



The voice of the energy industry

STORMS APPROACHING: **How to prevent an investment hiatus in UK low-carbon generation**

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EXECUTIVE SUMMARY

The UK is at a crossroads in our energy transition. The Government has set bold targets to tackle climate change and bolster our energy security through a rapid expansion of clean, homegrown energy. Doubling down on new-low carbon generation will combat the cost of living crisis, the energy crisis, and the climate crisis, all at the same time. This can only be achieved by ensuring that the UK continues to attract international private sector investment into low carbon projects; providing jobs, skills, and economic growth to parts of the country that need it most.

Challenging investment conditions

Yet the harsh reality is that **the investment climate for UK low-carbon generation has deteriorated significantly over recent months.**

- Inflation, interest rates, supply chain difficulties, and increased competition from abroad are all leading international investors to reconsider where they allocate capital.
- A poorly designed windfall tax has caused immediate concerns for the viability of new clean energy projects, particularly renewables.
- **The knock-on effect for new low carbon generation is that overall costs have increased by a staggering 20-30%, with some developers reporting cost increases of up to 50% for specific projects.**
- These cost increases are compounded by systemic regulatory uncertainty, and lengthy delays to planning and grid connections which hold back new projects from being built quickly.

The impact of lost investment

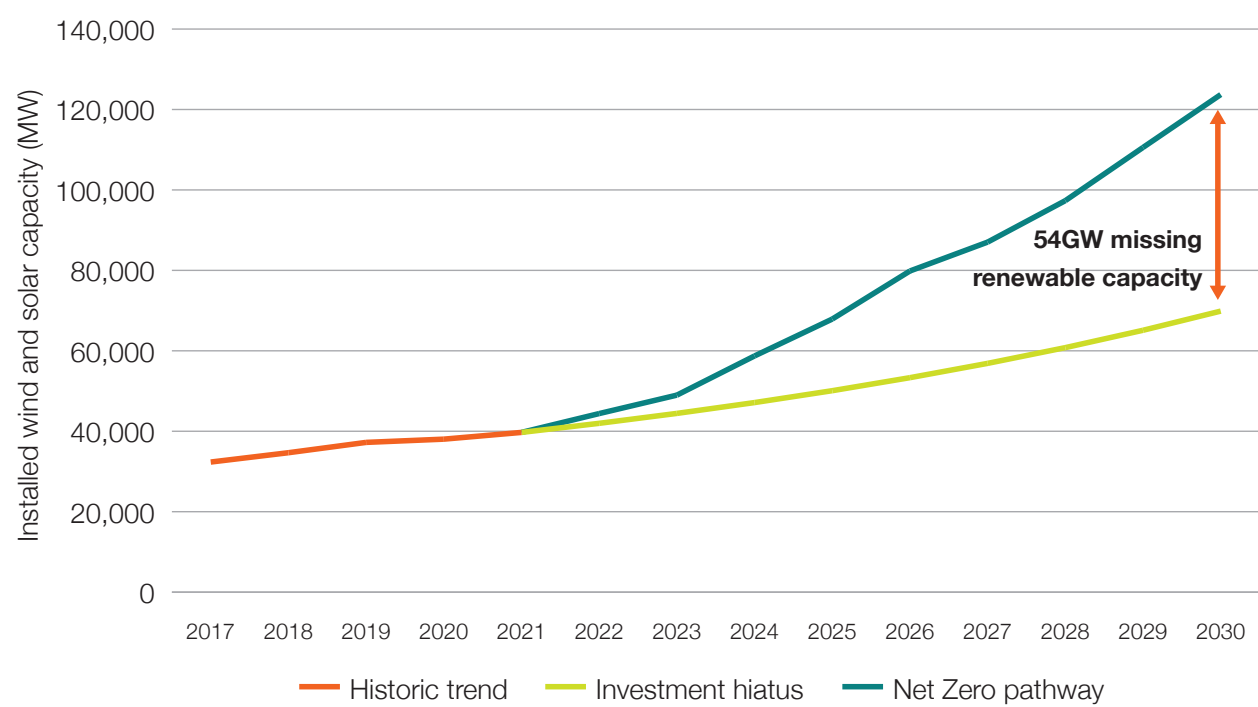
Without rapid Government intervention, it has become increasingly clear that the UK will be unable to secure the private sector investment needed to reach our energy security and Net Zero targets.

Not ramping up investment to achieve the £500 billion¹ needed in additional power sector investment to meet our Net Zero goals would have crippling consequences for the country. The UK is on course for an investment hiatus in low carbon generation that will lead to higher energy bills for longer, increased emissions, and continued reliance on volatile and expensive international energy markets. If these economic headwinds remain unaddressed, they will have serious consequences for our ability to accelerate the deployment of low-carbon generation. **Energy UK analysis has revealed that the coming investment hiatus could result in;**

- **£62 billion of missing investment in the UK economy between now and 2030**
- **Failing to build 54GW of wind and solar generation this decade - capacity that could deliver generation each year to cover the current annual usage of every UK household**
- **Losing out on potential bill savings of hundreds of pounds per household (depending on the price of gas)**

- **Irreparably damaging supply chains, that will take considerably longer to recover than investment.**
- **Missing our near-term targets, especially by not reaching 50GW of offshore wind by 2030.**

Failing to accelerate investment will lead to 54GW of missing capacity:



The road to recovery

Whilst the effects of an investment hiatus are sobering, it's not too late for the Government to put in place policies that can safeguard the UK's role as a clean energy superpower. Ensuring that the UK remains an attractive location for international investment in low carbon generation requires a serious reevaluation of current policy. With the Spring Budget approaching, an immediate rethink of fiscal policy is needed to secure the potential capacity that is – at this very moment – under threat. Without this action, we will lose near-term investment crucial to achieving our energy security and Net Zero targets. Measures the Government can take today include;

- **Rethinking the Electricity Generator Levy (EGL)**, for example by including an Investment Allowance consistent with the treatment of oil and gas extraction. The draft EGL legislation would lead to oil and gas extraction facing a lower rate of effective tax than low carbon generation.
- **Reforming the Capital Allowance Regime** to provide enhanced incentives for low carbon investment. This is particularly important now that the US has fired the starting gun on the race to Net Zero and energy security through the Inflation Reduction Act (IRA).
- **Maximising capacity from future Contracts for Difference (CfD) Allocation Rounds** by addressing design issues and increasing the budget. This has been given added urgency by the EGL which has effectively redirected projects that may have pursued a merchant route to market toward CfDs.

In addition to immediate interventions needed at the forthcoming Budget, maintaining investor confidence in UK low carbon generation requires policies that provide long term certainty to create a stable investment environment. This includes;

- **Pursuing Voluntary CfDs** (VCfDs) as a way to bolster investor confidence, provide net benefits to consumers, and decouple electricity prices for existing low carbon generation from marginal prices set by gas.
- **Signalling Certainty** by providing a stable and predictable long-term policy landscape, and by ruling out revolutionary market reforms as soon as possible.

The clock is ticking on investment in low-carbon generation that will provide the backbone of the UK's Net Zero economy. Without putting in place a compelling regime of incentives, the UK risks falling behind and losing crucial investment. The longer that the UK presents a less attractive investment climate than other economies, the harder it'll be to persuade investors to choose the UK over them. A cheap, clean, and secure energy system is within reach, but immediate action is required to keep it there.

UNLOCKING INVESTMENT: NOW AND IN THE FUTURE

The UK is on course for an investment hiatus in low-carbon generation that could have crippling consequences for our Net Zero trajectory. Without rapid Government intervention, the UK will miss out on vital low-carbon capacity that can bring down bills, ensure a secure sovereign energy system which has significant export opportunities, and foster economic growth across the country. However, it isn't too late for the Government to intervene and ensure that the UK remains an attractive destination for international investment. Both immediate fiscal interventions and actions to create a sustainable investment environment in the long term are needed to secure the UK's low-carbon future.

Immediate Fiscal Rethink

As soon as possible - ideally in the upcoming Budget - the Government should set out changes to address concerns about the Electricity Generator Levy and the broader tax treatment of low-carbon investment. Time is of the essence to prevent an investment hiatus.

Optimising the Electricity Generator Levy

If the Government plans to go ahead with the EGL, it is crucial that it doesn't negatively affect the very investment needed for future projects. At a minimum, the EGL should:

- **Include an investment allowance consistent with the treatment of oil and gas extraction.** The draft EGL legislation would lead to oil and gas extraction facing a lower rate of effective tax than low-carbon generators. As a minimum, the EGL must be no worse than that applied to oil and gas extraction in terms of investment allowances. The preferential treatment given to the oil and gas sector through the investment allowance in the Energy Profits Levy sends the wrong signal to investors. Should the Government choose not to offer an investment allowance, it is critical that changes to the tax regime are prioritised to incentivise new investment, such as changes to the Capital Allowances Regime.
- **Exclude merchant nose revenue.** The inclusion of this revenue under the EGL has placed Allocation Round 4 (AR4) projects at risk of non-delivery. Developers are eager to move ahead with AR4 projects, but may be unable to do so unless the Government recognises that AR4 strike prices reflect the ability of generators to factor in a period of merchant exposure.
- **Exempt merchant investment that is scheduled to be built before 2028 and did not reach financial close by the start of the renewed Russian invasion of Ukraine in February 2022.** Many of these projects have grid connections and planning permission, and are facing Final Investment Decision in the next 6 months. If such projects fell under the scope of the EGL, there are serious concerns that they may not go ahead.

