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United Kingdom
Renewable Energy

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This country-specific Q&A provides an overview of renewable energy laws and regulations applicable in United Kingdom.

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United Kingdom: Renewable Energy

1. Does your jurisdiction have an established renewable energy industry? What are the main types and sizes of current and planned renewable energy projects? What are the current production levels? What is the generation mix (conventional vs renewables) in your country?

Although it is common to use the term 'the UK', this note seeks where possible to differentiate between Great Britain (GB) and Northern Ireland (GB and Northern Ireland together comprising the United Kingdom (UK)). This is because the electricity markets in GB and Northern Ireland are separate from each other; Northern Ireland's being linked to the Republic of Ireland via the Integrated Single Electricity Market (I-SEM).

The UK has a well-established renewable energy industry and GB is considered the world leader in offshore wind in particular.

Onshore and offshore wind farms are the largest source of renewable energy in the UK, accounting for 60% of all wind generation and 37% of all renewable generation in 2023[1]. The Hornsea Project Two is currently the world's largest offshore wind farm with a capacity of 1.3GW. The Dogger Bank Wind Farm is currently under construction in three phases and will be the largest offshore wind farm with a capacity of 3.6GW once complete.

Bioenergy projects are the second-largest contributors to renewable energy in the UK, providing 11.7% of the UK electricity generation in 2023. Projects include the Drax Power Station, which was formerly the country's largest coal-fired power station before converting 4 of the 6 boilers to biomass. Due to the prominence of Drax (it provides 5% of UK power and 10% of UK renewables), that distorts the actual prevalence of bioenergy in the UK and there is more obvious activity in, for example, solar PV projects.

The UK has numerous future renewable energy projects planned. The Renewable Energy Planning Database of UK renewable electricity projects over 150kW (updated quarterly) shows 1,145 projects had submitted planning permission as at January 2025 and 295 were under construction. Of those under construction, the largest (by capacity) are offshore and onshore wind, followed by battery storage and solar PV.

Renewable generation in the UK reached record high levels in 2023, marginally exceeding the previous 2022 record, reaching 135.8TWh. An increase in capacity of wind and solar PV installations offset the effect of less favourable weather conditions. Renewables accounted for 46.4% of total generation in 2023, a new record.

GB has been seen to be a leader over several generations of renewables with market leading approaches to subsidising renewables. The current regime of Contracts for Difference (CfD) is seen as a cornerstone for making offshore wind and solar PV attractive in GB and is being largely copied in several places around the world.

Footnote(s):

[1] Digest of UK Energy Statistics 2024, Chapter 6

2. What are the key developments in renewable energy in your country over the last 12 months?

The key development is the change of government in the UK, which has seen an increased emphasis on the transition to net zero. Following the general election in July 2024, the new Labour government implemented ambitious net zero targets. Key initiatives include the establishment of Great British Energy, lifting the de facto ban on onshore wind in England, and committing to transitioning the UK to clean power by 2030 in the Clean Power 2030 Action Plan. This latter commitment means that by 2030 clean sources should produce at least as much power as Great Britain consumes in total over the whole year, and at least 95% of GB's generation.

Other key developments include a new Planning and Infrastructure Bill which when passed should speed up the planning consent process for new renewable energy projects. Major solar and battery storage projects gained planning approval and there are more co-located projects, where solar and a battery storage system are installed on the same site.

In the annual subsidy auctions, the budget for the Contract for Difference (CfD) Auction Round 6 was increased by over 50%, resulting in a record number of renewable energy projects being awarded contracts.

The UK's final coal-fired power station closed in 2024 and over half of the UK's electricity was generated from

renewable sources for the first time.

This ambition is attracting a rising level of criticism. The voting public still backs net zero, but the speed required to implement the 2030 Action Plan is being questioned openly by prominent public figures.

3. What are your country's net zero/carbon reduction targets? Are they law or an aspiration?

In June 2019, the UK became the first major economy in the world to pass net zero emissions laws, when the Climate Change Act 2008 (2050 Target Amendment) Order 2019 amended the target in the Climate Change Act 2008 from an 80% to a 100% reduction in carbon emission from 1990 levels by 2050. The target requires the UK to bring all greenhouse gas emissions to net zero by 2050 and end its contribution to global warming.

The 2050 target is legally binding and is enforced through a series of 'carbon budgets' that the UK must meet. Each budget is effectively a cap on emissions, lasts for five years and is set at least 12 years in advance to give enough time to prepare. The latest Carbon Budget Delivery Plan, published in March 2023, shows that the UK has met its first three carbon budgets (2008-2012, 2013-2017 and 2018-22) and sets out a package of proposals for enabling carbon budget 6 (2032-37, the first to be set under the new net zero target) to be met. However, the 2023 Carbon Budget Delivery Plan was successfully challenged in the High Court and the Government has been ordered to produce a new report by 29 October 2025.

Although this 2050 target is UK-wide, climate change is a devolved matter and so the devolved administrations (Scotland, Wales and Northern Ireland) have set their own targets in addition. This means they may have slightly different interim carbon reduction targets, although the overall UK target remains 2050.

