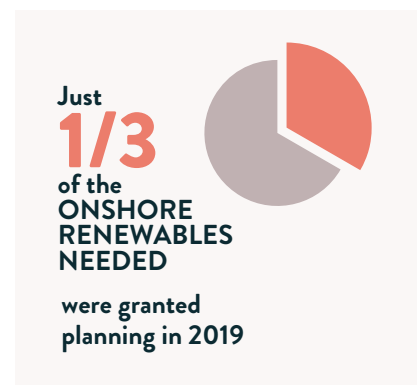


The UK has a groundswell of shovel-ready onshore renewable energy projects. Since January 2019, 276 onshore renewable electricity planning applications have been submitted, totalling 4,442MW of capacity. 182 (1,947MW) onshore renewable electricity projects have been granted planning during that timeframe.

The amount of renewable capacity added to the grid has dropped substantially in recent years, with 294MW of wind, hydro and solar onshore projects becoming operational in 2019, 87% lower than the five year average.⁹ Many sites are not being developed as the business case is unclear due to planning and revenue uncertainty, driven by the prevailing lack of clarity in Government policies.



Despite the challenging policy environment, the market is still trying to build 1.9GW of onshore capacity annually.⁹ However, this is only one third of what's required to deliver net zero. Imagine what could be achieved if the sector had clear policies – a solid long-term business case for onshore wind, solar and hydro could deliver huge opportunities for us all.



REPOWERING

Another opportunity to stimulate the expansion of renewables is to enable existing sites to be upgraded – “repowered” – with new and more advanced technology. The UK has almost 30GW of onshore renewable power generation. These wind, solar and hydro technologies are designed to operate for between 25-35 years. At the end of their life, rather than close the site, the best approach is to replace the old wind or solar technology with latest turbines or panels. In the case of onshore wind, this can often result in fewer wind turbines with greater productivity.

Repowering is much cheaper than building on a new site – the infrastructure is already there such as access roads and grid connections – and quicker to develop. Caton Moor is a Thrive Renewables onshore wind site in Lancashire. The site was repowered in 2006. Eight new turbines were installed, capable of generating seven times the power of the previous 10. Caton Moor wind farm is now supplying more clean energy more efficiently to UK consumers.

Combining repowering with a programme of building new onshore renewables is another way to unlock the much needed long term growth potential of the sector.

OPPORTUNITIES OF ONSHORE RENEWABLES

There are three key opportunities we can harness from accelerating onshore renewable energy in the UK:

SHOVEL READY INVESTMENT

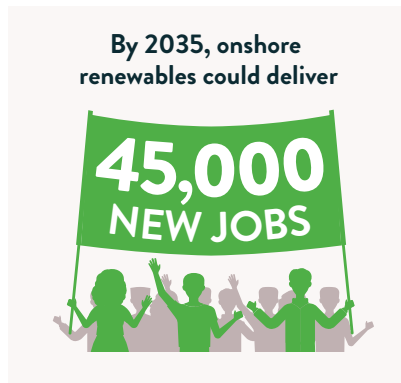
We estimate that there is an annual investment opportunity of £4.75 billion for onshore renewables alone, of which UK content of capital investment would be £2.1 billion,⁸ a material figure towards our national economic recovery. This will grow to an estimated 67% UK content as the majority of the ongoing costs for onshore renewables are local monitoring and maintenance.¹⁰

Many onshore wind, solar and hydro projects are an ideal size to bring together crowdfunding, community and direct impact investment. Of 182 (1,947MW) onshore renewable electricity projects that have been granted planning since January 2019, 45 (446MW) have a capacity between 2MW and 30MW. The investment opportunity of these projects, which UK individual investors could access, is in the region of £356m.

BOOST UK ECONOMY

Onshore renewables can also help to boost the economy as we emerge from the COVID-19 crisis.

- It will drive growth in employment.¹¹



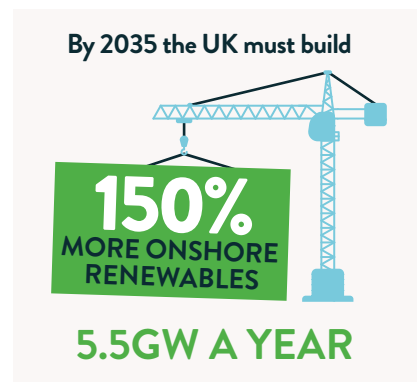
- And save consumers money.¹²



NET ZERO CARBON EMISSIONS

The UK has a legally-binding target to reach net-zero carbon emissions by 2050. Meeting this target will help us to slow climate breakdown and save our planet from heating to dangerous levels. Getting it right will save the UK from potentially significant sea, flood and drought defence expenditure and losses.

