



Department for the
Economy
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An Roinn
Geilleagair

ENERGY EVIDENCE PROGRAMME

**INFORMING THE
DELIVERY OF THE
ENERGY STRATEGY**

DECEMBER 2025

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1. INTRODUCTION

Energy Evidence Programme

Northern Ireland's Energy Strategy¹ sets out a vision of net zero carbon and affordable energy by 2050. One of the commitments within the strategy is:

We will produce a comprehensive energy evidence programme to inform policy decisions

This evidence programme will ensure we support the delivery of our vision with evidence-based policymaking. It outlines our plans to gather and utilise energy information for the purposes of policy development and delivery. The content of this evidence programme will focus on the information needed to inform the energy policies outlined in the strategy. Building on our approach to date, we envisage that there will be a number of aspects to this including energy modelling, research projects, data and statistics and real-life demonstrators and pilots.

Our research will align with at least one of the five principles identified in the Energy Strategy and given that we are taking a whole system approach, some of the research will contribute to more than one. The five principles are:

- Placing you at the heart of our energy future;
- Grow the green economy;
- Do more with less;
- Replace fossil fuels with indigenous renewables; and
- Create a flexible, resilient and integrated energy system.

Details of specific projects and research areas already completed, or planned, are outlined in the remainder of this document.

1 [Northern Ireland Energy Strategy 'Path to Net Zero Energy'](#)

Background

In December 2021, alongside the [Energy Strategy for Northern Ireland](#), the first Energy Evidence Programme report was published by the Department for the Economy (DfE). This set out the research and evidence gathered to inform the Energy Strategy and outlined priority areas for research moving forward. This second edition of the report provides a summary of the work that has progressed since and how we are continuing to build the evidence base in support the principles of the Energy Strategy, the objectives of the Economic Vision for Northern Ireland² and to deliver against the targets established in the Climate Change Act (NI).

Department for the Economy Economic Vision

In addition to the Energy Strategy and its core principles, there are further supporting Northern Ireland (NI) Executive policies and legislation that highlight the priority research areas.

On 19 February 2024, the Minister for the DfE revealed a new Economic Vision for Northern Ireland. A clear mission has been set, with four key objectives:

1. Good Jobs
2. Regional Balance
3. Raising Productivity; and
4. Reducing Carbon Emissions / Decarbonisation.

These are reinforced within the DfE Research Programme for 2024-27³ to produce high quality economic research that will form the evidence base for the Department for the Economy, aligned with the four priorities.

Climate Change Act

The Climate Change Act (NI) 2022 (the Act) sets a target of an at least 100% reduction in net greenhouse gas (GHG) emissions by 2050, and a target for DfE to deliver at least 80% of electricity consumption from a diverse mix of renewable sources by 2030. DfE is the lead Department for the Energy Production and Supply Business and Industrial Processes and Public Buildings Sectors within the draft Climate Action Plan⁴ (CAP) – the plan to achieve the first carbon budget (2023-2027). The Department also has an important role within the residential buildings sector in developing and delivering policy for energy efficiency and heat decarbonisation in homes.

The Act places a clear obligation on Departments to ensure that all actions within the CAP are assessed for their wider economic, social, and financial impacts. DfE has a significant broader role in enabling a just transition to a net zero economy in areas such as skills, jobs, innovation and investment.

2 [DfE Minister's Economic Vision](#)

3 [DfE Research Programme 2024-27](#)

4 [Draft Climate Action Plan 2023-27](#)

Programme for Government

In February 2025, the NI Executive published its Programme for Government (PfG) 2024-2027 'Our Plan: Doing What Matters Most'.

The PfG has nine priorities, one of which is to "Grow a Globally Competitive and Sustainable Economy", which relates to the work of DfE. This priority is broken down into actions which are focused on the Minister's Economic Vision.

The PfG also has long-term Missions: People, Planet and Prosperity underpinned by a cross-cutting commitment to Peace. Within the Planet mission, several targets align with energy policy, these include:

- **Affordable Renewable Energy:**

In 2025, we will review the Energy Strategy to ensure the remaining 5 years to 2030 uses up-to-date data and insights, bringing a renewed focus on affordable renewable energy.

- **Just Transition:**

In the energy sector, we will take an all of Government approach to develop and deliver a plan to produce community benefit through a community energy innovation project.

- **Renewable Electricity Support Scheme:**

This will help both in the delivery of self-sufficiency in affordable renewable energy and in achieving our carbon targets.