Scotland aims to achieve net zero by 2045 under the Climate Change (Scotland) Act 2009. It originally had a set of interim emissions reduction targets to meet, but these were replaced in 2024 by a carbon budget based approach for setting emissions reduction targets up to 2045[2].

The Environment (Wales) Act 2016 (amended in 2021) places a duty on the Welsh Ministers to ensure that the net Welsh emissions in 2050 are at net zero, with interim carbon reduction targets for 2020 (27%), 2030 (63%) and 2040 (89%) and five-yearly carbon budgets.

The Climate Change Act (Northern Ireland) 2022 sets a net zero target for Northern Ireland by 2050, although the net methane emissions do not have to be more than 46% lower than the 1990 baseline.

Following COP26 and for the purposes of meeting the 2050 target, the UK announced its aim to cut greenhouse gas emissions by at least 68% by 2030 in December 2020. The 68% target is part of the UK's National Determined Contribution (NDCs) as party to the UNFCCC Paris Climate Agreement 2015. The UK's latest NDC (February 2025) is to reduce all greenhouse gas emissions by at least 81% by 2035 (excluding international aviation and shipping emissions).

The Government also announced in 2021 that all electricity in GB should be generated from clean sources by 2035 to ensure that the UK meets its net zero target. In 2024 this target was brought forward to 2030 by the Clean Power 2030 Action Plan.

Although there are criticisms around how quickly the binding general targets are being translated into specific initiatives, the legal imperative to meet those targets is there which leads to a strong sense of progress in the industry and a strong level of support from the Government – and the risk of legal challenge if the targets are seen not to be being met.

Footnote(s):

[2] Climate Change (Emissions Reduction Targets) (Scotland) Act 2024

4. Is there a legal definition of 'renewable energy' in your jurisdiction?

The legal definition of 'renewable energy' in the UK is determined by the applicable law or regulation.

For example, the Promotion of the Use of Energy from Renewables Sources Regulations 2011 (SI 2011/243) applies the following definition of "energy from renewable sources" contained in Directive 2009/28/EC (Renewable Energy Directive): "*energy from renewable non-fossil sources, namely wind, solar, aerothermal, geothermal, hydrothermal and ocean energy, hydropower, biomass, landfill gas, sewerage treatment plant gas and biogases*" – each of which is defined separately.

The National Renewable Energy Action Plan which was adopted in accordance with article 4 of the Renewable Energy Directive sets out that Ofgem shall administer schemes designed to promote the increased take-up of

renewable generation. Each scheme (such as the Feed in Tariff, Renewables Obligation and Renewable Energy Guarantees of Origin) contains different criteria to determine whether the electricity generated is renewable.

The Energy Strategy for Northern Ireland (2021) seeks to promote the growth of renewable energy but does not define it.

Some technologies like nuclear do not technically meet the definition of net zero but they are being treated as being zero carbon.

5. Who are the key political and regulatory influencers for renewables industry in your jurisdiction? Is there any national regulatory authority and what is its role in the renewable energy market? Who are the key private sector players that are driving the green renewable energy transition in your jurisdiction?

The two main UK Government departments responsible for renewable energy policies are the Department for Energy Security and Net Zero (DESNZ) and the Department for Environment and Rural Affairs (Defra). DESNZ is responsible for delivering security of energy supply, ensuring properly functioning energy markets, encouraging greater energy efficiency, and seizing the opportunities of net zero to lead the world in new green industries. Defra is responsible for improving and protecting the environment and also aims to grow a green economy and sustain thriving rural communities.

The Scottish and Welsh governments also support renewable energy in their nations, setting their own energy strategies. For example Scotland aims to generate 50% of its energy from renewables by 2030 and Wales aims to meet 100% of its energy needs from renewables by 2035.

In Northern Ireland the Department for the Economy is responsible for policy and strategy on energy including renewables.

DESNZ is supported by other public bodies, including the Gas and Electricity Markets Authority (GEMA) and the Office of Gas and Electricity Markets (Ofgem), together normally referred to as Ofgem. Ofgem is the independent economic regulator of gas and electricity markets in England, Scotland and Wales under the Utilities Act 2000 and is accountable to the UK Parliament for the performance of its functions and duties. Northern Ireland has a separate Utility Regulator, again an independent economic regulator that is responsible for regulating the electricity, gas and water industries in Northern Ireland.

The Energy Act 2023 establishes a new independent body, referred to in the Act as the Independent Systems Operator and Planner, but to be known as the National Energy Systems Operator (NESO). NESO is tasked with strategic oversight across GB's electricity and gas systems, meaning it plans ahead and also acts as the operator of the system and accepts or rejects requests for connection.

The recent Strategy and Policy Statement for Energy Policy in Great Britain[3] sets out the roles and responsibilities of Government, Ofgem and NESO in more detail.

A new publicly-owned energy company, Great British Energy[4], is being set up to accelerate the roll-out of renewable energy projects in Great Britain, including local community energy projects and co-investing in clean energy supply chains and manufacturing, alongside The Crown Estate and National Wealth Fund.