In order to achieve this, onshore renewable energy must grow by 150% by 2035.



UNBLOCKING THE BLOCKERS

In order to realise these opportunities, there are three key challenges that must be addressed by the Government:

PLANNING BLOCKERS

Unlike any other form of development, new onshore wind applications in England have to demonstrate to planners that the project is sited within an area designated for wind development by the local authority, within the local plan. However, the lifecycle of local plans can be 30 years, and many have therefore not been updated since that requirement came into place in 2015.

This effectively means planning permission is automatically blocked for new onshore wind projects in much of England. Two thirds of local authorities have declared a climate emergency, but may not have had the time to reflect this in their local plan. They therefore may not be able to grant planning consent to well-sited, appropriately-sized wind farms which will contribute to the UK's net-zero targets.

By removing this one piece of red tape from the National Planning Policy Framework, the UK Government could unleash investment and deliver lower bills and cleaner energy supply for UK consumers and businesses.

There is also no uniform approach to life extension and repowering, which has the potential to generate more clean power, more cheaply using modern infrastructure.

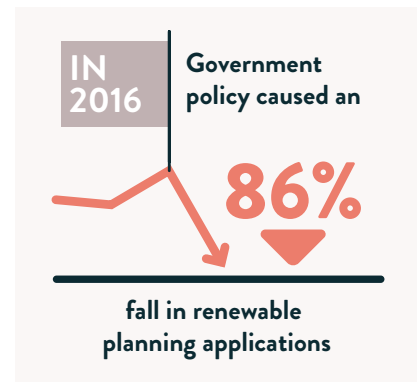
Without a uniform approach to planning, the risk for potential developers is too high and many are not able to justify the business case to make repowering happen. Every £1 of investment which can be de-risked will lower the cost of energy for UK homes and businesses.

COHERENT ENERGY POLICY

UK energy policy is like crazy paving at the moment, with market fundamentals skewed by a complicated cocktail of legacy interventions. This means long-term capital intensive decisions are very challenging to make, hence the current lack of investment. New onshore renewables are currently the only generation class entirely reliant on selling electricity on the open market.

The Government must demonstrate clear support by delivering long-term, simple energy policies that allow investment decisions to be based on fundamentals.

Certainty over mechanisms, such as the price stabilising Contract for Difference auctions, and distribution network connection planning and cost structures, would support the business case for renewable energy and ultimately lead to the UK being able to better utilise the benefits of its abundant natural resources – wind, sunshine and rain.



GRID CHALLENGES

In its annual report to Government in June, the Committee on Climate Change recommended that, in order to deliver net zero, energy networks must be strengthened to support the electrification of transport and heating.

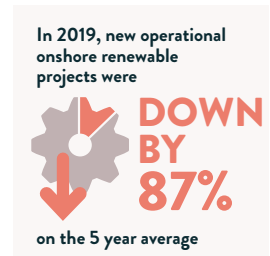
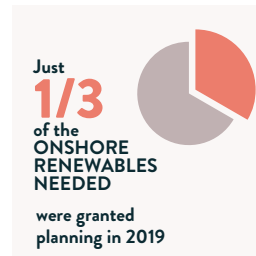
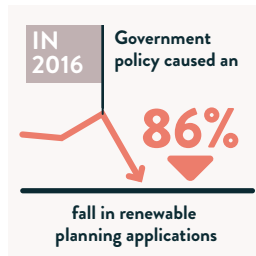
To benefit from the huge opportunities of increased electrification, the Government must give network operators licence to plan ahead and work transparently with developers to ensure the right renewable infrastructure can be built in the right places.

Every penny saved in this high-risk development phase has a significant impact on the price that the system and consumers ultimately pay for the electricity generated.

CONCLUSION

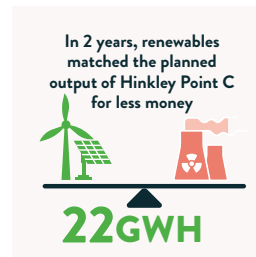
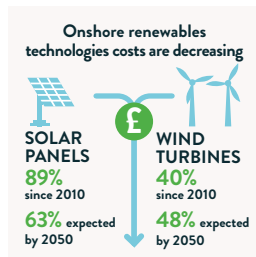
As we start to rebuild from the COVID-19 pandemic, the UK Government must seize the opportunity offered by the onshore renewables industry. It provides a simple and sure way to drive investment into our economy, deliver new green jobs and accelerate our net zero carbon emission ambitions.