Taxation of low-carbon investment

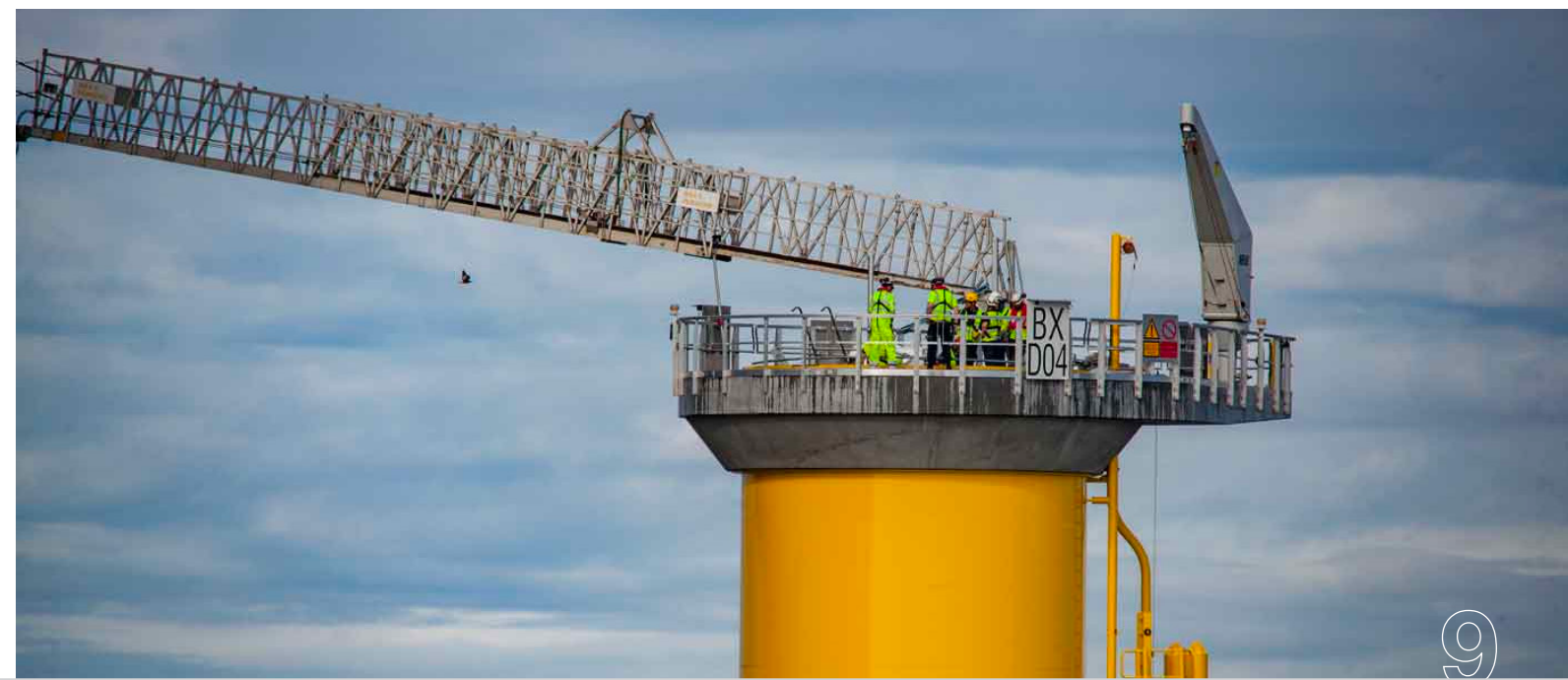
Beyond the EGL, increased international competition through the US Inflation Reduction Act (IRA) and a forthcoming EU equivalent, mean that the Government should consider putting in place changes to the capital allowance regime that provide compelling incentives for investment. This could include:

- **Exempting low-carbon generation from the 25 year asset lifetime rules:** A significant reduction in capital allowances rate for assets with a useful economic life of 25 years or more from 18% to 6% will have a material impact on the investment case for such assets. Exempting Net Zero plant and machinery capital expenditure from the 25 year asset life limit for general pool capital allowances, such that the 18% rate is available would be essential.
- **Significantly writing down allowance rates** and switching from reducing balance basis to straight line depreciation to increase competitiveness with other OECD countries. Increasing the very low rates of Structures and Buildings Allowances and special rate capital allowances for plant and machinery would help improve the investment case.
- **General pool capital allowances for all civils, plant, and machinery spend for electricity infrastructure:** Treating all civils, plant, and machinery spend on net zero assets as qualifying for general pool capital allowances at the 18% rate could also help improve the investment case.
- **Extending the 130% “super deduction” regime to apply to all assets purchased as part of a renewable project** (irrespective of whether the asset would qualify for general pool allowances or other allowances) with flexibility as to when the benefit of the allowance can be claimed. The 130% super deduction applied for purchases of only 2 years (ending 31 March 2023) but carved out investment already contracted at the announcement date (3 March 2021) meaning the renewables sector didn’t obtain much benefit as the projects signed after this date were largely constructed/invoiced too late. The UK loss relief rules also potentially materially reduce the value of the super-deduction if losses arise that can only be carried forward to later period.
- **Creating a 100% first year allowance (FYA) regime for all assets purchased as part of a renewable project, with flexibility as to when the benefit of the allowances can be claimed.** There are/ have been several FYA regimes in the past including the “Enhanced Capital Allowances” (ECA) regime which was specifically targeted at purchase of green technology in all businesses. If a specific regime was introduced for assets used in a renewable project, there is considerable potential benefit on the NPV (if the losses created were available in the first year are available for offset in that year or soon after, or can be spread to avoid the impact of the 50% loss relief cap) without there being an overall cost to the Treasury.
- **Extending the Annual Investment Allowance (AIA) for qualifying renewable projects from £1m to £20m.** If renewable projects obtained a high value of AIA there would be a cash flow benefit from obtaining more up front tax relief in the first year. There is no overall cost to the Treasury, this simply moves some relief earlier within an established framework of the annual investment allowance.
- **Increasing certainty that all capital spent on Net Zero appraisal and development qualifies for capital allowances:** There remains a risk that spend on assessing and developing Net Zero infrastructure falls between two stools for tax purposes, being neither revenue nor capital allowances-qualifying, thereby denying any tax relief. An explicit confirmation that any spend of a capital nature wholly and exclusively incurred on Net Zero projects would qualify for capital allowances would allow companies to include the benefit in their base case economics.
- **Extending the relief for decommissioning costs** available for oil and gas assets to low-carbon investments, or allow capital allowances on decommissioning costs during the project lifetime.
- **Extending the R&D Expenditure Credit (RDEC)** to capital expenditure for low carbon projects.

Maximise capacity from future Contract for Difference (CfD) Allocation Rounds

As demonstrated in examples below, increasing the capacity for near term CfD Allocation Rounds is crucial to reach our Net Zero targets, and to combat the gas crisis. This has been given added urgency by the EGL which has effectively redirected projects that may have pursued a merchant route to market toward CfDs. Unless we fully maximise the capacity from these Allocation Rounds, there is a strong likelihood that the UK will lose prospective renewable capacity. Not increasing the procured capacity now either means an exponential increase in AR7 that will be difficult and expensive to manage correctly, or missing the 2030/2035 targets. Building investor confidence and making the most of the pipeline of available projects needs to start now to achieve these goals and put the UK on the right path. The Government should:

- **Recognise that costs will increase for AR5 and AR6 projects due to the broader economic conditions.** Low-carbon generation remains excellent value for money, but higher costs will be reflected in higher strike prices. This must be counterbalanced against the cost of not bringing forward the lowest available cost generation and continuing to rely on volatile and expensive international gas markets. The main purpose of CfDs should be to deliver the largest volume of renewable capacity possible at lowest available cost, not to keep driving prices down beyond what is realistic given market conditions.
- **Maximise the budgets of AR5 and 6.** Before economic conditions and windfall taxes stifled investment, there were already concerns that the UK was not on track to meet its own targets. A significant increase in budget is the least regret option.
- **Address the issue of pot structure** by putting in place mechanisms that will ensure established technologies are not penalised by being grouped together in one pot.
- **Increase the Administrative Strike Prices (ASP) for AR5 and 6.** There is genuine concern in industry that the proposed AR5 ASPs are too low given the financial situation.
- **Signal what future Allocation Rounds will look like** by bringing forward parameters and a full schedule for AR6 and onward to allow industry to prepare and increase investor confidence.
- **Ensure stability in CfD design in the short term.** Energy UK believes that more substantial reforms should be envisaged from AR7 onwards, but not for the next 2-3 years in the midst of an investment crisis.



Creating a long-term, sustainable investment environment

In addition to the immediate changes outlined above, the Government can and should take actions to create a long-term, stable environment that creates the confidence to invest vital new generation capacity. Steps taken in the coming months and years will set the country up for success in decades to come.

Voluntary Contracts for Difference

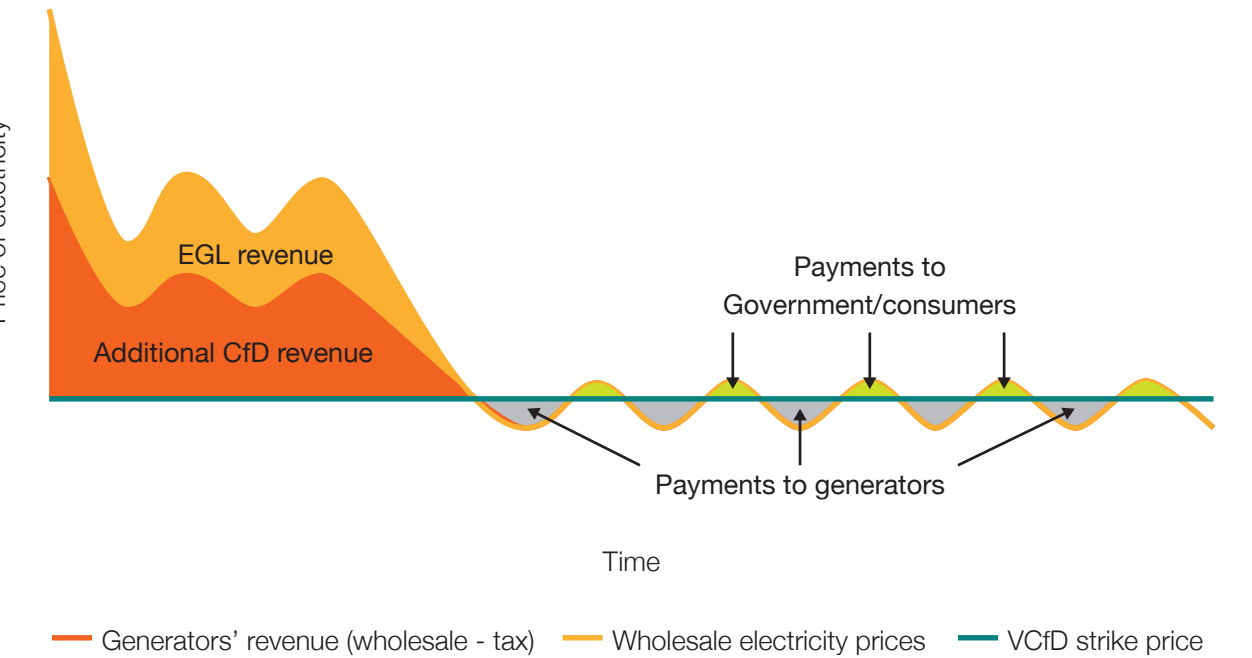
This is a challenging time; investor confidence has been called into question, public finances are under intense pressure, and millions of households are struggling with high energy bills. To bring down bills, and maintain investor confidence, we believe that the Government should pursue the idea of Voluntary CfDs (VCfDs). This voluntary scheme, first outlined by UKERC, would enable Renewable Obligation (RO) and nuclear generators to secure a CfD in place of selling electricity at wholesale prices.² If every RO eligible plant were to move onto a VCfD (over a period of time as hedging arrangements unwind), more than 35GW could be covered, including 18GW of wind, 9GW of biomass and 6GW of solar. This is the equivalent of more than a fifth of total generation. Including nuclear capacity under VCfDs increases that figure further. The required legislation has now been brought forward through the Energy Prices Act. Introducing VCfDs would do the following:

