NIRIG
NORTHERN IRELAND
RENEWABLES INDUSTRY GROUP

renewableUK IWEA Irish Wind Energy Association

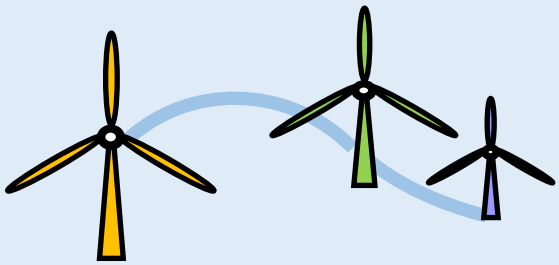
ENERGY STRATEGY FOR NORTHERN IRELAND

Now that low-carbon energy is delivering for Northern Ireland, it is important that we set out a clear pathway for least-cost decarbonisation of the energy sector up to 2050.

The Northern Ireland Renewables Industry Group (NIRIG) represents the views of the renewable electricity industry in Northern Ireland, providing a conduit for knowledge exchange, policy development, support and consensus on best practice between all stakeholders.

Committed to making a positive difference, we promote responsible development, support good community engagement and deliver low-cost electricity generation from sources such as onshore wind, solar and storage using our greatest natural resources.

This document proposes a vision for Northern Ireland's economic growth through maximising low-carbon energy sources, building on our manufacturing and innovation heritage and delivering an outward-looking, modern and sustainable economy.



Low-carbon energy is delivering for Northern Ireland...

Northern Ireland is energy rich, and in the last 15 years we have begun to utilise these indigenous energy resources using new and advanced technologies. The power sector in Northern Ireland has subsequently become increasingly decarbonised, facilitated by clear policies driving sustainable development, such as the Strategic Energy Framework 2010-2020, Sustainable Development Strategy and Regional Development Strategy 2035, and supporting policies such as Planning Policy Statement 18 and the Renewables Obligation scheme.

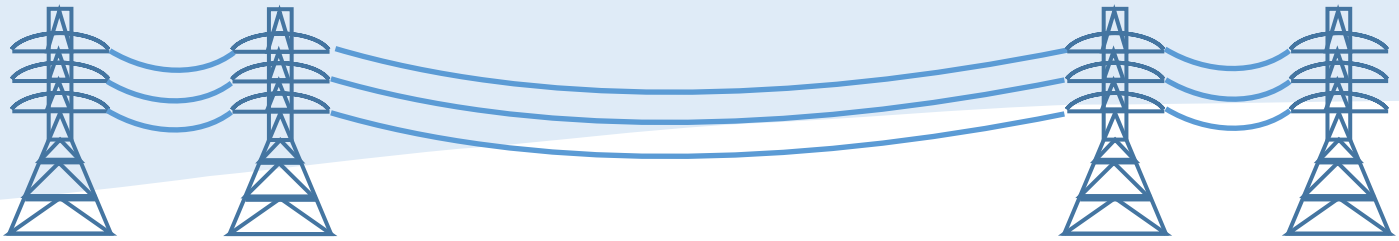
This success has been delivered with significant private investment across Northern Ireland and the growth of a supply chain that services local industry and exports to other markets. Renewable energy and its associated infrastructure is now a major industrial sector, helping to sustain economic growth and employment.

Our industry can help deliver for Northern Ireland in the following key areas:

- Low-cost
- Technology & Innovation
- Global Markets
- Sustainable Growth
- Skills & Employability

Image Credit (front cover, electric vehicle): Reinis Babrovskis (@Ren0_LV / @NIEVO)

We must now set out a clear pathway for least-cost decarbonisation of the energy sector up to 2050.



Northern Ireland has more powers in energy than other devolved administrations of the UK, and therefore greater freedom to set the direction of its energy policy. Planning, innovation, skills development, grid development and targets can be ambitious and tailored to local strengths and opportunities.

However, the interconnectedness of electricity markets means that for consumers to benefit fully from new technologies, policies for energy trading and markets must be coordinated. The development of the Single Electricity Market (SEM) and a consistent policy framework has successfully enabled a world-leading energy system with rapid growth in low-carbon electricity. The benefits of participation in the SEM include more efficient market trading and maximisation of low-cost renewables, reducing consumer bills across the island.