- **Facilitate Net Zero Infrastructure:**

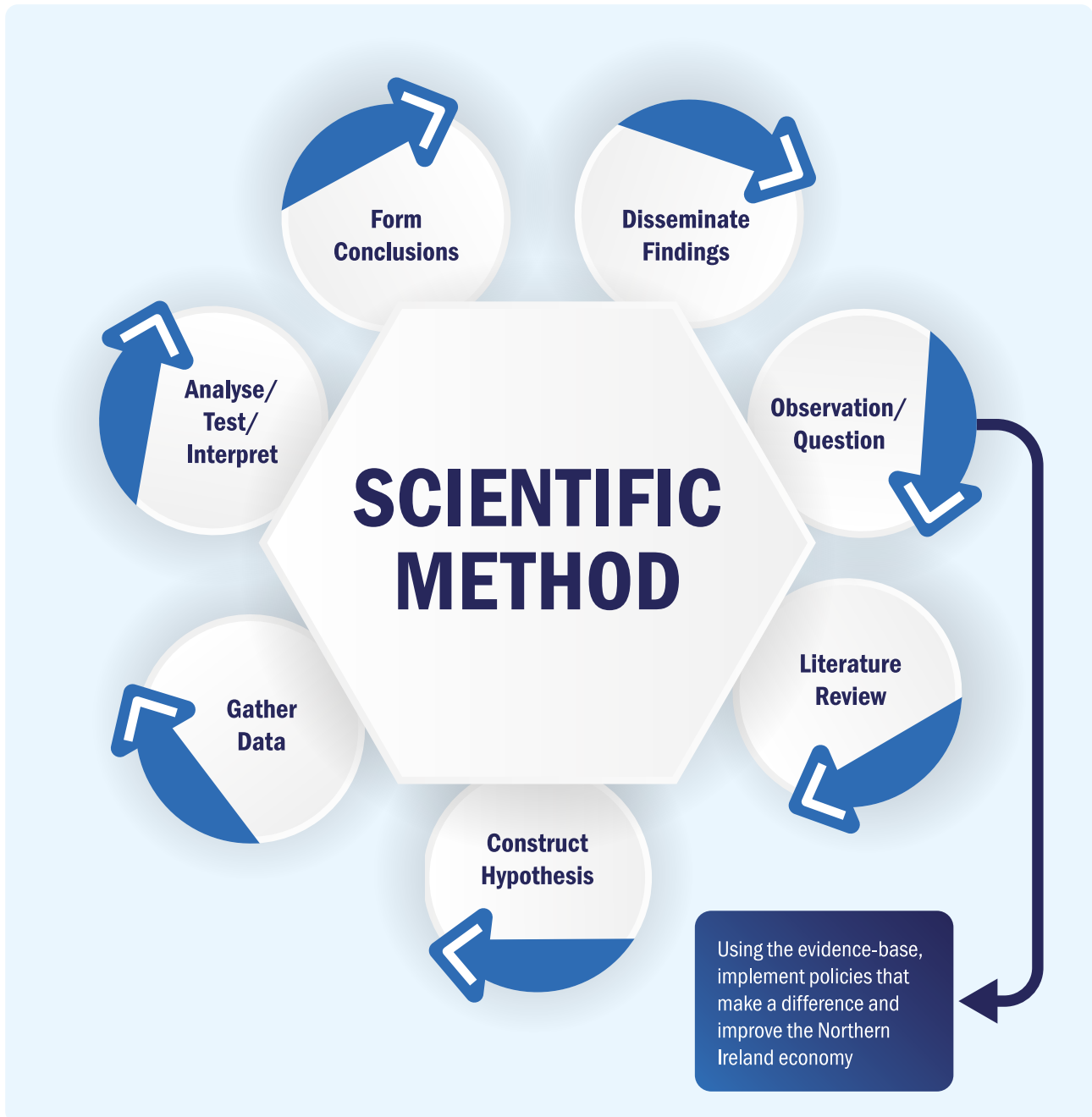
A change to Electricity Grid Connection Charging policy will be delivered, lowering a barrier to connection for renewables and other low-carbon technologies such as electric vehicle charging; and, through the development of a Net Zero Accelerator Fund, we will make the region more attractive for net zero investment and also help cut greenhouse gas emissions in line with the Climate Change Act 2022.

These actions will create solid foundations for our economy, inward investment, health and social wellbeing. This will be evident for the present and for future generations.

Importance of Evidence

Making a Difference: The NICS guide to making policy that works⁵ states that good-quality policy making depends on high-quality information, derived from a variety of sources. This includes reviewing existing research, commissioning new research and consulting relevant experts.

Figure 1: The Research Cycle and Policy-Making



5 [Making a Difference: The NICS guide to making policy that works](#)

Evidence and intelligence are at the heart of energy policy development. The approach taken when developing the Energy Strategy focused on evidence, initially through the Call for Evidence and subsequently by gathering additional intelligence through five working groups and our Expert Panel, commissioning research projects and providing funding for independent academic research.

Since the launch of the strategy, a wide range of evidence gathering and analysis has continued to be progressed across a range of sectors. A summary of this, and areas of work to be progressed, are detailed in the following sections.

Our Approach

Delivering on research areas requires a Departmental-wide effort and can involve partners in several organisations, including Invest NI, Northern Ireland Statistics and Research Agency (NISRA), Utility Regulator (UR), Consumer Council Northern Ireland (CCNI), Ulster University (UU) and Queen's University Belfast (QUB).

For projects directly commissioned by DfE, the development and day-to-day delivery of projects are typically managed by Energy Group. The Energy Intelligence Team within Energy Group provide analytical support to policy teams and manage the research agenda in support of the strategy. Additional in-house support is available through Analytical Services Division (ASD). ASD is staffed by professional statisticians and economists with experience and expertise on various aspects of the research. Given the broad spectrum of research required to support the strategy, DfE staff engage with and work in coordination with relevant departments across the UK and their analyst teams.

Following the launch of its Energy Strategy, the Department has conducted a series of open calls, including two specifically for energy-related research. These calls have yielded a diverse range of innovative proposals from academics, consultancies, and private industry, contributing significantly to the key research themes and objectives of the new research programme and bolstering the evidence base for Energy Strategy policy.

Through developing partnerships, investments in local academic institutions and making the outputs widely available, the commitment of DfE resources to research also delivers benefits beyond evidence gathering for policy.

We believe that our low carbon energy research base can make a significant contribution to decarbonising energy, understanding the behaviours of energy consumers both domestic and non-domestic, bringing forward new technologies and growing the green economy. To maximise the contribution and impact of our research base, we work closely with relevant departments to ensure core needs are met, including:

- **Research mapping:** Building on our existing relationships with researchers, we work to identify key research areas that can further support the delivery of the Energy Strategy. Continuous engagement with the research community ensures the full range of capabilities and specialisms in Northern Ireland are known.
- **Research funding:** Where research, trials and demonstration projects are needed to help inform energy policy decisions, we work with local research centres with relevant specialisms and ensure that the outcomes and impacts of such projects can be assessed and analysed to support future interventions.
- **Business linkages:** We encourage local businesses that have either challenges or opportunities related to low carbon energy to work with our research base to ensure knowledge transfer, develop linkages and potentially partner for bids for innovation funding available within the UK and beyond.