The devolved administrations governments (Scotland, Northern Ireland and Wales) create their own climate change policy and help implement UK-wide policies.

The Climate Change Committee (CCC) is the UK's independent adviser on climate change and on achieving the emissions reduction targets in the Climate Change Act and its carbon budgets.

Private sector players include generation companies, transmission and distribution companies (formed when the networks were privatised in the 1980s), NESO (formerly the National Grid Electricity System Operator) and a number of suppliers (formerly the “big six” but now including many smaller suppliers to domestic and business customers).

There are also very active private sector energy participants from former oil and gas majors who are focusing on renewables (BP, Shell, Total) to renewable investment funds such as Greencoat and Equitix who invest in these projects. Investments there tend to be equity driven. The debt market is also active and has been supplemented by the National Wealth Fund who are focused on net zero lending (equity and debt).

In summary, there is both very clear Government policy support for renewable energy and the energy markets are very open in GB and so global and financial investors play a very active role alongside traditional and visible energy players.

Footnote(s):

[3] https://assets.publishing.service.gov.uk/media/6631ff75ed8a41eeaf58c0eb/strategy-and-policy-statement-for-energy-policy-in-great-britain.pdf

[4] https://www.gbe.gov.uk/what-we-will-do

6. What are the approaches businesses are taking to access renewable energy? Are some solutions easier to implement than others? If there was one emerging example of how businesses are engaging in renewable energy, what would that be? For example, purchasing green power from a supplier, direct corporate PPAs or use of assets like roofs to generate solar or wind?

Businesses are taking a range of approaches, from simply buying energy from suppliers on a green tariff, to entering into corporate power purchase agreements with a renewable plant to supply them with electricity. Many are installing on-site generation such as solar panels or smaller wind turbines, often combined with battery storage.

Direct corporate PPAs are becoming very common now. So, for example, a large user of energy directly purchases power say from an offshore wind farm and that power is sleeved into the overall supply arrangement. It is also becoming much more common for a customer's assets to be used, for example a roof where an energy supplier will finance and install solar PV panels and sell the power to the customer. Both are prevalent, but buying power direct is becoming very common indeed, partially as it gives some price certainty as well as fulfilling ESG credentials.

All these solutions have pros and cons and Addleshaw Goddard have developed an Energy Ready tool[5] to help businesses and the public sector decide which solutions are best for them.

Most businesses find this area daunting and yet there are easy wins available which will help price stabilisation, security of supply and the ESG position of a business.

Footnote(s):

[5] https://www.addleshawgoddard.com/en/sectors/energy-and-utilities/energy-for-business/

7. Has the business approach noticeably changed in the last year in its engagement with renewable energy? If it has why is this (e.g. because of ESG, Paris Agreement, price spikes, political or regulatory change)?

The business approach to renewable energy has changed in the last year. ESG is still a key driver of behavioural change, but there is an increased emphasis on energy security as a result of geopolitical events like the Russia-Ukraine war. Previously there were broadly three responses to renewable energy by business. The first and most common was purchasing green power from their existing energy supplier; the second is engaging on taking renewable power directly by for example, allowing solar panels on their own roof; and third is the commitment of their own capital to have a more secure energy future.

The change towards being more engaged has been a board level issue where a business makes a conscious choice to have tangible examples of taking the E element of ESG seriously. When options are examined, they often focus on taking some power directly from renewable sources, often using their own assets (such as rooftops) and moving “beyond” just purchasing power.

So a combination of seeking a more secure and cost-effective energy supply and a desire to demonstrate a commitment to sustainability is driving businesses to engage more with renewable energy. However, this must also be balanced with the uncertainty created by elections in a lot of influential Western democracies. The period in the run up to an election and often for six months afterwards can be a period of little regulatory change.

8. How visible and mature are discussions in business around reducing carbon emissions; and how much support is being given from a political and regulatory perspective to this area (including energy efficiency)?

Reducing carbon emissions is becoming a top priority for many businesses, due to the legal imperative to reach Net Zero by 2050 but also to the increasing importance of ESG issues to shareholders.

There is much political and regulatory support. In 2023 the UK Government published some key policy documents including the Powering Up Britain plan, the Energy Security Plan and the Net Zero Growth Plan, along with a Green Finance Strategy to drive a multi-billion-

pound investment in green energy. These were followed up with the Energy Strategy and Policy Statement which gives guidance to the energy sector on the actions and decisions needed to deliver the government's policy goals. There has been criticism from some quarters that these plans do not do enough to incentivise energy efficiency measures, especially in buildings and building standards.

However, taking hydrogen as an example, the policy documents are very well developed in GB giving a very sophisticated and thoughtful risk environment (see the hydrogen business models and the hydrogen net zero investment roadmap[6]). As larger hydrogen projects have stalled in Europe, the GB approach of awarding contracts to developers who have (often) a business offtaker looks to be the right scale of development for hydrogen. We would expect existing heavy gas users to benefit from large scale hydrogen projects as hydrogen can replace gas in a hydrogen enabled boiler, for instance.