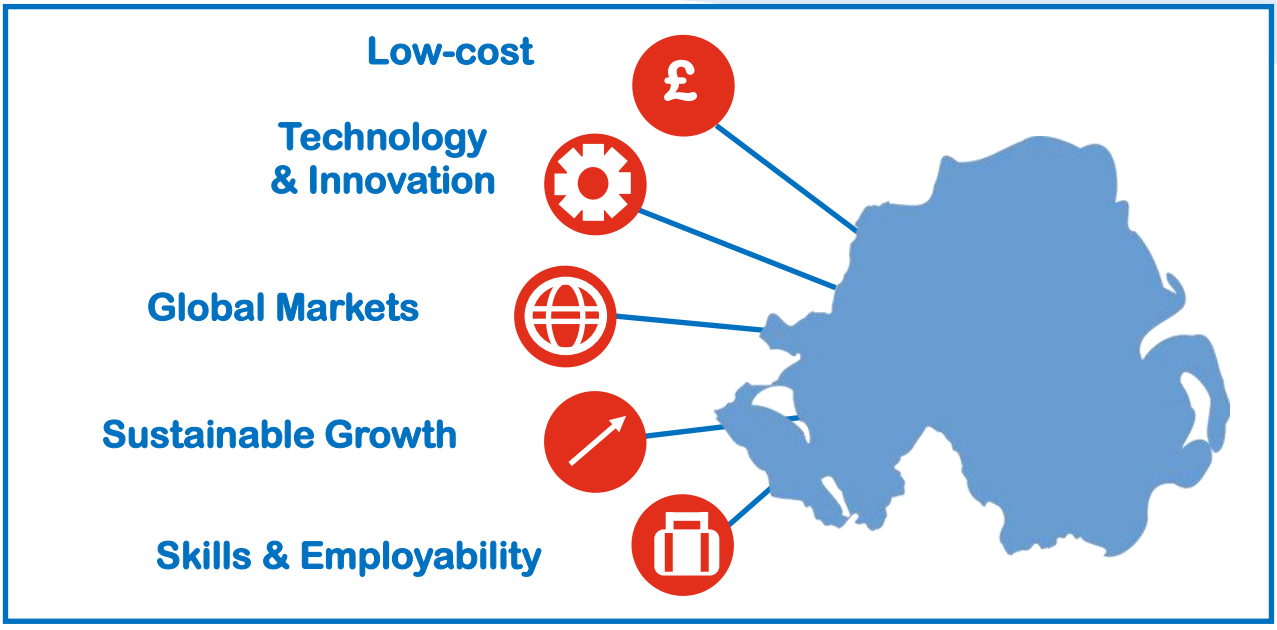
This pathway needs to take account of electricity costs, security of supply and climate change targets. It must build upon:

- Long term policy certainty and a whole-system view
- Cost effective, efficient modernisation
- Regional investment, skills and innovation

Low-carbon energy is delivering for Northern Ireland...

Low-cost:

Technological leaps and constant innovation have led to significant reductions in the cost of renewable energy, and technologies such as onshore wind are now cost-competitive with new gas plant. Innovative technologies such as energy storage will enable maximisation of available resources as they are integrated into the electricity system, helping to balance the grid and improve the utilisation of renewable energy assets.



Onshore wind decreases electricity costs in the all-Ireland Single Electricity Market, even accounting for increased constraint payments and the cost of subsidies.

Wind energy delivers savings of €34/MWh to Northern Ireland consumers[1] .

With predictable long-term renewable energy production costs, businesses can negotiate long-term energy contracts – Power Purchase Agreements - directly with generators.

Renewables can allow some businesses to hedge against increases in energy costs.