- **Bolster investor confidence at a time of deep uncertainty.** Longer term contracts provide investor certainty and offer a route out of the political risks inherent in policy and market instability.
- **Save the public money.** The EGL taxes 45% of revenue above £75/MWh. We believe that VCfDs are likely to have strike prices at a similar – if not lower – level than the EGL threshold. The Government (or billpayer, depending on how they are structured) will keep 100% of revenue above this threshold. Whilst power prices are high, the Government gains much more from assets on a VCfD than on merchant plant subject to the EGL. At the autumn statement, the EGL was forecast to raise over £7bn between in 23/24 and 24/25.³ Whilst this is highly dependent on energy prices, every MW of capacity moving to a CfD will raise more money in the next few years.
- **Allow for greater investment and provide net benefits to consumers.** Generators are willing to surrender volatile wholesale market revenue in exchange for a stable fixed term contract with lower overall returns. This means that the sum of the losses (ie gains to consumers) in the near term will be greater than the sum of the gains (ie costs to consumers) in the longer term as generators value a low but certain revenue more highly than an uncertain but potentially high revenue. Setting prices through a competitive action will mean that the CfDs attract the lowest possible price depending on generators’ future expectations of prices and revenues. Strike prices can be brought even lower through refinancing gains, which makes capital available for new projects, and gains to consumers may be even higher than our estimates if energy prices return to higher levels in the future.
- **Decouple electricity prices for existing low-carbon generation from marginal prices set by gas whilst limiting the impact on investment.** Energy UK strongly believes that consumers should be able to benefit more directly from the low cost of low-carbon energy. The Review of Electricity Markets Arrangements programme is looking at options to decouple gas from electricity prices. VCfDs provide a much quicker route to decoupling large volumes of renewable power from gas prices and reduce the need for more destructive reforms that could exacerbate the investment crisis.
- **Avoid a cliff-edge for RO era renewables that may stop generating once the subsidy has lapsed.** As mentioned previously, once the RO subsidy comes to an end and owners of older generation are making decisions about how much longer to operate plant, there are serious risks that lower wholesale market

prices will force them to stop generating. A VCfD would enable those generators to continue generating, and boosting both our security of supply and Net Zero pathway.

- **Reduce barriers to continued operation.** VCfD contracts could also provide much needed support to life extension and repowering. If generators had a VCfD contract prior to undergoing the repowering process, it would provide a strong incentive to pursue this route. Repowering and life extension are crucial to reaching our targets as they provide a cost-effective, and efficient way to expand much needed generation capacity.

Figure 1: Potential trajectories of Voluntary Contract for Difference and Electricity Generator Levy



Note: hypothetical scenario based on medium-term electricity forward curves and representations made by generators to Energy UK about VCfD strike prices

Signal certainty

The market has been spooked by the political instability of recent months, and deterioration of the investment landscape. **It's crucial that the Government steps in to provide long-term investment certainty through a predictable policy environment.** This will require moving away from stop-start policymaking that harms investment, and focussing on longer-term challenges that represent barriers to the delivery of Net Zero. These include the need to urgently accelerate delivery of new grid infrastructure, and planning issues which remain pivotal in the delivery of low-carbon generation. But it will also involve the recognition that in the midst of an investment crisis, what the industry needs now is stability. **The Government should make efforts to rule out more revolutionary reforms as part of the REMA programme as soon as possible,** to reduce the risk premium inherent in UK low carbon investments. It is hard enough to persuade investors to choose the UK amidst the current economic conditions without destructive reforms hanging over the industry indefinitely. The Government should ensure that the REMA programme works quickly to narrow down options, ensure that the scale of intervention is manageable, and that the timelines for reform are clear. The quicker the Government can streamline the options and decide on a clear and investable evolution of market arrangements, the quicker that risk premiums will come down.

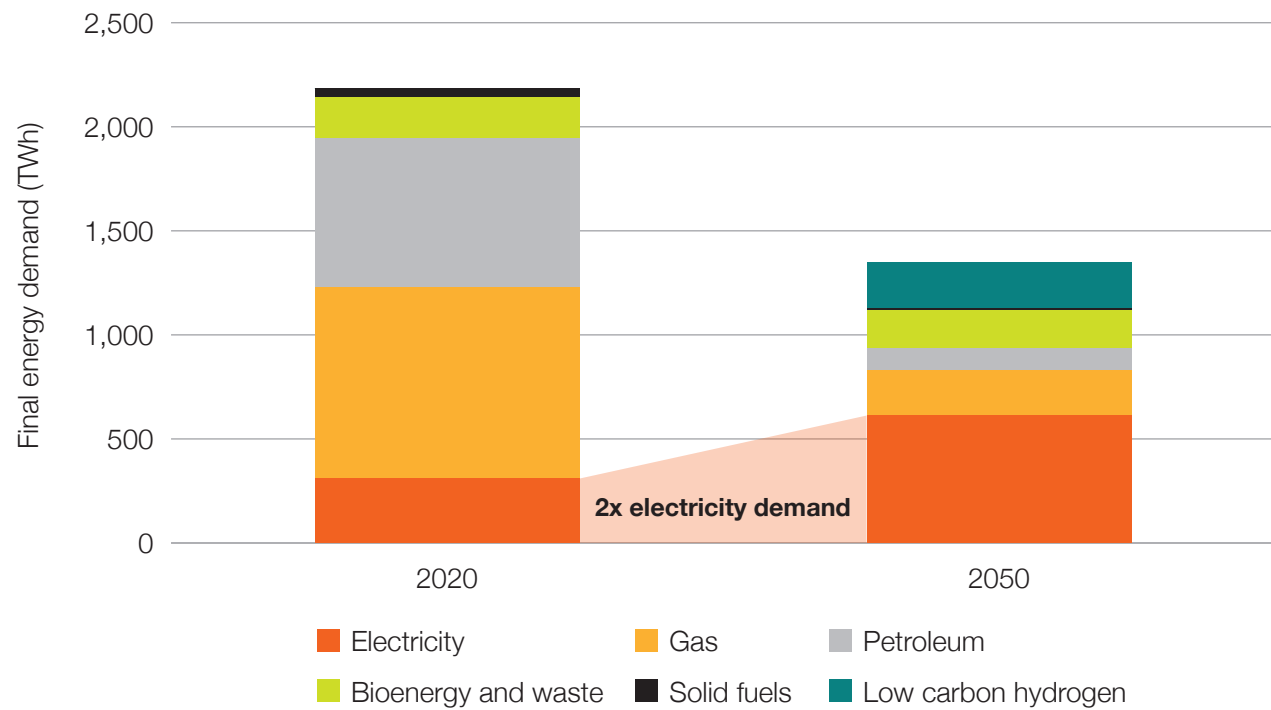


BOLD TARGETS, BOLD ACTIONS

The UK has set bold targets to tackle climate change and bolster our domestic energy security. The energy crisis has shown the importance of cheap, clean, homegrown energy as the solution to our reliance on volatile and expensive international gas markets. It is more important than ever that the UK doubles down on its ambitions to become a clean energy powerhouse through a rapid rollout of low-carbon generation that can power the energy transition and bring jobs, skills, and growth to the areas of the country that need it most.

Investment is crucial to achieving these goals. If the UK is unable to secure the investment needed to build a low carbon power sector, we will be paying higher bills for longer to maintain a more polluting and less secure energy system. We already know that not moving fast enough comes at a cost. For example, if the capacity auctioned in AR4 had been built in 2022, it would have saved consumers up to £4bn.⁴

Figure 2: Energy demand in 2020 and 2050, Net Zero Balanced Pathway (TWh per year)



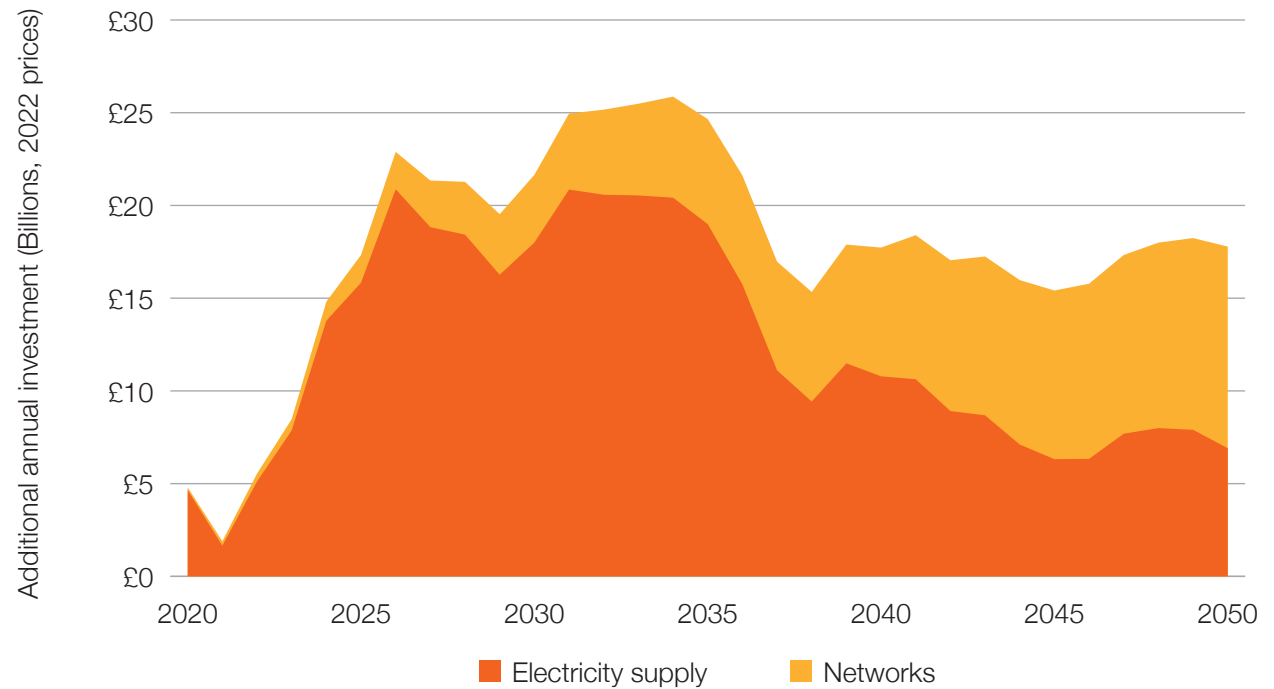
Source: Climate Change Committee, 6th Carbon Budget

Reaching the UK’s legally binding Net Zero target can only be achieved by a vast expansion of low-carbon generation and supporting infrastructure. This requires a rapid rollout of a broad range of technologies such as hydrogen, Carbon Capture, Utilisation and Storage (CCUS), and flexible solutions to build a secure and reliable decarbonised power system. Substantial investment in network infrastructure will also be necessary to reduce connection delays and constraint costs. Any investment hiatus would put our Net Zero target in question, let alone the Government’s ambition of achieving 50GW of offshore wind by 2030 and 70GW of solar by 2035.⁵

The scale of investment

Reaching Net Zero by 2050 is expected to cost over £1.3 trillion in additional capital spending above what would have been spent on our existing carbon-based system.⁶ Around 40% of this additional investment – over £500bn - will be needed for networks and electricity supply to ensure a multi-fuel, multi-technology low-carbon energy system. Whilst these are significant investments, it's critical to note that they are dwarfed by the cost of not investing in new low-carbon energy and remaining susceptible to volatile fossil fuel markets that are often driven by geopolitics. Equally, investing capital in infrastructure now will save operational costs (mostly through fuel) in the future.