2. BUILDING ON SUCCESS



Overview

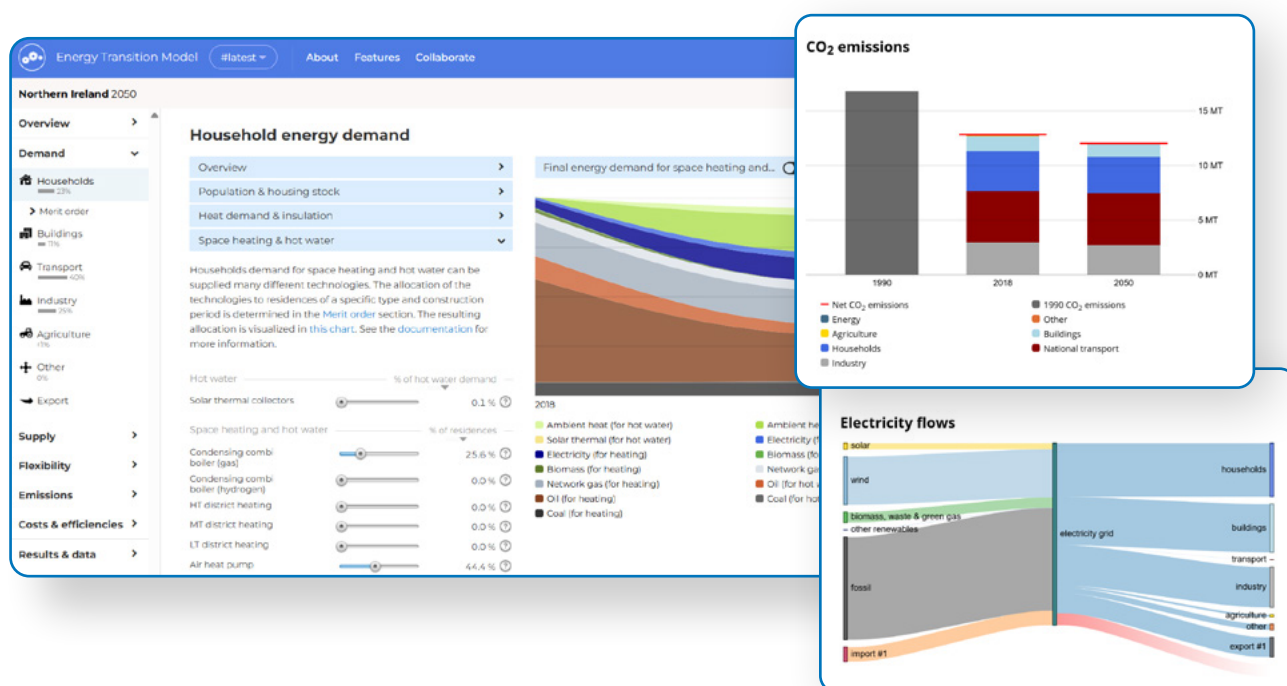
DfE along with its research partners, already has a strong track record of delivering research and evidence. This includes the development of a holistic energy systems model for Northern Ireland, comprehensive data and statistics, commissioned research and funding provided to expand our evidence base.

Energy Modelling

We have developed and maintained an Energy Transition Model⁶ (ETM) for Northern Ireland. This is an open source, Northern Ireland specific energy model, which has supported our whole system approach to energy decarbonisation. It is available for public use and provided the platform for illustrative Future Energy Decarbonisation Scenarios⁷ for both the Energy Strategy Options Consultation and the Energy Strategy.

The NI ETM has been used to illustrate the broad impacts of different sectors and sub-sectors on regional demand of energy and carbon emissions. The model visually reflects how changes in one sector can benefit from emissions reductions in other sectors. For example, electrification of transport and heat sectors will reach full decarbonisation only when full decarbonisation of the electricity sector is achieved. Such links can be easily observed and evaluated in the ETM, and as a result, the model has been widely utilised by DfE policy teams to explore a range of future scenarios.

Figure 2: Screenshots from Energy Transition Model and Future Energy Decarbonisation Scenarios



6 [Energy Transition Model](#)

7 [Future Energy Decarbonisation Scenarios](#)

We have continued to develop the ETM to improve the functionality in line with the Northern Ireland energy system. The product is open source so these developments will benefit any user of this model in creating future scenarios for Northern Ireland. We intend to build upon this success and explore other macro level energy models, as well as micro level models. This will enhance our ability to carry out sensitivity analysis on assumptions of the future and “stress-testing” various aspects of the energy system.

Data and Statistics

Research and analysis needs to be underpinned by robust statistics. Energy Intelligence Team and DfE’s ASD produce a range of statistical publications to meet the needs of policy makers and external stakeholders, alongside engaging with other statistical providers of energy related information. Official statistics about energy in NI are available through several publications:

- [Continuous Household Survey Heat and Insulation Results 2024/25](#) – provides insights into how households in Northern Ireland heat their homes and use insulation, helping to understand energy use, fuel poverty, and support environmental and housing policy; and
- [Energy in Northern Ireland 2024](#) – provides a comprehensive and accessible overview of key statistics and information relating to energy in Northern Ireland and is currently updated every two years; and
- [Electricity Consumption and Renewable Generation in Northern Ireland](#) – details information on the percentage of electricity consumption in Northern Ireland that was generated from renewable sources as well as information on the type of renewable generation and is currently published quarterly. These reports are produced by NISRA statisticians within DfE. In addition to existing metrics, ASD have taken forward the development of metrics from existing data sources to support the Energy Strategy;
- [Household energy expenditure relative to all expenditure](#) – examines the Northern Ireland average weekly household energy expenditure as a proportion of all average weekly household expenditure, transfers and savings; and
- [Business energy purchases relative to turnover](#) – focuses on business energy purchases as a proportion of business turnover and the mix of different types of energy purchased by businesses.

Since the last Energy Evidence Programme report, and in the context of rising energy prices, household expenditure data was re-examined with further analyses on different levels of household income, potential impacts of rising energy expenditure and non-discretionary impacts.

- [Northern Ireland household energy expenditure: income differences and non-discretionary impacts](#).