Current state of play: Onshore renewables

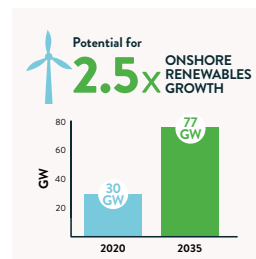
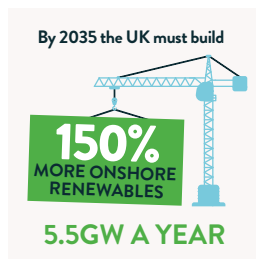


The industry does not require financial support. The technology is developed and operational, and improving all the time. Public support is consistently high, with the Government's own figures suggesting 82% of people are in favour of renewables.²

Unleash the potential of UK wind, solar and hydro



All that is needed is a policy environment that facilitates long-term decision-making for investors and developers. A long-term, coherent policy approach will enable the UK renewable energy industry to build a smarter, greener electricity system that is fit for the future.

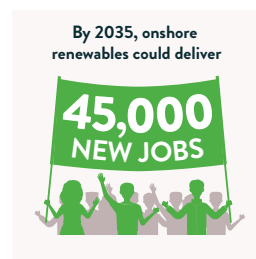


It is time to unblock the blockers and focus on this immediate, cost-neutral opportunity to create new skilled jobs, drive investment and power the UK's green recovery.

Seizing the opportunity to create investment, jobs and a green recovery



£/MWh cost	Today	vs	2035
ONSHORE WIND	£49	▼	
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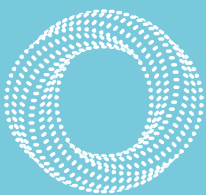




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- ¹ <https://www.gov.uk/government/collections/government-conversion-factors-for-company-reporting-2010-compared-with-2020-kgCO2e/kWh>
- ² Support for renewables 82% in March 2020 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/884028/BEIS_PAT_W33_-_Key_findings_Final_.pdf
- ³ <https://www.theccc.org.uk/2020/03/03/ccc-welcomes-government-re-commitment-to-onshore-wind-and-solar/> (section 2)
- ⁴ <https://www.gov.uk/government/statistics/energy-trends-section-6-renewables>
- ⁵ Bloomberg New Energy Finance <https://bnef.turtl.co/story/neo2019/page/5/1?teaser=true>
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- ⁷ <https://www.gov.uk/government/statistical-data-sets/historical-electricity-data>
- ⁸ Trade bodies (RUK, STA and BHA), are suggesting 77MW of the required growth to hit net zero can be delivered by onshore renewables by 2035. This will require building 5.5GW of onshore renewable capacity annually between now and 2035.

This creates an annual investment opportunity of £4.75bn. Of this £2.75bn is required to deliver onshore wind, £1.4bn Solar and £0.6bn Hydro (CAPEX estimates based on current market procurement).
- It is estimated that over 40% of the development and capital expenditure is UK content. The proportion of UK content renewable projects grows in the operational phase, estimated to be 66% for onshore wind. <https://bvgassociates.com/economic-benefits-onshore-wind-farms/>
- The UK content of the development and construction of ground mounted solar PV is estimated to be 46%, growing to 68% in the operational phase (<https://www.solar-trade.org.uk/sta-calls-for-government-to-commit-to-2030-solar-target-to-drive-green-recovery/>). The BHA estimate that 70% of CAPEX and OPEX of small hydro is UK content (<http://www.british-hydro.org/hydro-facts/>)
- ⁹ <https://www.gov.uk/government/publications/renewable-energy-planning-database-monthly-extract>
- ¹⁰ Projected capacity weighted figure combining information from <https://bvgassociates.com/economic-benefits-onshore-wind-farms/> (wind), <https://www.solar-trade.org.uk/sta-calls-for-government-to-commit-to-2030-solar-target-to-drive-green-recovery/> (solar) and <http://www.british-hydro.org/hydro-facts/> (hydro)
- ¹¹ Job creation calculations based on estimates from industry associations. Wind 18,800, Solar 22,800, Hydro 3,250.
- ¹² Saving calculated using Arup (2018) Cost of Capital Benefits or Revenue Stabilisation via a Contract for Difference: <https://www.arup.com/perspectives/publications/research/section/onshore-wind-financing>. Multiplied by the anticipated growth of onshore renewable projects from RUK, STA and BHA (see footnote 8), and the number of UK households <https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/families/adhocs/005374totalnumb>



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