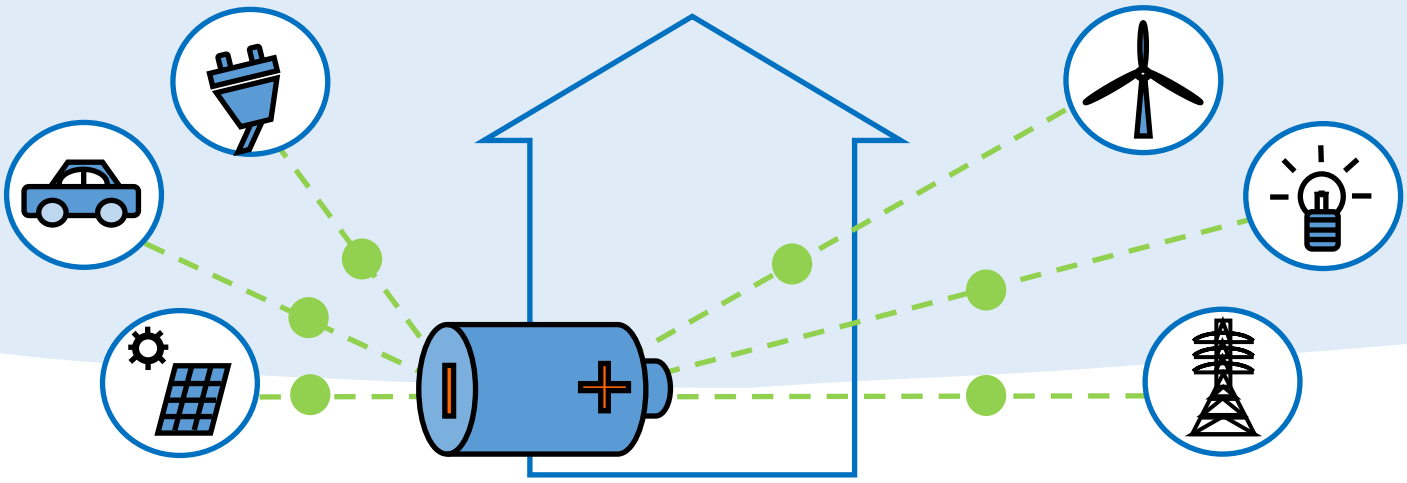
In 2012 a joint UK government and industry taskforce set a cost reduction target of £100/MWh for offshore wind by 2020.

11 September 2017: offshore wind delivered electricity at £57.5/MWh.

1 This figure has been calculated from working paper https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2926875

Technology and Innovation:

Local businesses are already working at the leading edge of energy systems; developing, adapting and taking advantage of new energy technology. Companies are developing world-leading products and services in energy storage, installation and decommissioning.



Northern Ireland is home to two global leaders in energy storage:

AES UK & Ireland and RES.

RES has advanced storage modelling experts and is delivering storage projects worldwide. AES delivered the first large-scale energy storage system in the UK at transmission scale.

The Northern Ireland System Operator (SONI) delivers world-leading electricity system management, currently enabling up to 65% intermittent renewable generation on the network at one time.

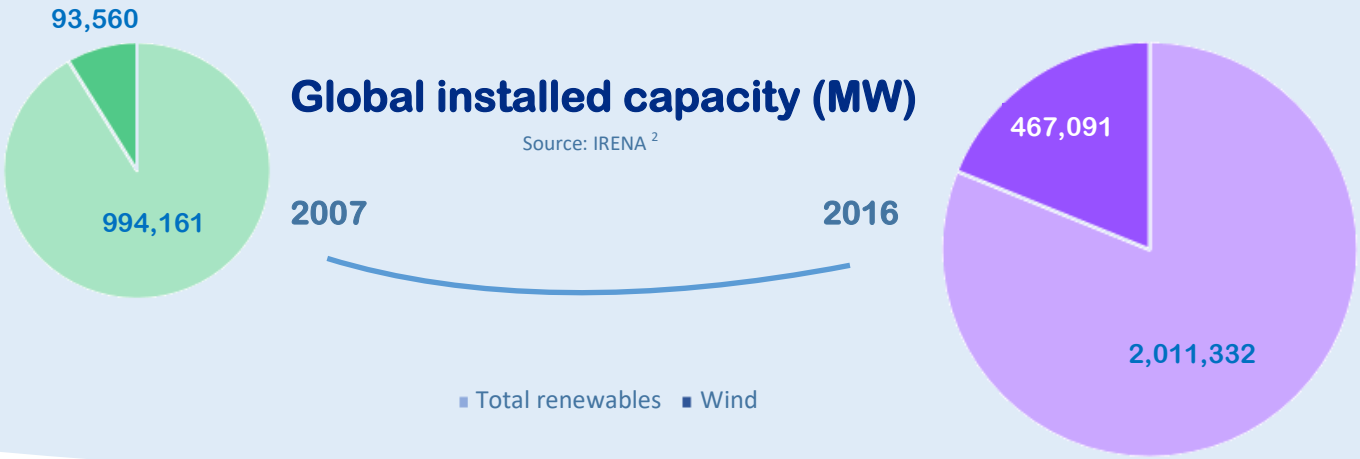
With a pathway to enabling 75% renewable generation on the electricity network at one time, we will have a world first.