Northern Ireland produced a 'Path to Net Zero Energy' in December 2021, an energy strategy that forms part of an overall plan to address climate change, the Green Growth Strategy. The Department for the Economy has lead responsibility for the development of energy efficiency policy and legislation in Northern Ireland and has recently been consulting on support for low carbon heat in the residential sector and using biofuels to transition away from fossil fuels for heating.

The UK Emissions Trading Scheme (UK ETS) also incentivises businesses to reduce emissions. Plants that are caught by the scheme are only able to emit up to a certain limit each year and have to buy allowances to cover any excess. The limits reduce over time.

The Energy Savings Opportunity Scheme requires businesses to conduct energy audits and identify energy saving opportunities. Large businesses are required to report on their energy use, carbon emissions and energy saving measures as part of their annual financial statements.

Carbon capture, use and storage (CCUS) is becoming much more prominent as a technology to reduce industrial emissions. The UK government has recently published a collection of documents[7] detailing its financial and regulatory support for this. This support includes developing business models to support the economic viability of CCUS projects including grants, revenue support and capital funding; and the legal and regulatory framework to underpin it, such as network codes and regulation.

Footnote(s):

6 https://www.gov.uk/government/publications/hydrogen-net-zero-investment-roadmap

7 https://www.gov.uk/government/collections/uk-carbon-capture-usage-and-storage-ccus

9. How are rights to explore/set up or transfer renewable energy projects, such as solar or wind farms, granted? How do these differ based on the source of energy, i.e. solar, wind (on and offshore), nuclear, carbon capture, hydrogen, CHP, hydropower, geothermal; biomass; battery energy storage systems (BESS) and biomethane?

For offshore projects, a licence is needed from the Crown Estate or Crown Estate Scotland, which owns rights to the seabed out to 12 nautical miles. These are normally granted by auction. A marine licence from the Marine Management Organisation (MMO) may be needed.

For onshore projects, planning permission or a development consent order is needed, depending on the size of the project. In Scotland, a consent order under section 36 of the Electricity Act 1989 is needed, and in Northern Ireland the construction, extension or operation of a generating station over 10MW (onshore) or 1MW (offshore) needs consent under Article 39 of the Electricity (Northern Ireland) Order 1992.

A generation licence is usually needed unless the project falls within a class exemption (e.g. onsite generation).

Environmental consents may be needed.

No specific rights are needed to transfer a renewable energy project, unless it is receiving a subsidy, in which case the terms of the relevant scheme will need to be checked to see if transfer is permitted.

In summary, the main method used to “stop” a renewable class is the planning system with onshore wind largely being not allowed in England due to planning rules, although these are now being relaxed. Promotion of renewable energy still largely needs a subsidy and the main method for promoting that is the Contract for Difference, for which onshore wind over 5MW, offshore wind (including floating), solar PV over 5MW, marine, geothermal, hydro and some waste technologies are eligible. As the price of energy rises, and technologies become more established, technologies like solar PV

become much easier to finance without subsidy.

10. Is the government directly involved with the renewables industry (auctions etc)? Are there government-owned renewables companies or are there plans for one?

The Government is involved directly in the renewables industry. The main public bodies in GB include the Department for Energy Security and Net Zero (DESNZ) and the energy ministries in the devolved administrations. In Northern Ireland it is the Department for the Economy. See the answer to Question 5 above for more details on their roles.

Ofgem is a non-ministerial government department that regulates the energy industry in GB and administers environmental programmes and sustainability schemes on the government's behalf. There is also the Low Carbon Contracts Company (LCCC) and the Electricity Settlements Company (ESC), both of which are government-owned entities that deliver key elements of the Government's Electricity Market Reform (EMR) Programme. The LCCC enters into Contracts for Difference (CfDs) to buy power from renewable generators at a fixed 'strike price', giving revenue certainty and enabling projects to be bankable.

In 2024 the NESO was established, under powers set out in the Energy Act 2023. The NESO is a publicly-owned body designated as the independent energy system operator and planner. NESO is a public corporation, that is independent from other commercial energy interests as well as from operational control of government. The government is the sole shareholder of NESO, and thus retains ultimate responsibility, however it does not exercise control over NESO's operations. NESO is licensed and regulated by Ofgem and funded by consumers through price control arrangements.

Northern Ireland's equivalent of Ofgem is the Northern Ireland Authority for Utility Regulation (NIAUR), an independent public body that regulates the electricity, gas, and water and sewerage industries in Northern Ireland.

Scotland is establishing a National Public Energy Agency, called Heat and Energy Efficiency Scotland, to accelerate the decarbonisation of heat across Scotland.

In August 2023 Wales launched Ynni Cymru ("Energy Wales"), a new publicly-owned energy company, to expand community-owned renewable energy generation across Wales.

A new state-owned renewable energy company, Great British Energy, is currently being established to accelerate the roll-out of renewable energy projects in Great Britain, including local community energy projects and co-investing in clean energy supply chains and manufacturing, alongside The Crown Estate and National Wealth Fund.

11. What are the government's plans and strategies in terms of the renewables industry? Please also provide a brief overview of key legislation and regulation in the renewable energy sector, including any anticipated legislative proposals?