Data linkage between existing administrative data sources can also be utilised to gather additional insights where there are information gaps. The Energy Intelligence Team in DfE commissioned NISRA to link Census 2021 information with property Energy Performance Certificate (EPC) ratings to explore the characteristics of households and residents by their EPC band.

- [Census 2021 Commissioned Outputs](#)

A wide range of non-DfE statistics produced by NISRA and others is also vital to informing the research programme, and DfE research staff, will work with other departments where opportunities arise to ensure there are appropriate statistics and information available. This will be through participation in expert user groups, input into statistical development and more general engagement, where appropriate.

Energy Group Commissioned Research

The Energy Group within the DfE commissions research to further inform energy policy issues in support of the [Energy Strategy principles](#) and key research themes. This includes directly commissioning research in support of a policy need or through an open call process inviting research proposals for evaluation. The open call process allows for innovative and novel research ideas that will feed into key research themes and objectives to be brought to the Department. Furthermore, the Department can also highlight research topics for which there is a particular demand for additional information.

Other energy related research projects are carried out by Arms'-Length Bodies (ALB) across government, such as Invest NI, UR and CCNI. Projects published by the UR and CCNI helped to inform the Energy Strategy development and continue to be used to inform further policy development.

Published research projects taken forward in support of the Energy Strategy are detailed in Annex A.

As well as commissioning research, DfE also undertakes calls for evidence to gather information in support of policy development. Recent examples include the request for views on a range of issues related to the development of a sustainable biomethane sector in Northern Ireland⁸ and to understand the opportunities, challenges and potential risks associated with using bio-fuels for heating⁹.

8 [Developing biomethane production in Northern Ireland - call for evidence](#)

9 [Using biofuels to transition away from fossil fuels for heating - call for evidence](#)

Academic Research Funding

Academic institutions make significant contributions to energy evidence programme, carrying out commissioned research in specific areas of expertise. Where research projects have been published by the universities these are included in Annex A.

The Department currently provides funding for the equivalent of 780 PhD places across the NI Higher Education Institutes (HEIs) each academic year. These PhDs have a strong focus on research within economically relevant areas, some of which may include energy related research¹⁰.

DfE currently provides funding for Northern Ireland universities to participate in the US-Ireland Research and Development (R&D) Partnership¹¹. There are several thematic areas, including “Energy and Sustainability” which have been prioritised as important research challenges under the US-Ireland R&D Partnership for the health and prosperity of the citizens of the United States, Ireland and Northern Ireland.

In addition, the Centre for Advanced Sustainable Energy¹² (CASE), a partnership between Queen’s University Belfast, University of Ulster and the Agri-Food and Biosciences Institute, is an industry-led sustainable energy research centre. They support collaborative Research & Development and policy development, bridging the gap between industry research needs and academic research. CASE has a central role in helping Northern Ireland meet its climate change objectives on the road to net zero while underpinning growth and regional prosperity in a sustainable, low-carbon economy.

Researchers and innovators can also apply for funding through the UK’s association to Horizon Europe¹³. Association gives UK and Northern Ireland (NI) scientists, researchers and businesses access to funding under the programme on largely equivalent terms as organisations in EU member states. Companies and academic institutions have availed of this funding stream for a range of energy and climate related projects.

Demonstrators and pilots

An important part of our gathering evidence will come from real-life demonstrators and pilots. Previous examples include supporting NI Water to undertake an electrolyser demonstrator project at a wastewater treatment works.

Between 2023 and 2025 DfE delivered the GeoEnergy NI¹⁴ project. The GeoEnergy NI geothermal demonstrator project comprised of geothermal exploratory and feasibility studies at two locations, to promote and demonstrate this technology locally. This project will be used to help inform the development of a policy and regulatory framework that supports and promotes opportunities to unearth NI’s geothermal potential.

10 In academic year 2025/26, the Department is funding 780 PhDs. PhD Research topics are searchable for awarding bodies for QUB and UU within the British Library.

11 [Higher education international research](#)

12 [Centre for Advanced Sustainable Energy](#)

13 [Horizon Europe](#)

14 [GeoEnergy NI](#)

Phase 1 of the project has now been completed with the drilling and exploration of boreholes at Stormont in Belfast and the successful application for a deep geothermal system at the College of Agriculture, Food and Rural Enterprise Greenmount Campus near Antrim. Extensive reporting and surveys were commissioned as part of the project with the first of these reports published in November 2025¹⁵.

The completion of Phase 1 represents an important step in exploring the potential for geothermal energy in Northern Ireland. The drilling, surveys, and engagement activities have provided useful insights and data that will help inform future policy and investment decisions. While further work is needed to fully understand the scale and feasibility of geothermal deployment, the GeoEnergy NI project has contributed to building technical knowledge and awareness of this low-carbon heat source, supporting progress towards the Energy Strategy's objectives.

Other stakeholders within the energy sector will undertake their own trials and pilots. Through broad engagement and collaboration, we will ensure sharing of outcomes and results to inform and improve our decision-making.

[15 Geothermal Demonstrator Project](#)



3. MOVING FORWARD

Overview

The previous Energy Evidence Programme report set out ambitious plans to gather additional evidence to inform policy development following the publication of the Energy Strategy. The preceding section and Annex summarise the scale and progress of work undertaken over the past four years. This work has delivered a wide range of activities, including energy modelling, data and statistics, and demonstrator projects, which will continue to evolve and build on achievements to date. Moving forward, DfE plans to continue delivery of supporting research and analysis in the coming months and years, guided by the evidence needs of the Energy Strategy and aligned with the department's Economic Vision and Research Programme.

Research Areas

In line with the aims of the DfE Research Programme, Energy Group will continue to deliver and support high quality research in support of the Energy Strategy.

In the short-term further research, commissioned by the Department, will be published on a range of topics. This includes looking at the economic impact of the decarbonisation of heat demand in Northern Ireland, the potential for urban wind generation and a sectoral decomposition of Northern Ireland's industry.