The SPIRE 2 project - an innovative cross-border collaborative project involving Ulster University, QUB and business - has received funding of €6.7 million from the EU's INTERREG VA programme.

The project will create 17 PhD studentships, develop six post-doctoral researchers and is expected to generate at least eight intellectual property disclosures.

Global Markets:

Local engineering companies are winning international contracts in renewable technologies, delivering high-skilled jobs locally. Supply chain companies in the low-carbon sector are exporting their innovative products and services globally.



WIS Group, the only indigenous AD Technology Provider on the island of Ireland, have been designing and building bespoke AD Process Technology since 2011, and on average their plants operate at greater than 97% availability compared to a UK average of 65%

They have built more than 30 plants in Ireland and the UK, ranging in size from 150kWe to 4MWe, and have won many awards for their AD Technology, including Small AD Plant of the Year and International AD Team of the Year in the 2017 ADBA Awards.

With significant EU funding local company Energia is working with Belfast Met on a world-first storage project to maximise wind farm output.

This power-to-gas project will help to optimise renewable energy in Northern Ireland by reducing wind energy curtailment and delivering zero emission gas solutions that will have a wide range of uses for industry and transport.

Belfast Harbour's Offshore Wind Terminal has been used by both MHI Vestas and DONG Energy

Belfast Harbour was the first location in the world for the mass-scale assembly of 8MW, 187m high turbines.

2 http://www.irena.org/DocumentDownloads/Publications/IRENA_Renewable_Energy_Statistics_2017.pdf

Sustainable Growth:

Investment in infrastructure and supply chains in rural Northern Ireland has been considerable. West of the Bann contains some of the best energy resource, reflected in the level of investment in wind energy in this area, leading to long-term jobs, significant business rates and local community funding.

Wind farm developers have worked hard to increase the local content of projects throughout each stage of development.

Each turbine erected at a wind farm in Northern Ireland represents £2.7million of investment in the local economy throughout its lifetime.[3]

Omagh-based business and renewables contractor Adman Civil Projects has scaled up from 10 employees in 2007 to 100 employees and 150 sub-contractors in 2017.

Wind energy contracts in Co. Tyrone alone represent £9.8m contracted value to local contractor Adman

With more than 1000MW of large-scale wind generation now installed across Northern Ireland, local Councils are reaping the benefits of business rates.

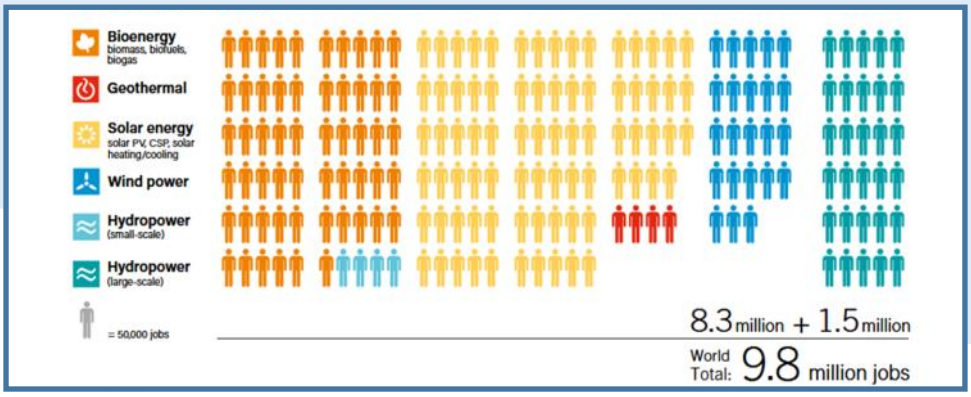
In 2017 alone the value of rates from wind farms to local Councils was approximately £9.5million.