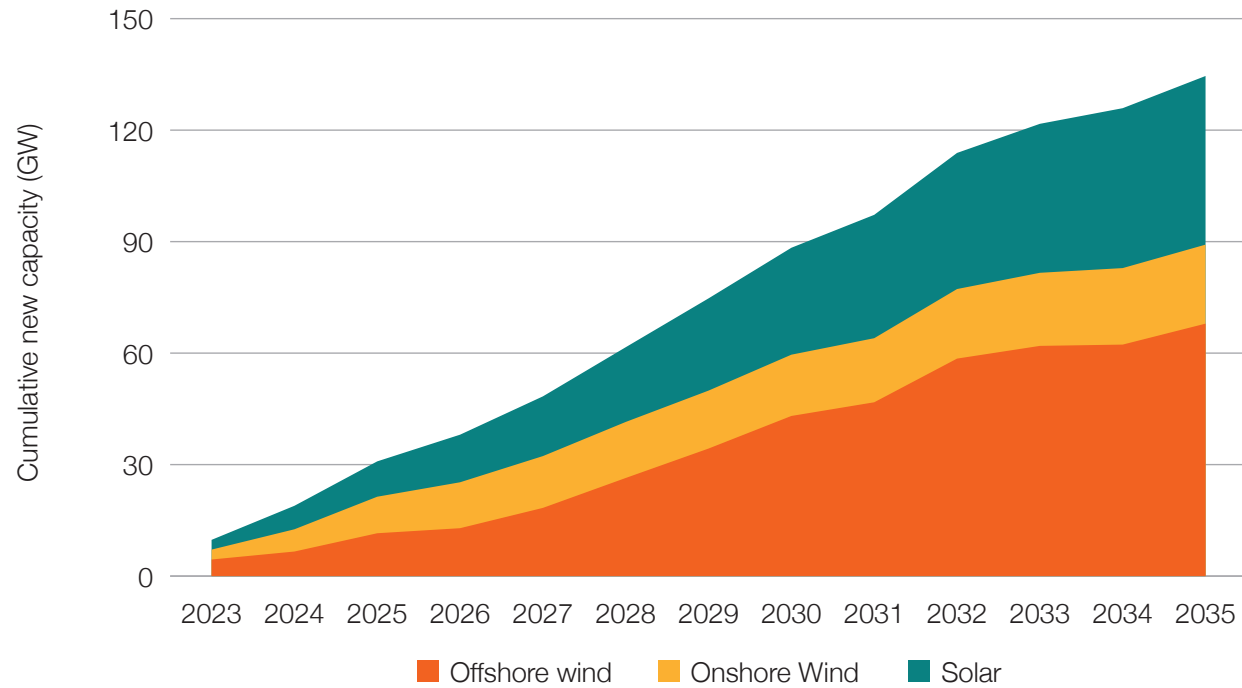
Figure 3: additional investment per year in electricity supply and networks to meet CCC Balanced Net Zero pathway



Source: Climate Change Committee, 6th Carbon Budget

These investments in the low-carbon energy system of the future will transform and level up the UK. They will provide jobs and economic possibilities across the country, in addition to locking in a secure long-term supply of energy at much lower cost than we currently face. But these results rely on a rapid buildout of new low-carbon capacity (see figure 4). Whilst the Government acknowledged this challenge in the Energy Security Strategy, the economic and investment climate has since deteriorated, calling into question our ability to build the capacity necessary to truly enable a decarbonised power sector by 2035.

Figure 4: Additional wind and solar capacity 2023-2035 (Future Energy Scenarios Leading the Way)



Source: National Grid ESO Future Energy Scenarios 2022, Leading the Way

The private sector is essential

There are two ways of achieving our Net Zero and energy security targets. They can be achieved in an integrated and efficient way at lowest cost, or be disruptive, inefficient, and expensive. **If the state had to deliver the level of investment needed, it would require the equivalent of an extra Defence budget every year.** This is clearly neither an efficient nor effective use of public finances. The simple reality is that the scale of investment required to create a decarbonised power system can only come from the private sector. At a time in which the Government is facing difficult economic conditions, and public finances are under intense pressure, it's more important than ever to ensure that private capital can be made available for investment in a low-carbon power system.

Wherever possible, the Government's primary role should be to de-risk investment for large-scale first of a kind technology and infrastructure and when these are more established, move to a market framework. This has been done very successfully through the CfD scheme, which has enabled the UK to become a world leader in technologies such as offshore wind. Consistent Government support has also led to an expanding market for projects without a subsidy (merchant investment) But there are serious concerns that a combination of current global and domestic factors are placing barriers in the way of new developments.



CLOUDS ON THE HORIZON



Increased construction costs: rising global commodity costs, more expensive components, and competition for staff and equipment make it costlier to build low-carbon power plants.



Political and regulatory uncertainty: rapid changes in the political approach to energy in recent months has undermined the UK's reputation as a stable investment environment, and increased uncertainty for new projects.



Increased finance costs: higher interest rates, depressed equity values, and uncertainty in the sector make it harder and more expensive to fund new projects.



Grid connections: difficulties in connecting projects to the transmission and distribution grids slow down how quickly assets can be built.



Electricity Generator Levy: the low-carbon windfall tax reduces the incentives to build new capacity.



International competitiveness: new subsidy regimes in the US and EU make the UK a less attractive place to invest.

Achieving the UK's Net Zero and energy security goals relies on securing significant amounts of private capital. For international investors to choose the UK over competing geographies, it's crucial to ensure a stable regulatory environment and attractive routes to market for new low-carbon projects. However, the last 6-12 months have been anything but stable, and the investment landscape for UK low-carbon infrastructure has seriously deteriorated. A combination of global and domestic factors has put investment in the UK in question and, if left unaddressed, will lead to an investment hiatus which risks the UK underperforming against its targets at cost to the environment and economy.

Increasing Costs

Over the last 12 months, capital costs for low-carbon generation projects have risen between 20% and 30%, with some developers reporting increases as high as 50% for specific assets. These cost increases are due to several factors, including:

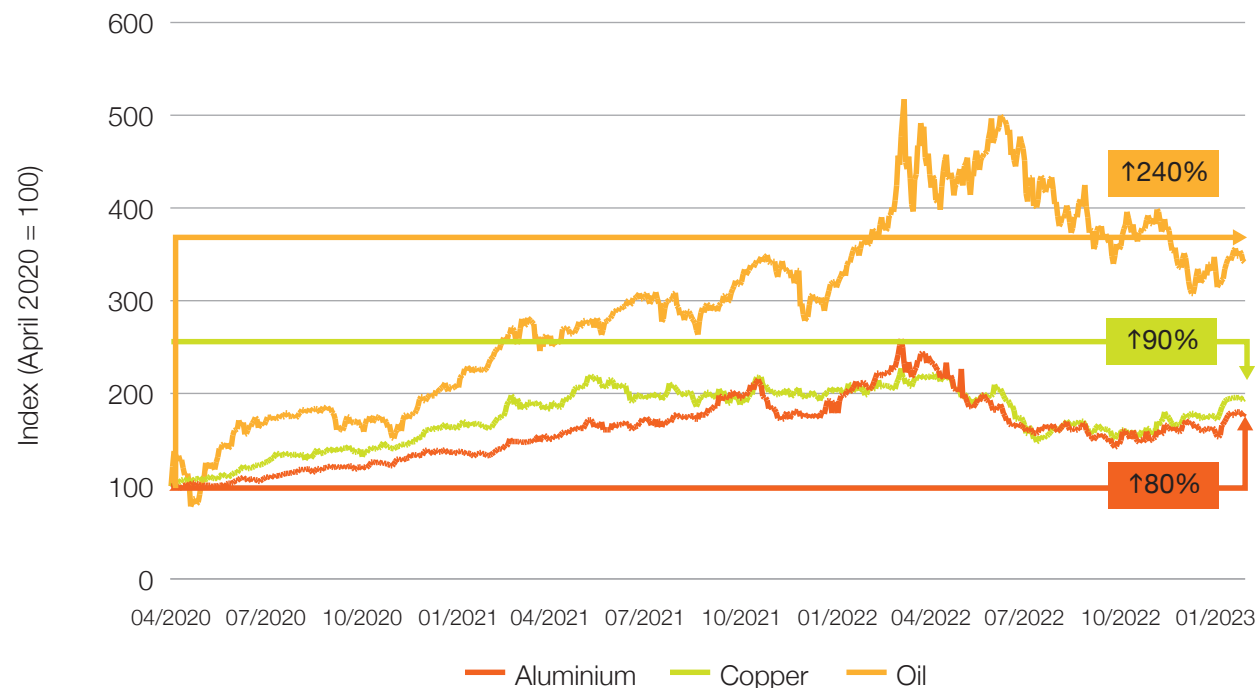
- **Commodity prices:** the cost of the raw materials required to build and operate a decarbonised power system – such as steel, copper, aluminium and fuel – have increased dramatically since the end of the pandemic and due to the war in Ukraine. Often, these commodity costs have increased significantly more than the rate of inflation, and those increases are fed through into project costs.
- **Inflation in components and construction costs:** In addition to the costs of materials, increased global demand for new low-carbon installations has placed a premium on skilled workforce and specialist equipment, further inflating costs. Likewise, demand for certain key components – especially for wind turbines – is keeping prices buoyant. However, this is not just an issue of cost, but also of availability.