Moving beyond the mid-point of the Energy Strategy, research will continue to be guided by the long-term vision originally set out and to support the strategic priorities, and underpinning actions, set out in the annual action plans.

This research programme for energy will typically be delivered through a number of channels:

1. By the department commissioning external researchers where specialist knowledge and expertise is required, or by responding to relevant external research proposals.
2. By administering further Energy Research Open Calls.
3. From our existing funding arrangements with the local HEIs.
4. Through internal research carried out by Energy Intelligence Team within Energy Group and departmental statisticians and economists within ASD.

Working with Partners

DfE will work collaboratively with other research providers, government departments across the Northern Ireland Civil Service, ALBs, the two main HEIs and NISRA, on relevant projects.

Potential areas of interest include:

- **Invest NI** has research interests relating to the green economy including energy efficiency interventions for businesses;
- **Utility Regulator** will continue to gather research evidence on issues facing electricity, gas and water consumers through our consumer protection programme; and
- **Consumer Council** will continue to undertake research to better understand and communicate current and future consumer issues in Northern Ireland.

Future Reporting

The Department for the Economy remains committed to ensuring that research and evidence underpin all energy policy decisions. Through the Energy Evidence Programme, we continue to make data, analysis, and research outputs transparent and accessible, supporting the delivery of Northern Ireland's Energy Strategy and its vision of net zero carbon and affordable energy by 2050. By fostering collaboration with academic institutions, industry, and stakeholders, and aligning research with the Strategy's principles, we aim to provide a robust evidence base that informs policy development and demonstrates our dedication to openness and accountability.





ANNEX A

Table 1. List of DfE Published Energy Research

Title	Researcher	Organisation	Summary
Circular Economy Metrics / Research Bulletin on Indicators to Monitor Decarbonisation and the Circular Economy	Circular Economy, DfE	DfE	This Research Bulletin explores the role of the circular economy in supporting the net zero agenda, where making a fundamental shift in how products are made and consumed, with less reliance on raw materials, can make a large contribution to reducing greenhouse gas (GHG) emissions.
Continuous Household Survey Heat and Insulation Results 2023/24	Energy Intelligence Team, Energy Group, Department for the Economy	DfE	<p>This report presents the results of the household heating and insulation questions from the 2023/24 Continuous Household Survey (CHS) with comparison to 2015/16 data, where applicable. Data were also collected in 2016/17, 2021/22 and 2022/23. This release is accompanied by a set of tables that include data from all years in the series.</p> <p>The CHS is a Northern Ireland-wide household survey administered by the Central Survey Unit (CSU) of the Northern Ireland Statistics and Research Agency (NISRA). It is based on a systematic random sample of addresses selected from the NISRA Address Register. The survey has been running since 1983 and is designed to provide a regular source of information on a wide range of social and economic issues relevant to Northern Ireland.</p>
Continuous Household Survey Heat and Insulation Results 2024/25	Energy Intelligence Team, Energy Group, Department for the Economy	DfE	The Continuous Household Survey Heat and Insulation Results 2024/25 provides insights into how households in Northern Ireland heat their homes and use insulation, helping to understand energy use, fuel poverty, and support environmental and housing policy. It tracks changes in heating methods, insulation measures, and consumer behaviour. The 2024/25 results are the first in the series to be published as an official statistic.
Electricity Consumption and Renewable Generation Statistics	Statistics Information Analysis and Research Branch, Analytical Services Division, DfE	DfE	<p>Statistics on Electricity Consumption and Renewable Generation in Northern Ireland are published by NISRA statisticians within DfE's Analytical Services Unit (ASU). The first publication, covering the financial year April 2013 to March 2014, was issued on 25 September 2014. Updated publications are currently released quarterly: in March, June, September and December.</p> <p>This publication aids reporting on performance against the commitments in the Northern Ireland Energy Strategy 'Path to Net Zero Energy' and the Climate Change Act target which is to "ensure that at least 80% of electricity consumption is from renewable sources by 2030."</p>

Title	Researcher	Organisation	Summary
Energy in Northern Ireland 2024	Statistics Information Analysis and Research Branch, Analytical Services Division, DfE	DfE	Published biennially, the Energy in Northern Ireland report aims to provide a comprehensive and accessible overview of key statistics and information relating to energy in Northern Ireland. The report endeavours to present a disparate range of existing and emerging information and statistics into a single coherent source. The majority of statistics and data included are National Statistics or Official Statistics sourced from producers such as the Department for Energy Security and Net Zero (DESNZ), the Northern Ireland Statistics and Research Agency (NISRA) and the Office for National Statistics (ONS) among others.
Northern Ireland business energy purchases provisional estimates 2016 to 2018	Statistics Information Analysis and Research Branch, Analytical Services Division, DfE	DfE	This report examines energy purchases by businesses in Northern Ireland in terms of its share of business turnover and how that may differ between industrial sectors and business size. The report also considers the mix of different types of energy purchased by businesses.
Northern Ireland household domestic energy expenditure 2013-15 to 2018-20	Statistics Information Analysis and Research Branch, Analytical Services Division, DfE	DfE	This report examines expenditure by households on energy as a component part of all household expenditure, transfers and savings. The report compares household energy expenditure between Northern Ireland and England, Scotland and Wales.
Northern Ireland household energy expenditure: income differences and non-discretionary impacts	Statistics Information, Analysis and Research Branch, Analytical Services Division, DfE	DfE	In the context of recent rising energy prices reflecting considerable volatility in wholesale markets, the Living Costs and Food survey household expenditure data for Northern Ireland was re-examined to explore: the pattern of energy expenditure by households in Northern Ireland in relation to their different levels of household income; potential impacts of rising energy expenditure; and whether the potential impact of rising energy expenditure on discretionary and non-discretionary expenditure could be explored.