There have been a raft of plans and strategies published over the last few years.

In November 2020 the Government set out a Ten Point Plan for a Green Industrial Revolution followed by an Energy White Paper in December 2020. The ten points for policy focus are:

- Advancing offshore wind
- Driving the Growth of Low Carbon Hydrogen
- Delivering New and Advanced Nuclear Power
- Accelerating the Shift to Zero Emission Vehicles
- Green Public Transport, Cycling and Walking
- Jet Zero and Green Ships
- Greener Buildings
- Investing in Carbon Capture, Usage and Storage
- Protecting Our Natural Environment
- Green Finance and Innovation

This was followed by more policy papers including a Net Zero Strategy (2021), the British Energy Security Strategy (2022) and Powering Up Britain (2023) which comprises an Energy Security Strategy and a Net Zero Growth Strategy, building on the 2021 Net Zero Strategy. Complementing this is the Energy Strategy and Policy Statement published in 2024 under the Energy Act 2013 which gives guidance to the energy sector on the actions and decision needed to deliver the government's policy goals.

The Energy Act 2023 enables the UK Government to implement a number of renewable energy support schemes such as business models for hydrogen production, transport and storage; a low-carbon heat scheme; and multi-purpose interconnectors to join up offshore wind farms.

Northern Ireland published 'The Path to Net Zero Energy', an energy strategy setting out a pathway to

decarbonising the NI energy industry by 2050, in December 2021. It included a target of 70% electricity consumption to be from a diverse mix of renewable sources by 2030. This target was increased to 80% by the Climate Change Act (Northern Ireland) 2022. There are annual Action Plans reporting against progress made against each of the 22 Energy Strategy actions.

The key legislation for the renewable sector is the Energy Act 2013 which introduced Electricity Market Reform (EMR) to provide long-term support for renewable electricity generation. This established the Contracts for Difference and Capacity Market regimes, which are governed by their own regulations made under the Act.

See also the answer to Question 3 above for the key legislation setting net zero targets.

Regulations to be made under the Energy Act 2023 will implement many of the proposals set out in the Energy White Paper and Net Zero Strategy, including measures to clarify the legal definition of storage; business models to encourage investment in hydrogen and carbon capture; and centralised planning of new network infrastructure.

12. Are there any government incentive schemes promoting renewable energy (direct or indirect)? For example, are there any special tax deductions or subsidies (including Contracts for Difference) offered? Equally, are there any disincentives?

The Government provides various incentives to encourage the development of and investment into the renewable energy industry. In GB, the Renewables Obligation (RO) scheme places an obligation on electricity suppliers to source an increasing proportion of electricity from renewable sources. Renewable generators earned money by selling RO certificates to suppliers to fulfil this obligation. This scheme closed to new entrants in 2017 but the support lasts for 20 years. Therefore a lot of live projects still sit under this regime.

The Contract for Difference (CfD) is the replacement for the RO and offers a set 'strike price' to generators for their electricity. Normally generators bid for a contract in an auction round, which now take place annually. The CfD makes a project bankable by guaranteeing a fixed price regardless of market fluctuations, although if market prices rise above the strike price the generator must pay back the difference, ensuring they do not make undue profit.

Most types of renewable projects can bid for a CfD and they are grouped into different 'pots' each with their own budget, so that more expensive less-established technologies are not competing with cheaper more-established technologies. The pots for the 2024 auction round (AR6) were:

- Pot 1: Energy from Waste with CHP, Hydro (>5MW and <50MW), Landfill Gas, Onshore Wind (>5MW), Remote Island Wind (>5MW), Sewage Gas, and Solar Photovoltaic (PV) (>5MW)
- Pot 2: Advanced Conversion Technologies, Anaerobic Digestion (>5MW), Dedicated Biomass with CHP, Floating Offshore Wind, Geothermal, Tidal Stream, and Wave
- Pot 3: Offshore Wind

Projects below 5MW are normally excluded from the scheme, as are nuclear projects and coal to biomass conversions. Renewable hydrogen projects are also excluded, although an equivalent support scheme is being developed and should be available in the next few years.

For smaller projects there was a Feed-in Tariff (FiT) subsidy scheme which closed to new entrants in 2019. It is replaced by the Smart Energy Guarantee, where energy suppliers pay small generators for the electricity they generate. This mainly affects domestic installations and smaller on-site solar PV installations such as panels on warehouse roofs.

There is the Renewable Transport Fuel Obligation (RTFO) for renewable transport fuel such as biofuels and hydrogen. This operates in a similar way to the RO, where suppliers of liquid fossil fuel for transport use have to supply a certain proportion of renewable fuel which they prove by buying RTFO certificates or paying a buy-out price.

In Northern Ireland there was the Northern Ireland Renewables Obligation (NIRO) which operated on a similar basis to the GB RO scheme. The NIRO closed to new entrants on 31 March 2017. The Department for the Economy has been consulting on a new Renewable Energy Support Scheme for Northern Ireland, which will be similar to the GB CfD. The high level design of the scheme was published on 9 April 2024[8] and the first auction is expected to take place in 2025.