Delaying projects due to supply chain issues also adds to costs.

- **Interest rates:** Inflation has led to interest rate increases, which have had a substantial impact on project financing by raising the cost of both debt and equity. This has unfortunately been worsened by the effects of the recent mini-budget, which has caused some institutional investors (particularly pensions funds) to reevaluate their investment in low-carbon infrastructure. The combination of these cost increases has meant that investment in UK low-carbon generation is seen as less attractive than 6-12 months previously.

These cost rises are particularly problematic, because they are going up faster than the Consumer Prices Index (CPI) that CfDs are linked to. For new generation capacity that relies on CfD contracts, this has caused major issues. Whilst CfD contracts are linked to inflation, they are not linked to the price of commodities. This leaves generators responsible for price increases not covered by the CfD contract, which are now often more significant than those assumed at the time they put forward a bid.

Figure 5: Price of commodity inputs for renewable plants (April 2020 = 100)



Source: Nasdaq and Federal Reserve Bank of St. Louis

Electricity Generator Levy

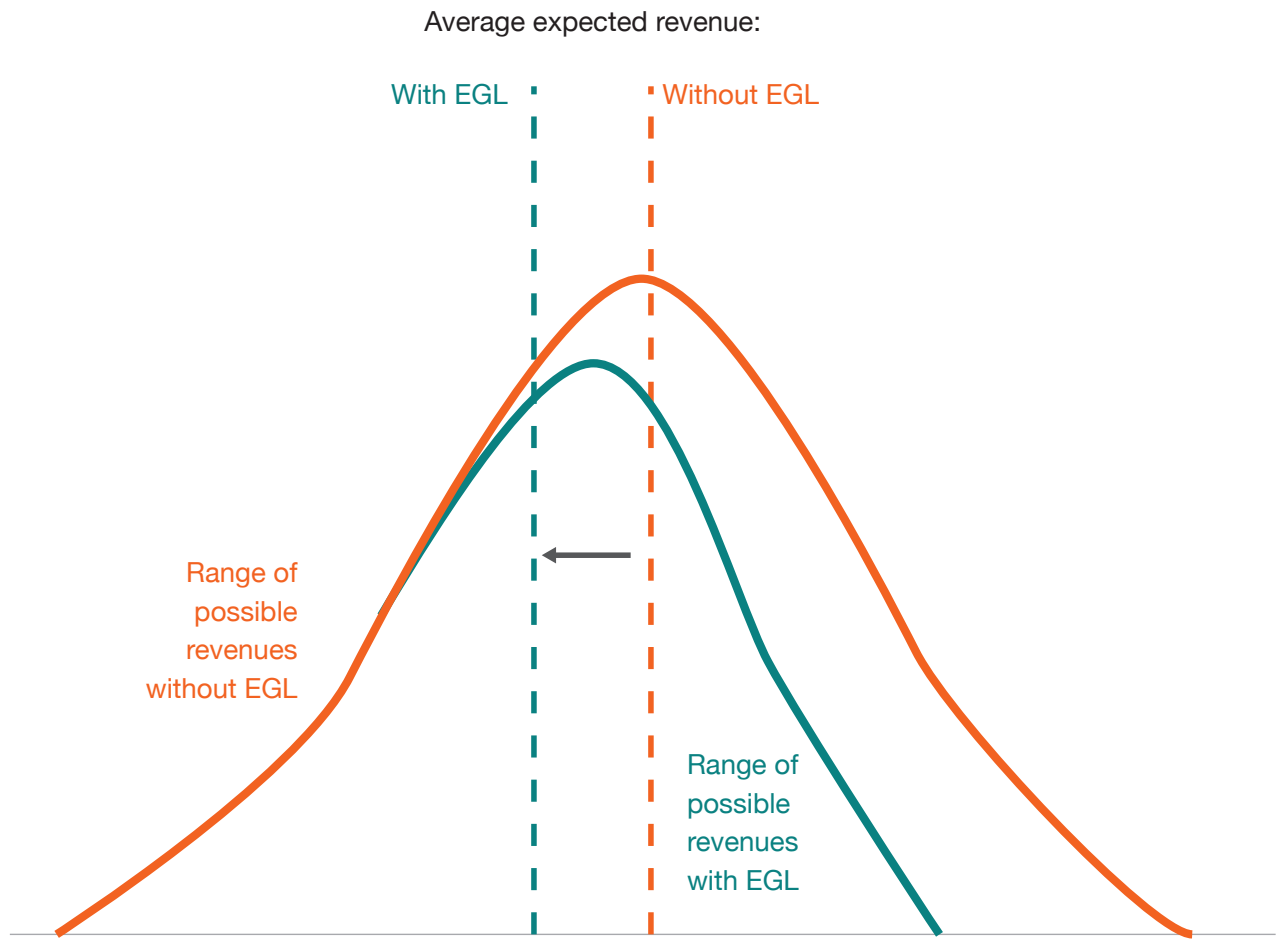
The cost of electricity has risen substantially as a result of the energy crisis. Industry recognises that the Government is under sustained fiscal pressure to address high energy bills and their impact on the broader cost of living crisis. The power sector came forward last summer with a proactive solution (Voluntary CfDs) that would bring down bills whilst maintaining investor confidence. However, the Government decided to put in place an Electricity Generator Levy rather than pursue other options. Whilst Energy UK recognises the intention behind this policy, it has in practice eroded confidence in Government and policy support for the energy transition. Simply put, the EGL takes away a large share of the upsides of investing in the UK, whilst keeping all of the downsides. This sends a clear and negative signal to international investors. In a market, high prices should send a signal to increase supply. The Government has taken away the signal of high electricity prices, which will lead to less new capacity being built. This has created a shock to investors that runs counter to the stable regulatory, policy, and legislative landscape that is required to maintain the UK's investability.

The EGL has effectively put a cap on renewable prices for half of this decade (2023-2028), making investment in UK renewables considerably less attractive. There are now serious concerns that the EGL will lead to lost investments and as a result, lost capacity that could be bringing down bills for consumers. The reasons for this include:

- **The lack of an investment allowance.** The windfall tax on oil and gas extraction includes a generous investment allowance, yet no such allowance has been offered to low-carbon generators. The result is a higher marginal tax rate for clean low-carbon generation than for polluting oil and gas extraction.
- **The low level of benchmarking.** The EGL is designed to recover a proportion of revenues above a £75/MWh benchmark. The reality is that increased costs over and above inflation reduce this benchmark in real terms. This shifts the EGL from its desired aim of recovering extraordinary profits to a mechanism that simply eats away at normal profits.
- **The inclusion of merchant nose revenue.** There are immediate concerns whether CfD Allocation Round 4 (AR4) projects will go ahead. Generators who secured AR4 contracts did so during a period of high prices. As such, many AR4 projects had low strike prices that took account of the ability of generators to factor in a period of merchant exposure before implementing the CfD. Those same generators are now facing pressures in the light of deteriorating economic conditions which will increase the cost of delivering projects. We have significant concerns that the combination of these factors in addition to the EGL may damage the investment case for AR4 projects.
- **The inclusion of new projects.** For new projects, current high energy prices are not a “windfall” because they are entirely expected. Yet the EGL does not exempt new projects which would only be built on the expectation of higher short-term revenues despite the clear benefits to consumers of quickly building more low-carbon capacity.
- **The expectation of political intervention in the wholesale market.** Investors are concerned that once the relevant EGL legislation is passed, future governments may decide to expand or extend the tax indefinitely. This creates an added political risk premium, raising the financing costs for new low-carbon projects.
- **The serious impact on merchant (non-subsidy) investment.** The Government's stated intention is to move toward fewer subsidies. Industry wants the chance to invest in more subsidy-free projects. But the EGL has penalised merchant investment which is built around higher-risk projects that have a reasonable expectation of higher returns should power prices increase. Without being able to recover market upside, merchant investment is likely to be seriously impacted by the EGL.

- **Inability of merchant investment to find other routes to market.** In 2021/22, 45% of existing solar generation and only 11% of onshore wind generation was attributable to assets without a CfD or Renewable Obligation Certificate.⁷ This leaves new potential solar generation particularly vulnerable to the effects of the EGL. This is compounded by the fact that solar has amongst the shortest lead times for new renewable plant. Solar assets commissioned today could conceivably be operational before the energy crisis is over; attracted to the market by high prices and ultimately contributing to the solution by increasing the supply of power. That is how price signals are supposed to work in markets. By dampening those price signals, the EGL will prolong the crisis, costing consumers money. Some of these projects may be able to find another route to market, though a PPA, but these will be limited, for the same reason that PPAs do not form a substantial segment of the market. There is a limit to PPA demand due to a lack of long term planning by large businesses and a lack of credit rated stable businesses to underwrite the deals.
- **Removing funding from the UK market:** although low-carbon generation projects are funded by global capital, funding does not tend to flow seamlessly across borders, even within global groups. Instead, a proportion of profits tends to be “recycled” within a country. By taxing that profit, it means there is less funding circulating within UK divisions of utilities, meaning less investment.

Figure 6: The Electricity Generator Levy removes some of the upside but keeps all of the downside – reducing average earning expectations and making projects less viable.



An uncertain political landscape

The Review of the Electricity Market Arrangements (REMA)

The Government launched REMA in July 2022 as a way to identify reforms needed to transition to a decarbonised, cost effective, and secure electricity system.⁸ Energy UK is in favour of an evolutionary reform programme which delivers electricity market arrangements that can effectively align the investment needed to create a decarbonised power system. The last decade has shown us what works and what requires improvement. We don't need to tear up the rule book to create more opportunities for investment in home-grown, low-carbon technologies. Indeed, enhancing existing structures that made the UK a world leader in offshore wind is the surest way to unleash the Government's ambition for a clean and secure power sector. Whilst the REMA process is welcome, it is unfortunately a reality that some of the more revolutionary reforms considered are having a negative impact on the investment case for new low-carbon generation. The uncertainty behind major policy change makes it much harder to forecast future revenues. This in turn makes investment decisions more difficult, and adds a risk premium to the overall cost of the project.

It must be noted that the investment climate has fundamentally changed even since the REMA consultation. The REMA process could design the most efficient power system possible, but it will be of little use if there is not sufficient investment in new infrastructure.

The fundamental risk is that some of the reforms envisaged by REMA are too significant, and will take too long to implement, leading to an investment hiatus.

