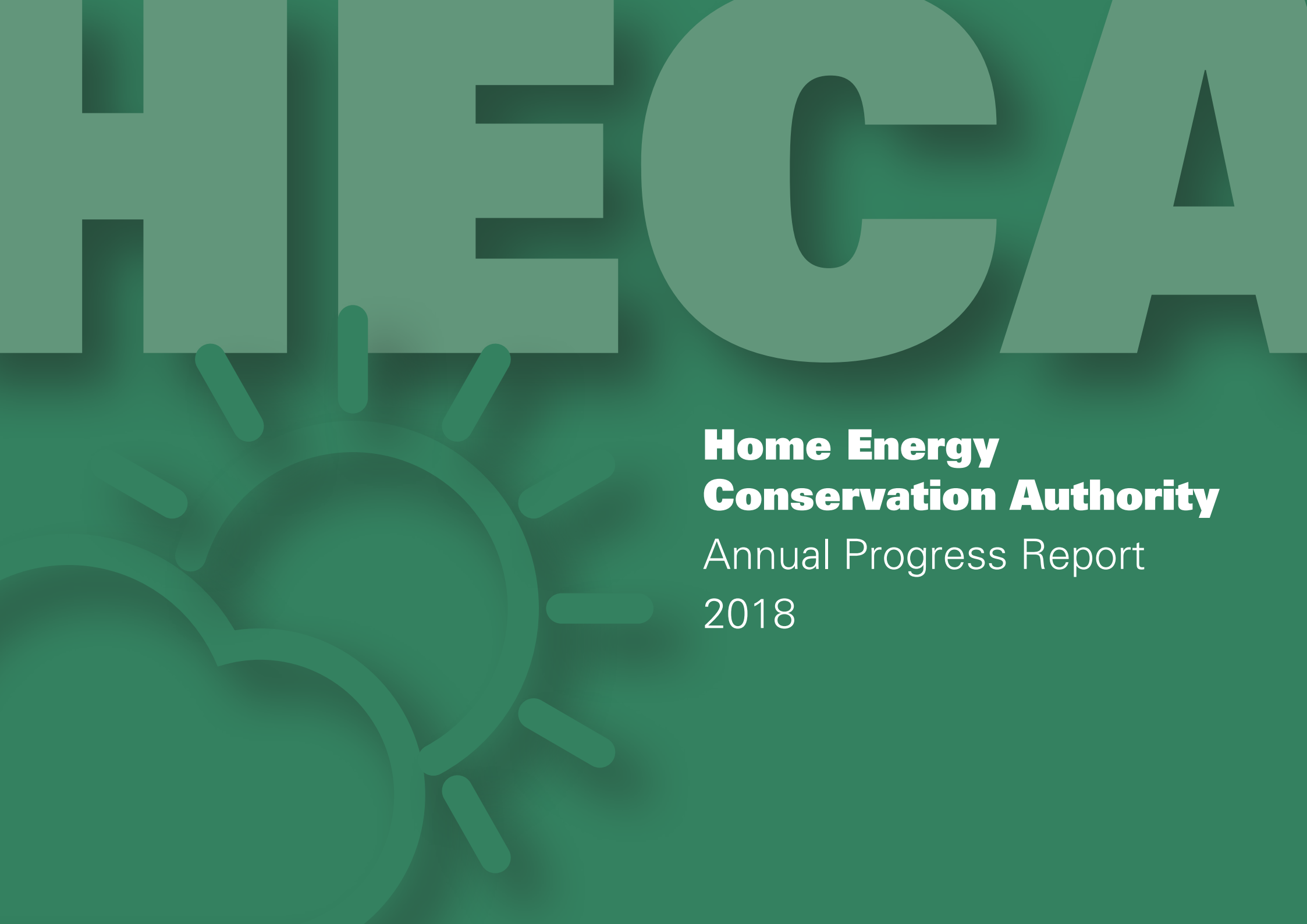


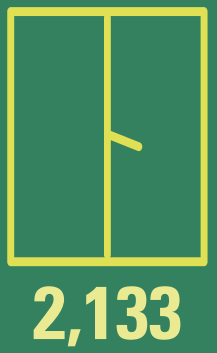
Home Energy Conservation Authority

Annual Progress Report 2018

Heating conversions

£16.2m

invested in
Housing Executive homes



Double glazing installations

£3.7m

invested in
Housing Executive homes

Affordable Warmth Scheme

£17m

of works in private sector homes (funded by the DfC and managed by the Housing Executive)