The UK Government is developing support schemes for carbon capture, use and storage (CCUS) and renewable hydrogen production. These will operate in a broadly similar way to the CfD but with extra capital support in recognition of the high upfront costs of these new technologies. There are also support schemes (on a regulated asset basis plus a subsidy top up) for the

carbon dioxide and hydrogen transport and storage infrastructure that is needed to support this.

Footnote(s):

8
https://www.economy-ni.gov.uk/publications/design-considerations-renewable-electricity-support-scheme-northern-ireland-response

13. How does the structure of the natural gas industry in your country impact the price of electricity? Are there any plans to de-link the price of renewable electricity from gas prices?

The structure of the natural gas industry in the UK significantly impacts electricity prices due to the way the wholesale electricity market operates. In the UK, electricity generating plants operate on a 'merit order', with the greenest, cheapest plants being called upon first. But this means the price of electricity is often set by the marginal cost of the last generating unit needed to meet demand, which is typically a gas power plant. This means that even though renewable sources like wind and solar are cheaper to produce, the overall electricity price is influenced by the higher cost of gas.

Despite generating a substantial portion of electricity from renewables, the UK still relies on natural gas to meet fluctuations in demand, especially during periods of low renewable output. This reliance on gas means that spikes in gas prices directly affect electricity prices.

The UK government has discussed in recent years plans to de-link the price of renewable electricity from gas prices, especially since the significant spikes in gas prices in 2022. The Energy Prices Act 2022 enabled the government to offer support to domestic and non-domestic energy customers by capping their energy bills (both electricity and gas) and gave wide powers to the government to intervene in energy markets in response to the energy crisis. One of those powers is to set a temporary fixed revenue limit on renewable electricity generators that are not already party to a CfD, although this power has never been used. It has effectively been replaced by the Electricity Generator Levy, a tax on nuclear, renewable and biomass generation units to prevent them making excessive profits when electricity prices rise due to the price of gas.

There is currently a REMA (Reform of Electricity Markets Arrangements) process underway which is looking at wholesale electricity pricing in GB and considering a range of potential reforms, including whether to introduce zonal prices. REMA and the Clean Power 2030 Action Plan are both aiming to move away from reliance on gas plants and instead increase the role of low-carbon flexibility services to meet fluctuations in demand.

14. What are the significant barriers that impede both the renewables industry and businesses' access to renewable energy? For example, permitting, grid delays, credit worthiness of counterparties, restrictions on foreign investment, regulatory constraints on acquisitions; disputes/challenges?

The most significant barriers in GB are planning permission and grid delays. The onshore wind industry in England has not been able to develop as quickly as in the other home nations due to a policy change in 2015 which made it more difficult for onshore wind projects to get planning permission. This along with the removal of RO subsidies the same year led to a sharp decline in onshore wind farm development. The Government has recently relaxed the planning restrictions on onshore wind projects in England so we should see more of these coming forward over the next few years.

Grid delays are however a major issue. There are reports of some projects waiting up to 10 to 15 years to be connected in GB due to a lack of capacity on the network. The transmission and distribution networks in the UK are struggling to upgrade in time to meet the challenging renewable energy targets set by the Government: the UK needs to build six times the amount of electricity transmission infrastructure over the next few years than it has done in the previous 30. This is being addressed through the NESO's Connections Reform project, that allows projects that are ready to connect to "jump the queue" instead of being connected in order of when they applied.

GB has very few restrictions on direct foreign investment and renewable assets have a very healthy secondary market of trading on assets. The National Security and Investment Act 2021 does require notification of any acquisition of a generating asset with a capacity of 100MW or more, or where the acquiring company plus its group companies and the entity it is acquiring together have a cumulated generation or aggregation capacity of 1GW or more.

There is currently a REMA (Reform of Electricity Markets Arrangements) process underway which is looking at wholesale electricity pricing in GB and considering a range of potential reforms, including whether to introduce

zonal prices. Until a decision on whether to introduce zonal prices is made, investors are reluctant to invest in new renewable energy projects, as it is difficult to calculate their return on investment without knowing what the likely price they could sell the energy in their zone will be.

15. What are the key contracts you typically expect to see in a new-build renewable energy project?

A new-build renewable energy project will have:

- Project Agreement (a shareholders agreement or joint venture agreement between the parties sponsoring the project)
- Lease (of the land for the project) and easements for cables and access routes
- Financing agreements (with the lender/s financing the project)
- Connection agreement (with the DNO or TO)
- Construction/EPC agreements (and turbine supply agreements if a wind farm)
- Operation and maintenance agreements
- Power purchase agreement (to sell the power: this is the key source of revenue for the project)
- Contract for Difference (if the project cannot be financed on a merchant basis).

16. Are there any restrictions on the export of renewable energy, local content obligations or domestic supply obligations? What are the impacts (either actual or expected) of the implementation of the Net Zero Industry Act (EU) Regulation 2024/1735?

There are no restrictions on the export of renewable energy. In fact, in 2022 Britain exported more power than it imported for the first time. The Energy Security Plan envisages more exports of electricity in future as the deployment of offshore wind continues. The Offshore Wind Sector Deal (published 2019 and updated in 2020) set a target of increasing UK offshore wind exports fivefold to £2.6 billion per year by 2030, and the Government committed to maintaining key policies and programmes that support export-led growth.