Systemic regulatory uncertainty

The political instability of recent months has led to investor unease. For example, the Energy Prices Act, which was introduced to Parliament by the previous Government, has given the Secretary of State sweeping new powers. The power to institute a revenue cap now exists in legislation, and despite not moving forward with this policy, the Government has yet to invalidate this part of the legislation.

Recent Government signalling around planning changes for new low-carbon has also been counterproductive. The possible banning of solar on 3b agricultural land would have had devastating effects on the solar industry if it had gone ahead. Similarly, whilst it is positive to see recent announcements regarding an easing of planning regulation for onshore wind in England, the overall public debate and remaining limitations have had a negative effect on regulatory certainty which is crucial for investment.



Competition from abroad

Whilst the UK has been sending mixed and sometimes negative messages to investors, it has been clear that other jurisdictions are sending unambiguously positive messages to attract inward investment. Investors have a choice in where they allocate capital, and investment in UK low-carbon generation is increasingly unattractive for investors versus other key markets. Most major actors in the UK low-carbon industry, both developers and investors, are global companies or have a major presence abroad and are considering moving investment from the UK to the USA or the EU. Our international members report that it is now increasingly hard to push for investment in the UK in place of more attractive jurisdictions.

This has primarily been driven by the USA's Inflation Reduction Act (IRA), which has introduced generous and unlimited tax credits for clean energy investments, particularly in the power sector. The scope of this policy is hard to overstate and it is already pulling investment away from the UK.⁹ In recent weeks, the European Commission has also announced that the EU will institute a similar mechanism to incentivise inward investment to the EU.¹⁰ This is in addition to a significant ramp up of clean energy that the EU has already committed to. The REPowerEU scheme involves ramping up the EU's domestic renewable energy generation capacity to 1,236 GW by 2030. For solar alone, this means bringing online over 320 GW of new capacity by 2025, over twice today's level, and almost 600 GW by 2030.

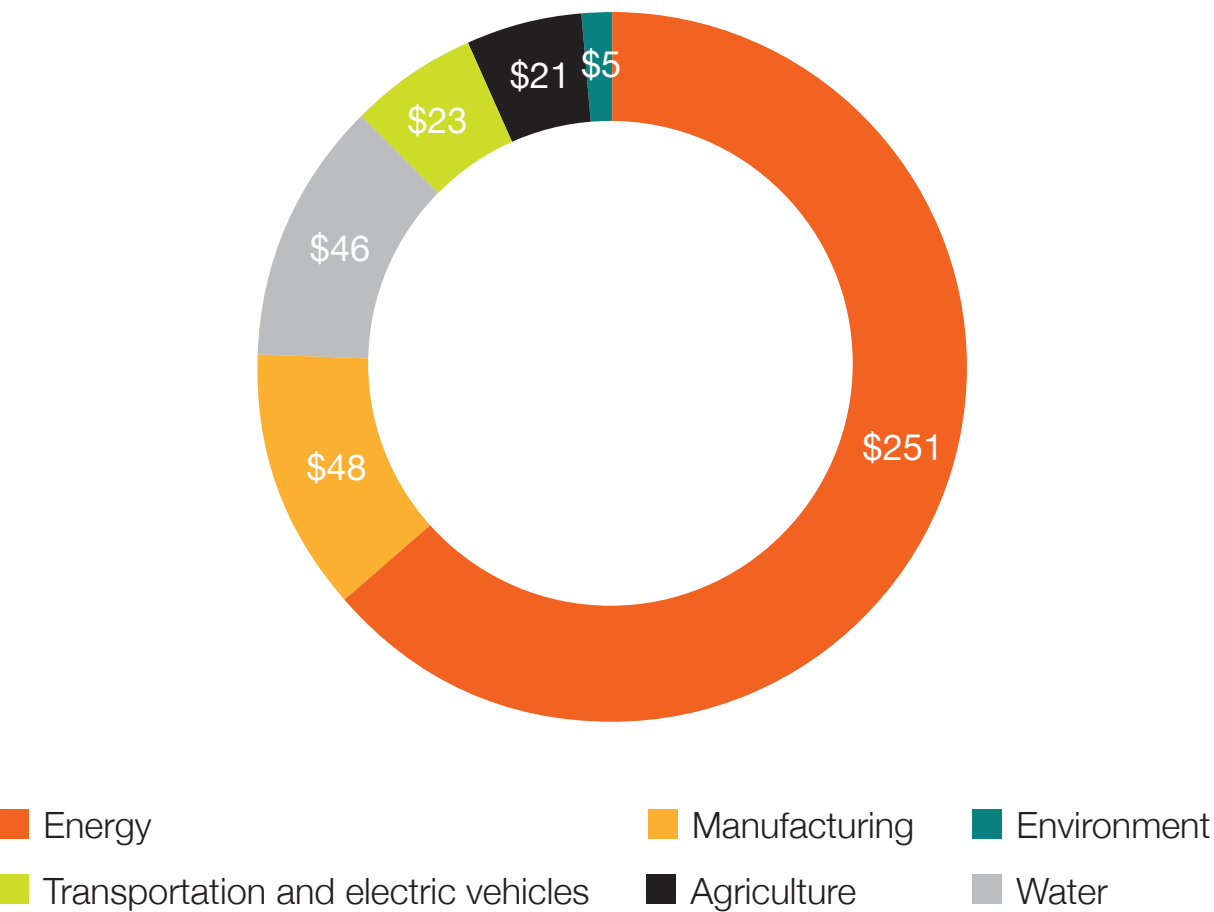
The Inflation Reduction Act

The Inflation Reduction Act was passed in the United States in 2022 and, amongst other measures, includes significant tax credits, grants and loans designed to encourage the adoption of low-carbon technology. The majority of these regard clean energy (see figure 7 below), with as much as \$250 billion in public support for new energy projects being made available in the coming years. By encouraging the deployment of private capital through the tax system, the IRA will come with a powerful multiplier effect, meaning that the total environmental spending may be up to \$1.7 trillion over the next ten years, of which nearly \$600 billion will be in the energy sector (Credit Suisse). This constitutes a revolutionary change in the funding for low-carbon technology and makes the United States a much more attractive market than its competitors, including the UK. To put that in context, the Levelized Cost of Energy (including subsidies) for both wind and solar projects has been forecast to fall below \$5/MWh, to which potential future UK CfD strike prices of £30-£60/MWh compare unfavourably.

Added to the Inflation Reduction Act is the very different political culture evident in the US compared to the UK (and, to an extent, the EU). Unsurprisingly, when considering recent history and the different political cultures in the US and Europe, investors see in the US a stable environment where the rules of engagement are unlikely to change. On the other side of the Atlantic, however, they see politicians willing and able to change their mind and seize profits and revenues unpredictably and suddenly. This means that, once investors have adjusted for the political risk, the US is a much more attractive environment. Decisions and statements by UK politicians compound this difference; every time the UK Government changes its mind on how energy is taxed and where it is permissible to build wind and solar, it makes investing in the UK more expensive and drives capital to flow elsewhere.

Both the IRA and the forthcoming EU scheme are being introduced in a context of increased global competition, in which the UK is already struggling to ensure its investment frameworks are enough to pull capital and supply chains in the direction of domestic investment. This puts the UK at real risk of losing its place as a market leader in both existing technologies such as renewables, and future low-carbon technologies like hydrogen and CCS.

Figure 7: Inflation Reduction Act Federal investments (billions)



Source: McKinsey analysis of Congressional Budget Office and Joint Committee on Taxation



THE COMING INVESTMENT HIATUS

The economic headwinds faced by industry are now raising serious questions about the UK's ability to build sufficient low-carbon generation capacity to meet our Net Zero and energy security targets. The combination of rising inflation, interest rates, increased global competition, a supply chain crunch, and windfall taxes, have already resulted in projects delaying Final Investment Decisions. Without Government action to avert the possibility of an investment hiatus, these projects may not go ahead at all.

Contracts for Difference

Allocation Round 4

The investment climate has changed dramatically since these contracts were awarded at record low prices. There are now serious concerns that many AR4 projects may not be deliverable at current strike prices. AR4 represents nearly 11GW of future capacity, and losing major projects would cause immediate and possibly irreparable damage to the pipeline of 135GW¹¹ new capacity needed by 2035 as well as sending a clear, negative message about the investability of the UK.

- **Supply chain and financing costs** are going up faster than CPI, raising questions about the deliverability of some AR4 projects.
- **The inability to recover merchant nose revenue**, which was a core factor in the investment case for AR4 projects. Much of this revenue will now be taxed through the EGL, which effectively increases the cost of delivering AR4 projects with low strike prices..

Allocation Rounds 5+

Potential lost capacity from AR4 is an immediate risk. But if AR5 and future allocation rounds are not modified to reflect recent economic conditions, there are risks that it too will fail to bring forward adequate capacity. In order to be successful, AR5 and future rounds must recognise that:

- **The risk of being locked into expensive fossil fuels far outweighs the risk of being locked into slightly more expensive renewables.** An increase in low-carbon generation is low-regret in every measurable way. The Government should procure extra volume to allow for the possibility of projects not progressing. If all projects do go forward, the result is simply a faster rate of renewable rollout at lowest available cost.
- **The pattern of cost declines for CfD projects has fundamentally changed.** CfD projects will not continue to go down in price due to increases in commodity and input prices, and many of the easier sites have now been built. Harder sites with more complex design, engineering, and difficulty obtaining land agreements, will be more expensive to deliver. Higher project costs will lead to fewer bids unless key parameters are addressed.

- **The budget or capacity caps should be the highest they possibly can be while ensuring competitive tension.** This is particularly relevant given that the EGL limits other routes to market, resulting in a need for CfD budgets to achieve the same build rate as was expected pre-EGL (this has been made possible by the move to annual auction rounds, which is a positive and welcome development). It can be justified by bringing in more technology sooner, which in turn benefits consumers. Even with higher strike prices, it is a prudent choice to make. Volume and pace must be the priority at this stage. It will be important to have maxima and minima for the sake of technological diversity, and to increase the transparency of the budget process.
- **An evolutionary approach for CfD reform is crucial.** The concerns from AR4 must be listened to and learned from.
- **The proposed Administrative Strike Prices are too low.** There is a significant chance bids will not be entered as the risk vs reward is too high, and that project economics likely require a strike price above the ASPs.
- **CfD pot changes have added risk and complexity to the auction process.** The Government must explain why it has undermined offshore delivery further when acceleration has been the priority.
- **Information on AR6 and onwards needs to be provided much further in advance** for industry to prepare adequately and to build market confidence. For example, urgent draft budget parameters have yet to be published for AR5, putting significant strain on industry to decide whether or not to put forward bids.