3 http://149.255.57.18/~nirigweb/wp-content/uploads/2017/03/Onshore-Wind-Economic-Benefits-NI.pdf

Skills and Employability:

Local energy companies have initiated schemes to develop the technical skills that are required for the growing low-carbon energy sector. Regional colleges have implemented partnerships with business to service the sector with skills in manufacturing, fabrication and engineering.

Global jobs in Renewable Energy 2016



Source: IRENA [4]

The SSE Airtricity Scholarship Fund enables post-graduate study for young people within a certain distance of wind farm developments and a regional scholarship fund in Tyrone and Derry/Londonderry.

20 students per year from Counties Derry-Londonderry and Tyrone will receive funding support towards the cost of their student fees at Ulster University and South West College.

CREST provides industry R&D, demonstration and testing facilities for new renewable energy products and sustainable technologies in Enniskillen.

The facilities are used by small companies locally to enable development, demonstration and testing of new technologies and show how these can be integrated practically and sensibly to achieve energy savings.

An energy sustainability project led by Belfast Met has won €9.39million European funding, partnering with international as well as local businesses .

The GenComm project will develop 3 pilot facilities fuelled by Solar Power, Wind Power and Bioenergy to measure their ability to produce and store hydrogen, and its viability as a sustainable energy solution.

4 http://www.ren21.net/wp-content/uploads/2017/06/GSR2017_Highlights_FINAL.pdf

We must now set out a clear pathway for least-cost decarbonisation of the energy sector up to 2050

Energy is a low-carbon enabler and driver of strong economic growth, delivering and attracting investment across Northern Ireland.

GOALS

A more diverse energy mix and increased integration provides adequate **security of supply**

Competitive and integrated markets deliver more efficient trading and lower wholesale electricity **costs** for homes and businesses

Low-carbon electricity delivers increasing amounts of energy needs in line with domestic and international **climate change** targets

Long-term policy certainty and a whole-system view	• Confidence in policy direction and cooperation between policy-makers facilitates strategic, coordinated decision-making, allowing long-term planning and low financing costs • Political leadership provides a coherent message on the importance and value of decarbonisation • Accelerated growth in low-carbon electricity enables decarbonised electrification of heat and transport
Cost-effective, efficient modernisation	• Our energy system is increasingly based on predictable and low cost energy sources • A future-proofed energy system and associated infrastructure reduces the likelihood of crisis interventions • Evidence-based decision-making is based on robust and comprehensive data collection, collation and synthesis
Regional investment, skills and innovation	• Councils can attract inward investment and high skilled jobs • A robust and flexible electricity network enables efficient connection for all customers • Investment in skills drives high-value jobs and feeds the demand from growth industries. • Continued expertise in engineering and manufacturing ensures world-leading innovation

A whole system view and long-term policy certainty

Economy wide transformational plans are needed to deliver on the UK target[5] of 57% reduction in carbon emissions by 2030 (from 1990 levels). A thriving energy sector will include public and private sectors working together and alongside this the public must help to deliver and shape our energy future, with meaningful consultation and engagement.

A stable and supportive regulatory regime is needed to enable a sustainable, affordable and secure energy system. The creation of the SEM promoted greater competition, enhanced security and diversity of supply and brought efficiencies and economies of scale. Now under modification to become closer to the European Target Model (I-SEM), the market needs to become increasingly fit for a renewables-dominated energy system.