There are local content obligations for the Contract for Difference support for larger projects. If a project of 300MW or more (or any size of floating offshore wind project) wishes to benefit from the CfD scheme it must complete a Supply Chain Plan questionnaire. This requires them to state the percentage of 'UK content' that the project will have. Developers who cannot show a sufficient level of UK content in their project will not qualify for the CfD scheme.

However, there is an informal move to have more local content and some more enlightened developers have implemented their own local content schemes.

The Net Zero Industry Act (EU) Regulation 2024/1735 does not directly apply to the UK but its broader implications for market competitiveness and investment could have significant indirect effects. Its support for net-zero technologies within the EU may increase competitive pressure on UK manufacturers and exporters of clean energy technologies, leading to a need for the UK to enhance its own support mechanisms to remain competitive. By streamlining permitting procedures and providing additional benefits to strategic projects, the Act may attract investments that could otherwise have been directed to the UK. This shift in investment dynamics could affect the UK's energy supply and export markets. Finally, the Act's provisions on public procurement and auctions for renewable energy sources may set new standards that the UK might need to align with to facilitate cross-border trade and cooperation.

17. Has deployment of renewables been impacted in the last year by any non-country specific factors: For example, financing costs, supply chain or taxes or subsidies (e.g. the US's Inflation Reduction Act)?

The latest full year's Digest of UK Energy Statistics (July 2024, covering 2023) shows that 4.2GW of renewable capacity was installed in 2023, marking another year of significant growth. Most of the new capacity (3.1GW) was in offshore wind, with 0.8GW solar PV and 0.3GW of onshore wind.

Non-country specific factors have continued to impact the deployment of renewables in the UK. The global rise in interest rates has increased the cost of capital, making financing more expensive for renewable projects. This has led to a cautious approach from investors.

The US Inflation Reduction Act has had a ripple effect globally, including in the UK. It has intensified competition for investment in renewable technologies, prompting the UK government to consider adjustments to its own subsidy schemes such as the CfD to remain competitive. The CfD scheme has been modernised to better accommodate the fluctuating costs and ensure consistent volumes of renewables are deployed year on

year. This has helped mitigate some of the financial risks associated with renewable energy projects. Additionally, the UK has introduced new incentives to attract private investment into renewable energy projects, with the launch of the National Wealth Fund.

Last but not least, the US tariffs could lead to higher costs for components and materials used in renewable energy projects. This is because many of these components are sourced globally, and the tariffs have disrupted supply chains and increased prices. The tariffs have also caused delays in project timelines and increased uncertainty in the market, affecting investor confidence and the availability of capital for renewable projects. Where tariffs end up and the uncertainty around that is causing difficulties, including the recent pausing of significant offshore wind projects. That uncertainty coupled with the drive to 2030 is what is attracting most criticism of the UK policy approach.

18. Could you provide a brief overview of the major projects that are currently happening in your jurisdiction?

The Energy Trends March 2025 report shows that in 2024 a total of 4.2GW of renewable generation capacity (the highest since 2017) was added, taking the total installed capacity to 60.7GW. The new capacity was largely made up of wind (1.4GW offshore and 0.8GW onshore) and solar PV (1.6GW, the largest amount of new capacity added in one year since 2016, dominated by small installations).

Future projects include East Anglia 3 offshore wind project, expected to be completed in 2026; and Cleve Hill (Project Fortress), which will be the largest solar farm in the UK, consisting of 373MW of solar and over 150MW of battery energy storage. There is also Tees biomass station, one of the world's largest purpose-built pellet biomass power plants, generating 299MW.

The Eastern Green Link is a 2GW high voltage direct current electrical interconnector connecting Scotland to England, reinforcing the transmission network and enabling Scotland's renewable energy to be transmitted to England where it is needed. Construction is just beginning on this and it is set to be operational in 2029.

There are various BESS (battery energy storage system) units being constructed in Scotland, which should help to provide the necessary flexibility on the grid and reduce the UK's reliance on gas generation.

The H100 Fife project is a green hydrogen trial involving Scotia Gas Networks (advised by Addleshaw Goddard) building a hydrogen network that will serve around 300 houses with green hydrogen produced at an electrolysis plant powered by a local offshore wind turbine. This will help inform the UK Government's decision in 2026 on whether to proceed with hydrogen heating in homes, to replace natural gas.

The Government is supporting two CCUS industrial 'clusters': HyNet in the North West and the East Coast cluster in Track-1; and is looking to support a further two, Acorn and Viking, in Track-2. Those clusters will comprise a CO2 and/or hydrogen transport and storage network to which individual projects can connect. The individual projects in or near the cluster network can bid for project support under the CCUS or hydrogen business models in allocation rounds. These operate in a similar way to the CfD, guaranteeing a level of income for the hydrogen produced or carbon that is captured, along with a level of upfront capital support by way of a grant.