Boiler Replacement Scheme

£1.9m

funded for the installation new energy efficient boilers

NI Sustainable Energy Programme (NISEP)

£7m

on energy efficient schemes to help householders implement energy saving measures to their home

Oil buying clubs

27

Housing Executive and Bryson Energy collaboration continues to deliver monthly oil deliveries within manageable budgets below the NI Consumer Council's average oil prices.

Domestic energy market

Five companies are continuing to offer choice in energy - Power NI, SSE Airtricity, Budget Energy, Click Energy and Electric Ireland.

2017/18

FOREWORD

This year's annual report is a key milestone for the Housing Executive as the Home Energy Conservation Authority.

Through the findings of the 2016 Northern Ireland House Condition Survey (HCS), published by the Housing Executive's Research Department in May 2018, we can evidence the impact of reducing energy consumption and improving the energy efficiency of residential housing in Northern Ireland.[1]

Since the introduction of the Home Energy Conservation Act (1995), I am delighted to advise that as a result of the 'back to basics' approach to energy efficiency, educational awareness and fabric-first solutions, the findings of the 2016 HCS indicate the percentage of NI households in Fuel Poverty is now recorded as 22% (160,000), which compares favourably with the figures for Wales (23%) and Scotland (27%).

The findings of the 2016 HCS indicate that there has been a 20% reduction in the level of Fuel Poverty compared to the position based on the findings of the 2011 HCS.[2] During this period, a total investment of £300m was provided for energy efficiency programmes.

Energy Conservation still remains a priority in Northern Ireland. Significant investment continues to have been made by the Housing Executive, the Department for Communities, housing associations, the Utility Regulator and homeowners, in a combined effort to reduce levels of energy consumption and to increase the energy efficiency of stock across Northern Ireland's residential sector. During 2017/18, our investment of circa £39m delivered a wide range of programmes, including window and heating replacement. Our retro-fit pilot scheme in Newry reduces the total energy consumption by demonstrating an imaginative solution to improve a home's thermal performance.

As Interim Chair, I am very proud of our professionalism in partnership working and in particular, the collaboration we have demonstrated within local government structures as a statutory partner of Community Planning. This has provided us with the opportunity to focus on the reduction of fuel poverty, ensuring that increased environmental sustainability is galvanised within Community Planning outcomes. All our local Councils have prioritised enhanced health and wellbeing for householders. This provides a further opportunity to embed energy conservation for residents within their local areas.

Our expertise, as the Home Energy Conservation Authority (HECA) for Northern Ireland, was recognised internationally with our successful award of €2m European funding. As lead partner, we will work with a number of member states to further research and test innovative solutions, assisting in the alleviation of fuel poverty. This provides us with the opportunity for intellectual exchange, creativity and relationship building with energy conservation professionals throughout Europe.

In the absence of any new government support for renewable technologies within the domestic sector and the potential impact of Brexit, we need to continue to strive as an exemplar within the energy efficiency arena. We remain committed to 'reduce poverty' and 'increase environmental sustainability 'through the implementation of our wide-ranging programmes and initiatives', as supported in the Programme for Government (PfG) 2016-2021 Outcomes Framework. It is important that energy efficiency remains a priority, as this has a meaningful impact on people's lives.

This Annual Progress Report highlights the means by which improvements in domestic energy efficiency have been secured, and the extent to which collaborative working across the housing and energy efficiency sectors continues to reduce levels of fuel poverty across Northern Ireland.

Professor Peter Roberts
Interim Chair
Northern Ireland Housing Executive

---

1. For the first time the House Condition Survey was awarded National Statistics status by the UK Statistics Authority, whic. denotes the highest standards of trustworthiness, quality and public value.
2. Fuel Poverty is defined as circumstances where a household, in order to maintain an acceptable level of temperature throughout the home, would have to spend more than 10% of its income on all household fuel.