Whole System View

- Develop an Electric Vehicle charging network
- Plan and design integrated schemes for low-carbon urban transport
- Create a partnership with logistics/ transport companies to increase efficiency, particularly for 'the last mile'
- Encourage active participation in low carbon cities initiatives
- Explore low carbon heat networks in urban communities
- Formulate regional plan to reduce energy usage in water storage, distribution and management
- Identify and develop opportunities to reduce or utilise energy waste from industrial processes.

5 Committee for Climate Change 5th carbon budget

Strategic Direction

- The Executive Office to take specific responsibility for decarbonisation under its objective 'Driving investment and sustainable development'
- Carry out an urgent review of the potential impact of Brexit, including specific recommendations on membership of the Internal Energy Market and retention of policies that support sustainable, secure and cost-effective energy
- Implement a Climate Change Bill for NI
- Develop a public communication strategy on the importance of and opportunities represented by the low-carbon energy transition
- Consider setting a target for decarbonisation of the energy sector by 2050
- Carry out a review of the duties and obligations of public bodies to strengthen requirements for sustainability
- Develop and implement a public sector decarbonisation strategy

Competitive, integrated electricity markets

- Secure effective regulation of and transparency in retail energy markets through proactive government and consumer group initiatives
- Develop a decarbonisation strategy and review regularly to ensure protection of future consumers
- Facilitate greater customer switching and encourage greater competition in supply markets
- Further integrate the all-island market into the European wholesale electricity market, including proactive engagement with development of the package 'Clean Energy for all Europeans'
- Complete all-island grid study, including future scenarios to 2050
- Build second N-S interconnector and collaborate with Scottish and Irish partners to ensure full utilisation of existing interconnection infrastructure
- Set up effective channels for North-South and East-West coordination on energy
- Prioritise 'Delivering a Secure, Sustainable Energy Strategy' (DS3) programme and initiate post-DS3 strategy

Image Credit: Forster Energy

Cost-effective, efficient modernisation

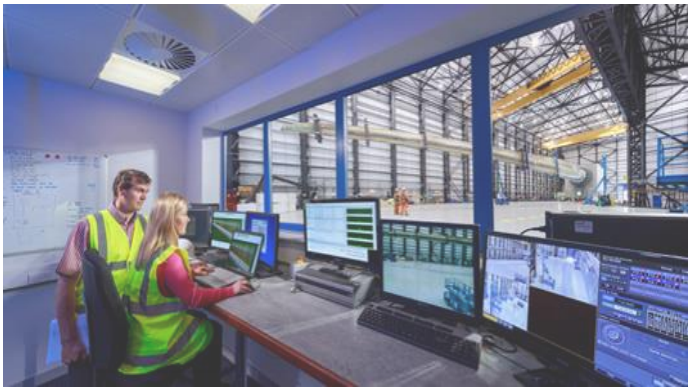
A low carbon transformation will substantially reduce greenhouse gas emissions and deliver economic, social, health and regeneration benefits. Decarbonisation also drives increasingly cost-effective energy generation.

Energy efficiency measures within our manufacturing and industrial sector will deliver enhanced competitiveness. Delivering efficiency measures in domestic heat and power will help address fuel poverty as well as reducing emissions.

Indigenous Energy

- Cross-departmental working group to reduce cost barriers to low-carbon renewable energy deployment and provide long-term price certainty
- Create clear plans for repowering existing low-carbon assets and growth of new generation capacity
- Coherent, efficient and effective planning decisions on renewable energy projects
- Strategic planning policy that enables diverse low-carbon energy sources
- Carry out cost-benefit analysis of continued reliance on imported energy sources
- Host regular reviews of new technologies and potential for maximising indigenous energy

Networks



- Implement smart grid initiatives to help active network management
- Multi-sectoral applied research into storage and related technologies to maximise renewables penetration
- Carry out comprehensive assessment of network development needs and regulatory funding to enable investment
- Review NIAUR powers to enable policy-making
- Develop connection policy that enables increased indigenous energy generation

Image Credit: ORE Catapult

Energy Efficiency

- **Future-proof building regulations to ensure all new-builds and upgrades to existing housing sector are compliant with highest standards of energy use and to maximise economies of scale**
- **Implement requirement for preliminary assessments of energy and transport use at planning permission stage**
- **Improve industrial competitiveness and productivity as a route to decarbonisation through business and public sector collaboration**
- **Work with UK Government and EU institutions to ensure that NI is well placed to continue to deliver industrial decarbonisation after the UK's exit from the EU**
- **Promote demand management and encourage large energy users to become proactive players in the electricity market**