Unsupported investment

A large proportion of new low-carbon capacity is funded outside of the CfD and RO support mechanisms. How much varies by technology with 45% of solar generation, 11% of onshore wind and just 4% of offshore wind coming outside of CfDs and ROs. These projects are the most likely to suffer from any upcoming investment hiatus because they are the most exposed to uncertainties in the market and, therefore, suffer higher capital costs. Indeed, our members report that a significant number of their Final Investment Decisions have at best been delayed, and at worst are likely to result in projects not going ahead. This is the opposite of what needs to happen for us to meet our Net Zero targets. The CfD programme will always be constrained by budgetary limits and the risk appetite of Government (although we propose below that those limits can and should be significantly expanded) and the scale of new capacity required for Net Zero necessitates a large amount of “subsidy free” investment.

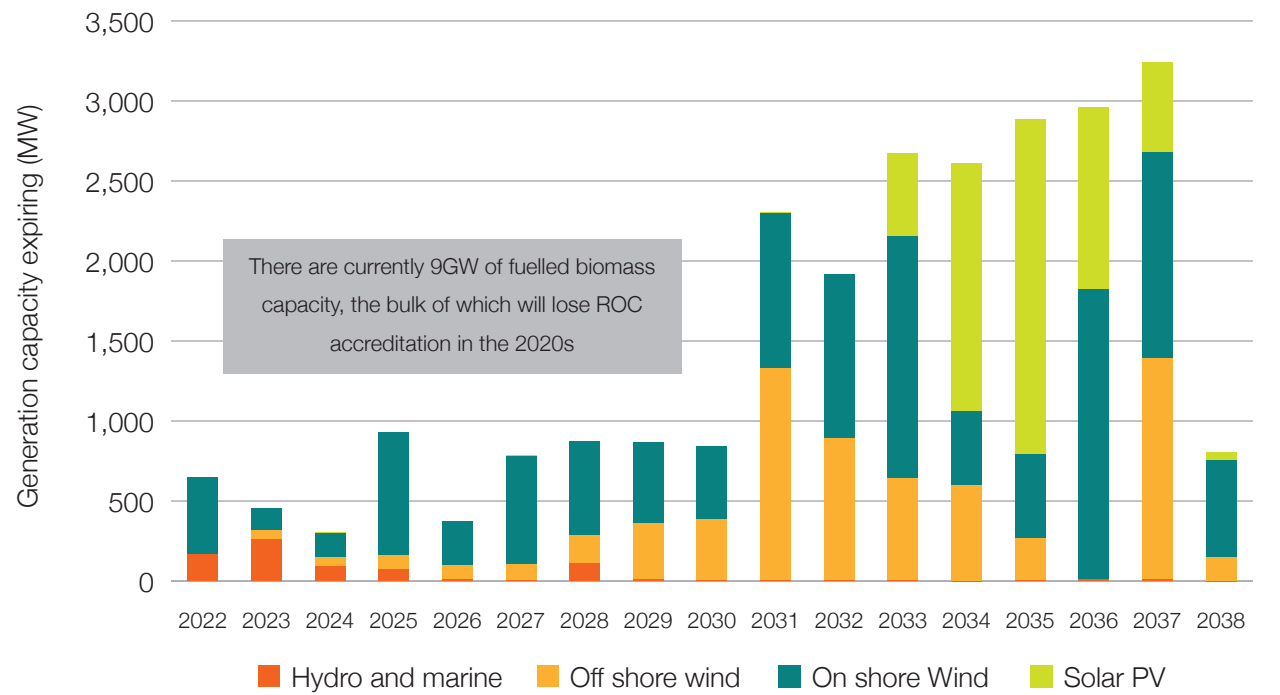
Older renewable capacity

Over a quarter of all electricity generated in the UK (80TWh in 2021/22) comes from wind, solar, biomass, and other plants supported by the Renewable Obligation (RO). This system sees generators receive a per-MWh subsidy paid for by consumers via their suppliers (and taxpayers more recently). In the next few years, plants built in the 2000s will see their RO certified status expire and the support they receive from selling RO Certificates withdrawn. It is of course right that the RO programme should unwind as was intended and as expected by the market. However, given the extraordinary market circumstances found in the market, the expiration of RO status raises concerns around generation capacity either falling or opportunities for growth not being realised:

- **Repowering assets:** the quality and affordability of renewable technology has undergone a revolutionary transformation over the past decade and a half. This means that projects commissioned in the mid-2000s can be rebuilt this decade with newer, larger and more efficient assets, allowing them to generate more energy at a lower cost.¹² Doing this, however, needs new investment, and it is hard for generators to commit to that investment given the headwinds outlined above.
- **Assets no longer being economical:** like any other piece of equipment, it becomes more expensive to operate and maintain a renewable energy plant as it ages. Owners of these assets will see the costs of running them continue to increase at the same time that their incomes are reduced, both by the (predictable) expiration of their RO-status and the (unpredictable) consequences of interventions such as the EGL and market changes. This sudden change in the economic viability of projects may see generators wind assets down prematurely.

The scale of capacity rolling off of RO contracts in the coming years is significant, as shown in figure 8 below. Between now and 2030 6GW of intermittent renewable capacity (including 4GW of on shore wind and 1.3GW of off shore wind)¹³ will cease to receive support through the RO - capacity which can generate the equivalent of nearly 5m homes’ annual usage of electricity every year. Losing that capacity would make it much harder to achieve Net Zero, whilst taking this as an opportunity to repower and expand legacy renewable plants could make a major contribution. This is particularly concerning because the sites chosen for early renewable projects are some of the best potential sites in the country (which is why they were chosen). If the UK wants to achieve a decarbonised power system by 2035, underutilising its prime generation locations would be an incredibly counterproductive and costly strategy.

Figure 8: Capacity of plants with expiring Renewable Obligation status (2022-2038)



Source: Energy UK analysis of Ofgem’s ROC register

Note: Other ROC technologies such as fuelled plants, landfill gas and sewage gas are not shown

Network Infrastructure Delivery

Delivering the necessary network infrastructure at the pace needed to support the growth of low-carbon generation is causing major concerns to prospective international investors. The length of delays to connection agreements is putting in question the UK's ability to rapidly increase clean energy in line with our targets. Some generators are increasingly having to use and buy sites with existing connections due to the inability to secure a connection within a sensible timescale. Delays in the planning and consenting regimes as well as local community acceptability are hindering the deployment of the necessary transmission infrastructure at the urgent pace required.

Continued network delays will lead to direct consequences of loss of potential low cost, low emissions energy through greater than necessary constraints and contribute to higher investment cost and reduced overall investment. If the UK is made a more expensive and higher risk investment location due to lack of network availability, investors will move to geographies in which projects can be developed more quickly, making it more difficult and expensive to reach our Net Zero target.



WHAT'S AT STAKE



Less capacity, missed targets: an investment hiatus where we do not accelerate construction in line with climate goals could see 54GW of missing capacity and the failure to meet the Government's 50GW 2030 offshore wind capacity



Consumer costs: by building less cheap, low-carbon capacity, UK consumers will be locked into paying more their energy, as well as being subject to more volatility



UK surpassed: missing our goals will undermine the UK's position on the world stage and will see economic activity move overseas



Security of supply: less home-grown energy means continuing to be reliant on imports from abroad, exposing the UK to geopolitical uncertainty



Levelling up and industrial strategy: pausing investment will make it harder to build the sustainable supply chains that are vital for delivering green jobs that will level up the country



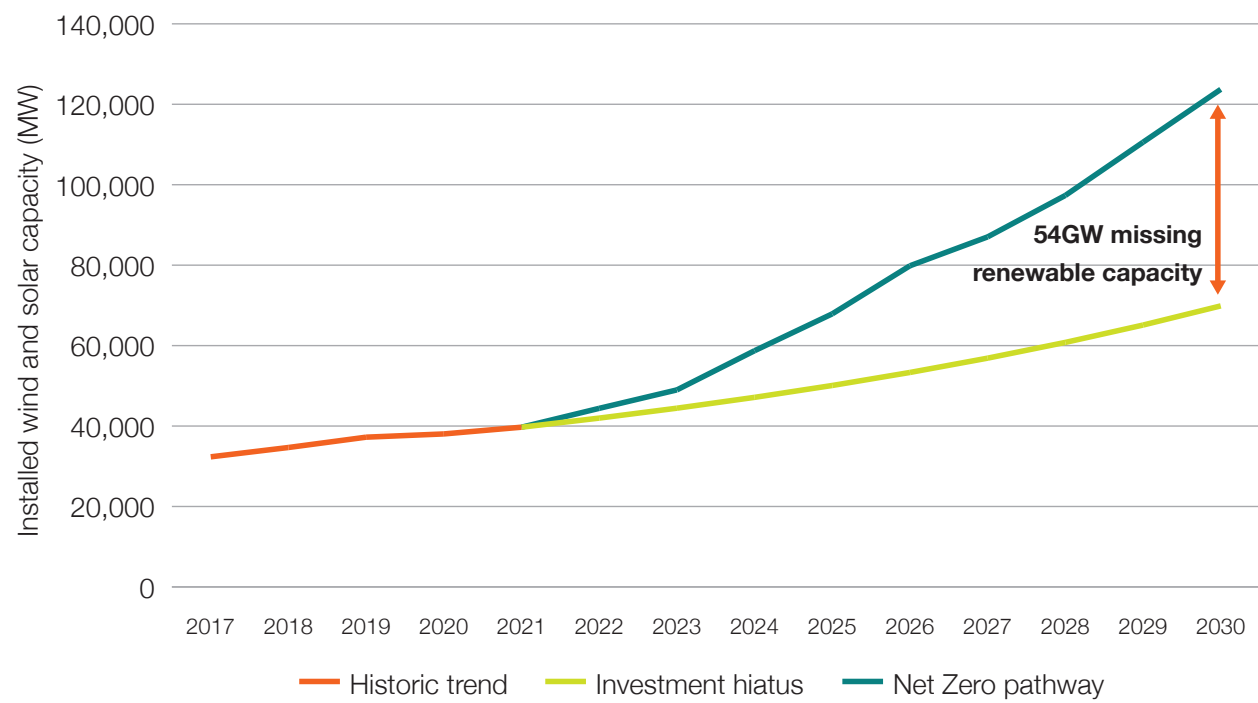
Environmental costs: failing to meet our low-carbon energy targets will keep emissions high, potentially leading to 40 million tonnes of additional carbon emissions in 2030.