Table 2. List of DfE Commissioned Energy Research Projects

Title	Researcher	Organisation	Summary
A Green Carbon Fibre Opportunity in Northern Ireland	Ulster University / NIACE	DfE Commissioned	An assessment of the market demand for carbon fibre, alternatives to traditional carbon fibre, and to identify potential opportunities for a new carbon fibre offering in Northern Ireland.
A Natural Fibre Supply Chain for Northern Ireland	Ulster University / NIACE	DfE Commissioned	The report focuses on opportunities for utilising natural fibres in composites to create a more sustainable composite offering than is currently the case with traditional composites of carbon or glass fibre.
Accelerating Renewables in Northern Ireland - High Level Design of a Support Scheme	Aurora	DfE Commissioned	Aurora Energy Research was commissioned by the DfE to provide recommendations for the design of the renewable electricity support scheme based on techno-economic analysis, literature review, and stakeholder engagement.
An assessment of the potential for solar PV electricity generation from rooftops in Northern Ireland	Ulster University	DfE Commissioned	As part of the Department's Open Call for research in June 2023, a research proposal was received from Ulster University (UU). The Department for the Economy funded UU to undertake independent research into the solar PV potential of all properties within Northern Ireland. It also assessed the potential impact of battery storage, in combination with solar PV in domestic properties. The report summarises the research undertaken, including the methodology used by the researchers, limitations and results.
Development of Residential Energy Archetypes in Northern Ireland	Building Energy Informatics (BEI)	DfE Commissioned	Independent research by Building Energy Informatics has developed residential energy archetypes for Northern Ireland using Energy Performance Certificate data. The study identified typical housing types and their energy characteristics to better understand current performance which could inform future retrofit strategies. Two segmentation approaches were used to generate and quantify archetypes: (1) building type and age band, combined with main fuel type, resulting in 176 archetypes; and (2) building type and age band, combined with energy rating, resulting in 220 archetypes. These archetypes provide a detailed snapshot of heating fuel and energy performance across the housing stock, forming a baseline for future analysis and retrofit planning.
Economics of Hydrogen and Associated Synthetic Fuels for Northern Ireland	University of Galway	DfE Commissioned	This report reviews and analyses the role that green hydrogen and associated synthetic fuels can play in the decarbonisation of Northern Ireland's energy system.

Title	Researcher	Organisation	Summary
Heat Pump Sector in Northern Ireland – Research Study	KPMG	DfE Commissioned	The Department for the Economy (DfE) commissioned KPMG to conduct a market survey and desktop research to assess the current capacity of the heat pump sector in Northern Ireland and provide recommendations for future growth.
Investigating the Economic Impact from Offshore wind in Northern Ireland	Fraser of Allander Institute at the University of Strathclyde	DfE Commissioned	The Department for the Economy funded the Fraser of Allander Institute (FAI) at the University of Strathclyde to undertake independent research to investigate the economic impact from offshore wind in Northern Ireland. This followed the receipt of a research proposal from FAI in December 2022 as part of the department's 10X Economy Open Call for research proposals. This report summarises the work undertaken, including the methodology, detailed results and conclusions.
Investigating the potential economy wide impacts of energy efficiency improvements in Northern Ireland	Fraser of Allander Institute at the University of Strathclyde	DfE Commissioned	Independent research by the Fraser of Allander Institute investigated the potential economy wide impacts of energy efficiency improvements in Northern Ireland. Using economic modelling, the study assessed several scenarios including insulation retrofits, broader housing upgrades and heat pump adoption. Findings suggest that such investments could reduce household energy bills, stimulate construction sector jobs, and support progress toward net zero targets. The report highlights the potential for both environmental and economic gains from targeted energy efficiency programmes.
Investigating the Potential for an Offshore Wind Supply Chain in Northern Ireland	Fraser of Allander Institute at the University of Strathclyde	DfE Commissioned	The Department for the Economy funded the Fraser of Allander Institute (FAI) at the University of Strathclyde to undertake independent research to investigate the potential for an offshore wind supply chain in Northern Ireland.
Low Carbon Heat and Energy Efficiency Workforce Assessment	LCP Delta	DfE Commissioned	As part of the Department's Energy Research Open Call in July 2024, a research proposal was received from LCP Delta. The Department for the Economy funded LCP Delta to undertake independent research assessing the low carbon heat and energy efficiency workforce in Northern Ireland. The report summarises the research undertaken, including the methodologies used, limitations and results.
Potential of Solar Photovoltaic (PV) in Belfast Area – Phase 2	Gordon Ingram Associates	DfE Commissioned	As part of the Department's Open Call for research in December 2022, a research proposal was received from GIA Surveyors Ltd (GIA). The Department for the Economy funded GIA to undertake a second phase of independent research into the solar PV potential of properties with 25 Data Zones in the Belfast area.

Title	Researcher	Organisation	Summary
Potential of Solar Photovoltaic (PV) in the Belfast Area – Phase 1	Gordon Ingram Associates	DfE Commissioned	The Department for the Economy funded GIA to undertake independent research into the solar PV potential of over 50 properties (both domestic and non-domestic) in the Belfast area.
Potential Rooftop Generation of PV in Northern Ireland	Ulster University	DfE Commissioned	As part of the Department’s Open Call for research in June 2023, a research proposal was received from Ulster University (UU). The Department for the Economy funded UU to undertake independent research into the solar PV potential of all properties within Northern Ireland. It also assessed the potential impact of battery storage, in combination with solar PV in domestic properties. The report summarises the research undertaken, including the methodology used by the researchers, limitations and results.
Renewable Electricity Support Scheme for Northern Ireland	Cornwall Insight	DfE Commissioned	Cornwall Insight was commissioned to produce a scoping exercise to feed into the early stages of development of a renewable electricity support scheme.
Research into the geothermal energy sector in Northern Ireland	ARUP & British Geological Survey (BGS)	DfE Commissioned	The Department for the Economy also commissioned Arup and the British Geological Survey (BGS) to produce a report evaluating the current geothermal energy sector in NI. The research report produced by Arup and the BGS, “Research into the geothermal energy sector in Northern Ireland”, reviews a broad range of geothermal technologies, describing the characteristics of each. Further, a comparison of geothermal regulatory frameworks from other countries has been conducted.
Reviving Northern Ireland Textile Heritage	Ulster University / NIACE	DfE Commissioned	The overall research aim was to showcase that, subject to strategic planning and investment, Northern Ireland is best placed in terms of its access to the relevant knowledge, skills, technology, raw materials and established end user connections to address the market challenges and become a leader in the design and manufacture of advanced textiles and textile composites.
Spatial National Heat Study for District Heating Potential in Northern Ireland	Building Energy Informatics Ltd	DfE Commissioned	The Department for the Economy (DfE) commissioned Building Energy Informatics to conduct a Spatial National Heat Study for District Heating Potential in Northern. This explores the potential for district heating networks in NI to identify geographical areas with the highest potential for development. To ideally include spatially modelled analysis of heating demand to identify suitable candidate areas. This includes a computational model for estimating capital and operating costs (capex and opex) and assessing the economic viability of district heating throughout NI and comparing different