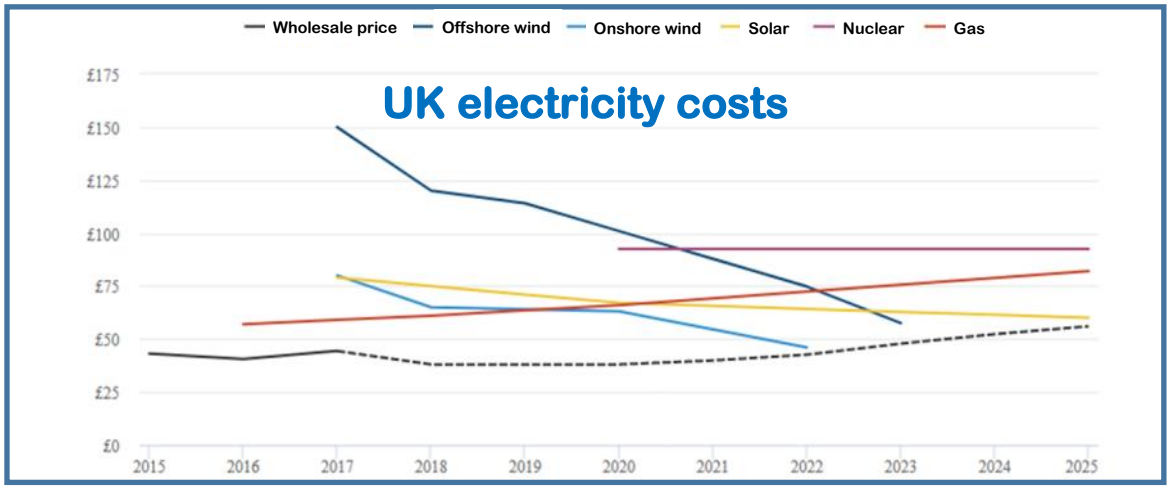


Chart by Carbon Brief. Costs of UK electricity generation, £/MWh.
Wholesale prices are actual (solid black line) and projected (dashed line). Technology costs reflect awarded contracts and projections. Sources: BEIS projections, CfD auction results and Baringa Partners.

Regional investment, innovation and skills

All customers must be able to connect at a reasonable rate and in a reasonable timeframe, and no region should be economically disadvantaged due to insufficient network capacity. Cost effectiveness and social equity must be maintained.

The network also requires modernisation in order to maximise our renewable resource potential. There is great local potential for smart, flexible and grid-friendly technologies that can help use existing assets more fully, balance energy supply and demand, and enhance energy system efficiency.

Northern Ireland is an internationally-renowned centre of energy innovation and expertise across a wide range of technologies and services. Increasing innovation in storage, generation and management technologies will maximise the efficiency of energy sources. It will also ensure opportunities for growth and export to growing low-carbon economies around the world.

Investment

- **Resource and produce Transmission Development Plan to facilitate demand and generation connections in all parts of NI**
- **Study of potential inward investment opportunities afforded by decarbonised energy e.g. FDI from RE100 companies and data centres**
- **Greater facilitation of self-build connections**
- **Develop equitable connection policy for all regions of NI**

Innovation

- Secure on-going participation in European funding and innovation networks, such as Horizon 2020, and proactively attract alternatives where on-going participation is limited
- Set up technical forum to assess new emerging opportunities such as energy systems integration and low carbon heat
- Implement low carbon fund for piloting innovative products, systems and services
- Review and reduce regulatory barriers to funding of innovation and demonstration projects
- Strategically expand research and development in key low-carbon sectors

Skills

- Increase STEM uptake at A-level
- Launch a high-level technical training centre
- Create engineering apprenticeship programme
- Host Further Education/industry forum to enable development of an effective pipeline of skills

Image Credit (RHS): SolarCentury

Image Credit (back cover): Innogy

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