The negative consequences of an investment slowdown or hiatus are hard to overstate. Decisions made now are vital to whether or not the UK is on a trajectory to meet its Net Zero targets. Failure to do so will not only lock in higher carbon emissions for longer, but also prevent the UK from developing a low-carbon industrial sector that can reduce energy bills and provide jobs, skills, and economic opportunity across the country.

Missed targets, lost opportunities

The UK has a target of achieving a decarbonised power system by 2035. If we are to meet that target, we need to rapidly increase the rate that low-carbon generation is being built, deploying up to 13GW a year. To quantify the impact of an investment slowdown, we assumed that the total impact of the investment headwinds set out in this report is that the deployment of renewables merely continues along its current trajectory, rather than accelerating as required. Given the magnitude of the issues faced, the reality could be much worse.

Figure 9: Projected solar and wind capacity to 2030



Source: Energy UK analysis
Notes: The “investment hiatus” scenario assumes a continuation of the historic trend from 2017-2021 (13% a year growth in offshore wind, 4% a year in onshore wind and 2% a year in solar). The Net Zero pathway is the “Leading the Way” scenario from the ESO's Future Energy Scenarios

This missing capacity is made up of:

- 18GW of offshore wind
- 11GW of onshore wind
- 25GW of solar

The consequences of failing to build the required capacity is serious:

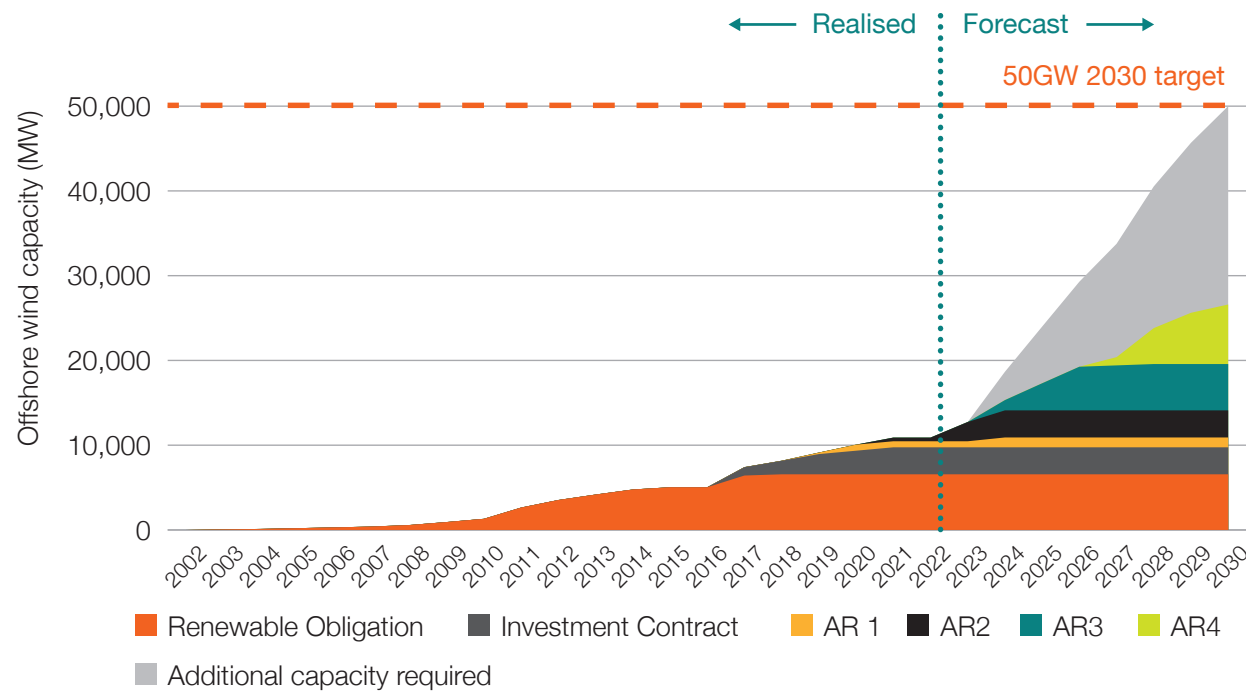
- £62bn of missing investment in the UK economy between now and 2030¹⁴
- Missing generation that equals the annual usage of every UK home in 2022
- Losing out on potential bill savings of hundreds of pounds per household (depending on the price of gas)
- By requiring additional unabated gas, the UK could emit an extra 40 million tonnes of carbon dioxide per year– around the same as the carbon emissions of all of Scotland.¹⁵

Missing our legally binding targets will harm the UK's reputation globally, and arguably will make it harder for us to advocate for countries with higher total carbon emissions to make efforts to reduce them.

2030 offshore wind target

In the 2022 British Energy Security Strategy, the Government committed to expanding its target of 40GW of offshore wind by 2030 to 50GW. Under any circumstances, reaching such a target will require a huge, coordinated effort to unlock investment and ensure it can reach new projects. Given that the majority of offshore wind capacity has been delivered using ROs or CfDs, the acceleration required in offshore deployment is unlikely to be realised without significantly more capacity being enabled as part of ARs 5, 6, and 7. There is currently 23GW – just under half of the 50GW target – of capacity that has not been delivered or commissioned as part of the Renewable Obligation or CfD programmes. This must be delivered through future allocation rounds, or non-supported investment. To achieve the target, over 3GW of extra capacity above what is already forecast must be delivered every year from 2024 to 2030. Given the challenges facing the industry, this will not be possible without a significant change in strategy.

Figure 10: Delivered and forecast offshore wind capacity needed to reach 2030 50GW target by support arrangement



Source: Energy UK analysis of LCCC CfD register and Ofgem ROC register

Supply chain and industrial strategy

A pause in investment will have long-lasting consequences to the supply chain that will scar the sector even after capital begins to return to the UK. A 1-2 year investment hiatus could lead to a 4-5 supply chain crunch. This means that any investment hiatus could do irreparable damage to the supply chain, and severely impact our ability to build vital generation to ensure energy security. Without adequate supply chains, it will be exponentially harder to deploy renewables in the coming decades and leave us vulnerable to the same international energy market volatility that caused the current energy crisis.

It will also dampen many of the economic advantages of deploying low-carbon as UK projects will need to buy in more from abroad rather than sourcing domestically, which could stimulate jobs, skills, and growth. In many respects, certainty and visibility of the project pipeline is more important for the supply chain than for developers of renewable assets. To build renewable projects and supply them with components, suppliers need to have made decisions about manufacturing capacity and capability years in advance.

This has implications on the wider economy. Building new low-carbon capacity leads to spending, jobs, investment and taxation along the supply chain. This activity is primarily located outside of the South East of England and can be particularly concentrated in deprived coastal areas, facilitating levelling up. The Government has set a target to create two million green jobs by 2030.¹⁶ Given that the energy sector is much more productive than the economy as a whole (creating £135 of output for every hour worked),¹⁷ these are likely to be high-skilled, high-paid jobs. Slowing down investment now puts this green economy future in jeopardy.

Cost to the consumer

Low-carbon electricity is now much cheaper to produce than gas generation, and this is likely to remain the case even after the immediate gas crisis has abated. There are two ways underinvesting in renewables will harm consumers:

Long-term savings

Gas is forecast to remain above pre-crisis prices for much of the coming decade. Coupled with the cost reductions that have been achieved in low-carbon generation, this means that we have likely reached a tipping point where technologies such as wind and solar are permanently cheaper than fossil generation. Comparing the AR4 strike prices the forward cost of electricity in 2026 mean that for every missing GW of generation, depending on technology, it will cost consumers:

- Onshore wind: £151m/GW per year
- Offshore wind: £246m/GW per year
- Solar: £57m/GW per year

Volatile gas prices:

As the past eighteen months have shown, internationally traded commodities like gas, that are subject to global factors outside of our control, can be very volatile. Indeed, gas is especially so because physical restrictions (ie the need to move it by pipeline or liquefying it) mean there are more regionally-segmented and illiquid markets for natural gas than exist for, say, crude oil. With high capital but low operating costs, renewable electricity is better suited to being bought and sold on long-term, fixed price contracts. More electricity locked into fixed prices gives consumers more certainty and protects them from wild swings in the market. From January 2023, Contracts for Difference are reducing the price cap for a typical bill by the equivalent of £40 per year.¹⁸ If the capacity commissioned through AR4 (an additional 11GW) had been in place at the agreed strike prices in 2022, it would have saved consumers an extra £4bn.



Notes and sources

1. Energy UK analysis of CCC 6th Carbon Budget
2. “Pot Zero”: Can existing renewables and nuclear help keep prices down this winter? (UKERC, 2022)
3. Autumn Statement 2022 Policy Costings (HM Treasury, 2022)
4. Energy UK analysis of LCCC. Assuming AR4 strike prices and 2022 Market Reference Prices
5. British Energy Security Strategy (HM Government, 2022)
6. Energy UK analysis of CCC 6th Carbon Budget, 2022 pounds
7. Energy UK analysis
8. REMA consultation (BEIS, 2022)
9. Pulse Survey Q4 2022: Europe (GIIA, 2022)
10. “EU plans to relax curbs on tax credits in response to ‘toxic’ US subsidies” (Financial Times, 30/01/23)
11. FES Leading the way required additional wind and solar, 2023-2035
12. Repowering Onshore Wind (Renewable UK, Energy UK and Scottish Renewables, 2023)
13. Energy UK analysis of ROC register (Ofgem, 2023)
14. Energy UK analysis of Electricity Generation Costs (BEIS, 2020)
15. Assuming renewables displace gas generation with 2021 carbon intensity. Compared to Scottish emissions from UK local authority and regional greenhouse gas emissions national statistics (BEIS, 2022)
16. UK government launches taskforce to support drive for 2 million green jobs by 2030 (BEIS, 2020)
17. Energy in the UK (Energy UK, 2022)
18. Q1 23 price cap announcement (Ofgem, 2022)

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Energy UK is the trade association for the energy industry with over 100 members – from established FTSE 100 companies right through to new, growing suppliers, generators and service providers across energy, transport, heat and technology.

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Our members deliver nearly 80% of the UK's power generation and over 95% of the energy supply for 28 million UK homes as well as businesses.

The sector invests £13bn annually and delivers nearly £30bn in gross value - on top of the nearly £100bn in economic activity through its supply chain and interaction with other sectors. The energy industry is key to delivering growth and plans to invest £100bn over the course of this decade in new energy sources.

The energy sector supports 700,000 jobs in every corner of the country. Energy UK plays a key role in ensuring we attract and retain a diverse workforce. In addition to our Young Energy Professionals Forum, which has over 2,000 members representing over 350 organisations, we are a founding member of TIDE, an industry-wide taskforce to Tackle Inclusion and Diversity across Energy.