In October 2024 the UK government confirmed the funding for the East Coast Cluster and Hynet, and The Crown Estate awarded an Agreement for Lease to Eni to repurpose existing infrastructure to transport and store CO2. In December 2024, the first two projects in the East Coast Cluster reached Financial Close and are set to begin construction from mid-2025 and become operational by 2028.

So far 11 projects have been selected for hydrogen production business model support in Hydrogen Allocation Round 1; and 27 electrolytic hydrogen projects in Hydrogen Allocation Round 2.

19. How confident are you that your jurisdiction can become a leader in newer areas like offshore wind or hydrogen?

The UK already sees itself as the world leader in offshore wind, with a mature supply chain and an established number of projects. The recent Offshore Wind Net Zero Investment Roadmap sets out the ambition to deploy up to 50GW of offshore wind by 2030. The UK continues to have the highest offshore wind deployment in Europe.

It is seeking to become a leader in hydrogen, with a recent Hydrogen Net Zero Investment Roadmap updated in February 2024 showcasing the scale of the UK's ambition: 10GW of low carbon hydrogen production by 2030, with at least half from electrolytic (green) hydrogen. This approach is looking fit for purpose as it is the right scale for an economy like the United Kingdon. In an update to the market in December 2024 the government

set out the key milestones achieved during 2024 and upcoming developments and hosted the International Investment Summit in October 2024 to attract investment from around the world.

Overall, the UK is seeking to mobilise green investment through its updated 2023 Green Finance Strategy, which seeks to cement the UK's pace at the forefront of the global green finance market.

The UK is developing a 10-year Industrial Strategy, to be published in June 2025, which aims to deliver the certainty and stability that businesses need to invest in high growth sectors including 'clean energy industries', which it sees as a focus area.

The approach to CCUS and hydrogen is very detailed and investable and is ahead of other jurisdictions. The UK government offers significant financial and regulatory support for CCUS including developing business models to support the economic viability of CCUS projects with grants, revenue support and capital funding; and the legal and regulatory framework to underpin it, such as network codes and regulation. The size of subsidy available may limit the impact of this insightful policy.

The market for battery energy storage systems (BESS) in the UK is growing rapidly and is predicted to reach 24GW by 2030, meaning the UK would rank 4th in the world with almost 9% of global capacity[9]. The UK government is supporting the sector through funding such as a recent £1 billion deal to establish an AESC battery gigafactory in Sunderland, where the National Wealth Fund and UK Export Finance are providing financial guarantees and the UK Government's Automotive Transformation Fund is investing £150 million in grant funding. The UK is home to several innovative energy storage companies including Zenobe Energy, Highview Power and Moixa. These companies are developing cutting-edge technologies and solutions, including grid-scale batteries, liquid air storage, and smart battery systems. The new long duration energy storage (LDES) cap and floor support scheme should help bring more novel storage technologies to market.

Footnote(s):

9 https://www.rystadenergy.com/news/charging-up-uk-utility-scale-battery-storage-to-surge-by-2030-attracting-investme

20. How are renewables projects commonly financed in your jurisdiction?

Large renewables projects in GB normally rely on obtaining a CfD to help them secure project finance, as the CfD provides a guaranteed level of income for the project. However, some smaller renewables projects (particularly solar PV which until recently have been unable to bid for a CfD) are able to operate on a merchant basis.

The UK government is currently designing business models to help finance renewable hydrogen and CCUS projects. These are a combination of grants to help with capital expenditure and a CfD-type arrangement for the sale of the hydrogen produced once the project is operational.

More generally, there is a very active equity market in this space with investment funds keen to invest in 'green' projects. There is Government-backed funding available at competitive rates from the Green Investment Bank and, more recently, the UK Infrastructure Bank (now rebadged as the National Wealth Fund). The National Wealth Fund in particular offers private and public sector financing and has been tasked with tackling climate changes and supporting regional and local economic growth across the UK and has £22bn of infrastructure finance to invest.

Great British Energy (see question 5) will also assist in financing renewable energy projects once it has been established.

21. What is your forecast for the coming year(s) for renewable energy in your jurisdiction?

The forecast for renewable energy in the UK over the coming years looks promising, provided that the bottlenecks with planning consent and grid connections can be overcome and global supply chains can plan with more certainty. The Clean Power 2030 Action Plan has made it clear that the UK government expects the GB grid to run on 95% clean power by 2030, with the remaining 5% being gas capacity to provide key flexibility. The connections reform process and reordering of the connections queue should free up capacity for projects that are ready to connect to the grid and so the UK is set to significantly increase its renewable energy capacity, particularly in offshore wind, solar power, and green hydrogen.

The new Labour government has shown strong commitment to renewable energy, lifting the ban on onshore wind and approving several large solar projects, along with providing further funding to hydrogen and CCUS projects. This political support is likely to drive further investments and developments in the sector.

Mandates on vehicle manufacturers and aircraft fuel suppliers will drive them towards new technologies including more efficient batteries and sustainable aviation fuel production. As these technologies continue to evolve, they will become more efficient and cheaper over time.

Overall, the UK is poised to continue its transition towards a cleaner, more sustainable energy future.

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