Title	Researcher	Organisation	Summary
Suitability of Buildings in Northern Ireland for Retrofitting Heat Pumps	AECOM	DfE Commissioned	The Department for the Economy (DfE) commissioned AECOM to research and assess the suitability of buildings in Northern Ireland for heat pump installation. The study comprised a review of literature and data sources and considers different aspects of heat pump retrofit installations, different heat pump types, heat sources, and building characteristics such as age, type, fabric and insulation levels. The report's findings will help to inform heat policy to support the transition to net-zero by 2050.
The potential of geothermal energy utilisation from standing column well technologies in Northern Ireland	Causeway Energies	DfE Commissioned	<p>The Department for the Economy (DfE) commissioned Causeway Energies to conduct a study into the potential of geothermal energy utilisation from standing column well technologies in Northern Ireland.</p> <p>Standing Column Wells are a Geothermal Energy application that has been applied to 500 m depth in North America, but negligibly in the UK and Ireland.</p> <p>Standing Column Wells are a hybrid between open loop and closed loop Geothermal Heat Exchangers (GHEs), where aquifer water is circulated around the open hole well and heat is drawn from the sink formed in the borehole by a heat pump.</p>
Transitioning to a Greener Economy – a Skills Perspective	Energy and Utility Skills	DfE Commissioned	Research project led by Energy and Utility Skills investigating the skills required for a transition to an advanced zero emission, indigenous diverse energy secure and circular economy in Northern Ireland.
Transport Energy Research Project: Low Carbon Transition for HGVs	Cenex	DfE Commissioned	The Department for the Economy commissioned Cenex to investigate the potential uptake of zero emission Heavy Goods Vehicles (ZE HGVs) and the associated recharging/refuelling/infrastructure requirements to 2040.
Transport Energy Research Project: Transition to EVs	Cenex	DfE Commissioned	The Department for the Economy commissioned Cenex to investigate the potential uptake of EV cars and vans and associated recharging/ infrastructure requirements to 2040.
Understanding Northern Ireland's Food Supply Chain / Safety and AgriTech Capability	KPMG	DfE Commissioned	The Department for the Economy commissioned KPMG to prepare this research report. The report aims to facilitate a broader understanding of Northern Ireland's Food Supply Chain/ Safety (FSCS) and Agri-Tech capability, and future windows of opportunity.
Views of NI SMEs Towards Environmental & Social Impact	Queen's University Belfast / ERC	DfE Commissioned	Research covering views of Northern Ireland SMEs towards environmental and social impacts has been developed by Queen's University Belfast in conjunction with the Enterprise Research Centre (ERC).

Table 3. List of Consumer Council NI Published Energy Research Projects

Title	Researcher	Organisation	Summary
Attitudes to the Energy Transition 2023	Cognisense	Consumer Council NI	Research regarding consumer attitudes to energy transition issues, the purpose of which was to gather evidence of public opinion and sentiment in order to provide both ourselves and key stakeholders with insights into the level of consumer support, education and protection required to meet established net zero goals.
Attitudes to the Energy Transition 2024	Cognisense	Consumer Council NI	Research regarding consumer attitudes to energy transition issues, the purpose of which was to gather evidence of public opinion and sentiment in order to provide both ourselves and key stakeholders with insights into the level of consumer support, education and protection required to meet established net zero goals.
Attitudes to the Energy Transition 2025	Cognisense	Consumer Council NI	The third annual Attitudes to Energy Transition research report is intended to provide policy makers and industry experts with insights into consumer experience of various energy saving measures, as well as overall attitudes towards the energy transition. The report features three years of continuous data.
Consumer attitudes to protection during energy decarbonisation in Northern Ireland	Social Market Research	Consumer Council NI	This report has been conducted as part of the Northern Ireland Energy Strategy Action Plan. It is intended to assess the public's views on the need for the protection of energy consumers during our decarbonisation journey. The report also provides insights into the level of consumer support, type of regulation, and amount of education required to meet support net zero goals.
Debt, Disability and Energy	Social Market Research	Consumer Council NI	In 2022 the Consumer Council commissioned Social Market Research to explore how consumers, and particularly those with a disability, are coping financially during the cost-of-living crisis. The research presents the findings based on three complementary elements: depth interviews with stakeholder organisations active in the field of disability; a nationally representative survey of 1004 consumers; and depth interviews and case studies with consumers with a disability. The report highlighted a link between households with a disabled person and high energy usage and costs.
Protecting consumers during the energy transition to net zero Installer and stakeholder feedback 2024	Cognisense	Consumer Council NI	This report has been conducted as part of the Northern Ireland Energy Strategy Action Plan. It is supplementary to The Utility Regulator and Consumer Council Call for Evidence on Protecting Consumers during the Energy Transition to Net Zero undertaken in 2022.
Research on the impact of the energy crisis on affordability and the impact of energy transition on consumers	Social Market Research	Consumer Council NI	Research that explores the impact of the current energy crisis on affordability and consumer awareness and understanding of energy transition.

Table 4. List of Utility Regulator NI Published Energy Research Projects

Title	Researcher	Organisation	Summary
Call for Evidence on Protection for Consumers During Energy Decarbonisation	UREGNI/ Consumer Council	Utility Regulator	Call for Evidence and an associated series of questions for stakeholders to consider, regarding how energy consumers will be protected during the transition to a decarbonised energy system.
Call for Evidence on Protection for Consumers During Energy Decarbonisation: summary of stakeholder feedback	UREGNI/ Consumer Council	Utility Regulator	Call for Evidence on how energy consumers will need protected during the transition to a decarbonised energy system. The Purpose was to present a high-level summary of responses and to identify the key themes and areas for consideration, namely affordability, protection and trust.
Northern Ireland Domestic Consumer Insight Tracker Survey Report 2024	Perceptive Insight	Utility Regulator	Publication of findings from the fourth domestic consumer insight tracker survey. This survey is repeated annually to provide a statistically robust evidence base of electricity and gas consumer experiences of the energy market in Northern Ireland.
Energy Hardship: Consumer Lived Experiences 2024	Perceptive Insight	Utility Regulator	Qualitative research report which aimed to better understand the lived experiences of electricity and gas consumers who have struggled to pay for their energy. Participants had experience of either being in debt with their energy supplier, regularly running out of energy on their prepayment meter, or had significantly reduced their energy usage to levels below their daily living needs because of affordability. The report details the situations and circumstances of the participants; behavioural strategies that participants were adopting to cope with energy payment struggles; the impact of energy hardship on health and quality of life; and changes the participants wanted to see.
Energy Strategy Consumer Research	Social Market Research	Utility Regulator	A representative survey of 1,200 Northern Ireland consumers covering consumer understanding, attitudes and awareness of climate change and net zero. The questions were grouped into three key themes: awareness and understanding of climate change and net zero; consumer behaviour in relation to Low Carbon Technologies, energy efficiency measures and EVs; and consumer attitudes to transition related issues such as trusted sources of advice, support for different types of policy interventions and willingness to pay.
Non-Domestic Consumer Insight Tracker Survey 2023	Perceptive Insight	Utility Regulator	Publication of findings from the second survey of non-domestic energy customers in Northern Ireland. The research builds on previous data to measure consumer engagement, experience and attitudes in the non-domestic market in Northern Ireland. The research highlights issues that influence this consumer group to assess the extent to which non-domestic energy consumers understand the requirements in relation to the energy transition to a decarbonised whole energy system.

Title	Researcher	Organisation	Summary
Non-domestic Consumer Insight Tracker Survey 2024	Perceptive Insight	Utility Regulator	<p>Publication of findings from the second survey of non-domestic energy customers in Northern Ireland. The research builds on previous data to measure consumer engagement, experience and attitudes in the non-domestic market in Northern Ireland. The research highlights issues that influence this consumer group to assess the extent to which non-domestic energy consumers understand the requirements in relation to the energy transition to a decarbonised whole energy system.</p> <p>Themes covered include:</p> <ul style="list-style-type: none"> • Billing, contracts and financial issues • Understanding of the energy market • Switching • Communication and methods of contact • Complaint handling • Satisfaction with services provided • Energy efficiency, renewables and decarbonisation
Northern Ireland Domestic Consumer Insight Tracker 2021	Perceptive Insight	Utility Regulator	Publication of findings from the second domestic consumer insight tracker survey. This survey is repeated annually to provide a statistically robust evidence base of electricity and gas consumer experiences of the energy market in Northern Ireland.
Northern Ireland Domestic Consumer Insight Tracker 2022	Perceptive Insight	Utility Regulator	Publication of findings from the third domestic consumer insight tracker survey. This survey is repeated annually to provide a statistically robust evidence base of electricity and gas consumer experiences of the energy market in Northern Ireland.
Northern Ireland Domestic Consumer Insight Tracker 2023	Perceptive Insight	Utility Regulator	<p>Publication of findings from the third domestic consumer insight tracker survey. This survey is repeated annually to provide a statistically robust evidence base of electricity and gas consumer experiences of the energy market in Northern Ireland. The survey covers awareness, attitudes and behaviours in relation to the following themes:</p> <ul style="list-style-type: none"> • types of home heating used (including use of renewables and LCTs) • payments (including willingness to pay extra for projects to support the environment) • interactions with energy suppliers • complaints • switching • payment difficulties • consumer protection • support services • Just Transition to net zero

INFORMING THE DELIVERY OF THE ENERGY STRATEGY

Title	Researcher	Organisation	Summary
Northern Ireland Sustainable Energy Programme Annual Report 2022/23	Energy Savings Trust	Utility Regulator	Annual report reviewing the performance of the 2022/23 Northern Ireland Sustainable Energy Programme (NISEP) schemes, outlining the measures installed, financial benefits to customers and the energy and carbon savings associated. The report breaks down the budget and spend; factors impacting the rate of installation; low uptake in the Non-Priority category; comparative summary with previous years; gross customer benefit; geographical spread, and the twenty-five approved schemes for 2022/23.
Smart Metering Consumer Impact Study	LCP Delta	Utility Regulator	Research into the lessons learned from Smart meter roll outs in Great Britain and the Republic of Ireland, with a focus on the experience of consumers. Involved interviews with key stakeholders and a series of key recommendations.
Stakeholder and consumer views on energy	Ipsos	Utility Regulator	<p>Desk and qualitative research into consumer views on the energy transition. The purpose of this research was to develop an enhanced understanding of the barriers that consumers face on the issue of energy transition and decarbonisation, and the forms of support required to overcome them. Additionally, the research aimed to understand how UR can support consumers who experience further barriers that make it particularly difficult to engage in the energy transition.</p> <p>The report includes recommendations to inform future strategies and decisions to support consumers to engage in energy transition.</p>