Strategic Context

The NI Executive's Draft Programme for Government (PfG) 2016-21 Outcomes Framework to 'reduce poverty' and 'increase environmental sustainability, aims to address the issue of fuel poverty and create a society that offers everyone, regardless of identity, the opportunity to access decent housing.

This drive encourages increased levels of renewable energy use, to improve security and diversity of energy supply, and is intended to contribute to reduced carbon emissions.

Under the terms of the Home Energy Conservation Act (1995), the Housing Executive fulfils the statutory role as the HECA for Northern Ireland.

This is further supported by the Local Government Act 2014, under which Councils have a requirement to produce a Community Plan document. The legislation states that the Community Plan must contribute to the achievement of sustainable development and identify long-term objectives for improving:

- The social wellbeing of the district;
- The economic wellbeing of the district; and,
- The environmental wellbeing of the district.

As Statutory Partner, we have established energy objectives within the Community Plans and, as a statutory consultee in the Local Development Plan (LDP) process, we advocate a holistic approach to developing energy policies. This seeks to provide better alignment of central and local government priorities in Northern Ireland[1].

We believe that the Local Government Act 2014 provides key influence through local policies aimed at reducing energy consumption, improving connectivity, integrating land use and transport, and requiring all new buildings to be developed to high standards of energy efficiency.

The Housing Executive has advocated a policy within the LDP, which includes a minimum SAP rating for new buildings. (For new build schemes delivered as part of the Social Housing Development Programme, an optional Energy Efficiency Multiplier supports sustainable and energy efficient design, beyond the existing statutory minimum SAP ratings)[2].

In November 2017, the UK Government published the Clean Growth Strategy, aspiring to 'Phase out the installation of high carbon fossil fuel heating in new and existing homes currently off the gas grid, during the 2020s, starting with new homes'.[3]

Northern Ireland must develop solutions to replace its dependency on home heating oil in the domestic sector in the medium to long term.

Energy policies and strategies can improve health, social and economic wellbeing by tackling fuel poverty and improving energy efficiency. It can sustain the environmental wellbeing by reducing CO2 emissions.

The Housing Executive, through its HECA role, continues to encourage increased levels of energy efficiency, as well as supporting customer choice of energy supply and encouraging innovative low carbon technologies that can contribute to reductions in carbon emissions throughout Northern Ireland.

---

1. http://www.legislation.gov.uk/nia/2014/8/contents/enacted.
2. Energy Efficiency Multiplier' for new dwellings which exceed the minimum standards currently required under the NI Building Regulations 2012. This standard is optional, and dwellings must achieve a SAP Band A or minimum Fabric Energy Efficiency Standard (FEES)
3. Clean Growth Strategy: This sets out the UK Govt policies and proposals that aim to accelerate the pace of "clean growth" towards compliance with the Climate Change Act 2008, i.e. deliver increased economic growth and decreased emissions. "Clean growth" means growing our national income, while cutting greenhouse gas emissions.

Improving domestic energy efficiency

Home energy

Reducing fuel poverty

Fuel poverty

Living sustainably, saving the environment

Environment

To have a more equal society

Equality

How to save energy

Measureable outcomes - baseline, actions and progress

Advice

Improved access to advice, improved connectivity with residential customers

Reduce

Implement energy efficient schemes within social and private housing sectors

Protect

Increase electricity consumption from renewable resources, research and install innovative measures

Measure

Energy mix, reduce oil dependency, gas to the west

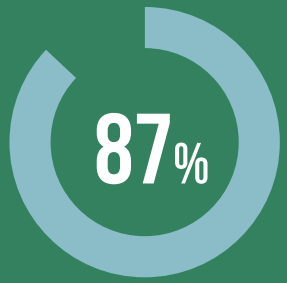
Improving domestic energy efficiency

Measuring progress across all dwellings

have central heating

still use home heating oil

have loft insulation



have full double glazing

SAP ratings

The Northern Ireland House Condition Survey (HCS), is the primary data source for assessing progress of energy efficiency across the residential sector.

As noted, the Standard Assessment Procedure (SAP) is the Government's standard method of rating the energy efficiency of a dwelling.

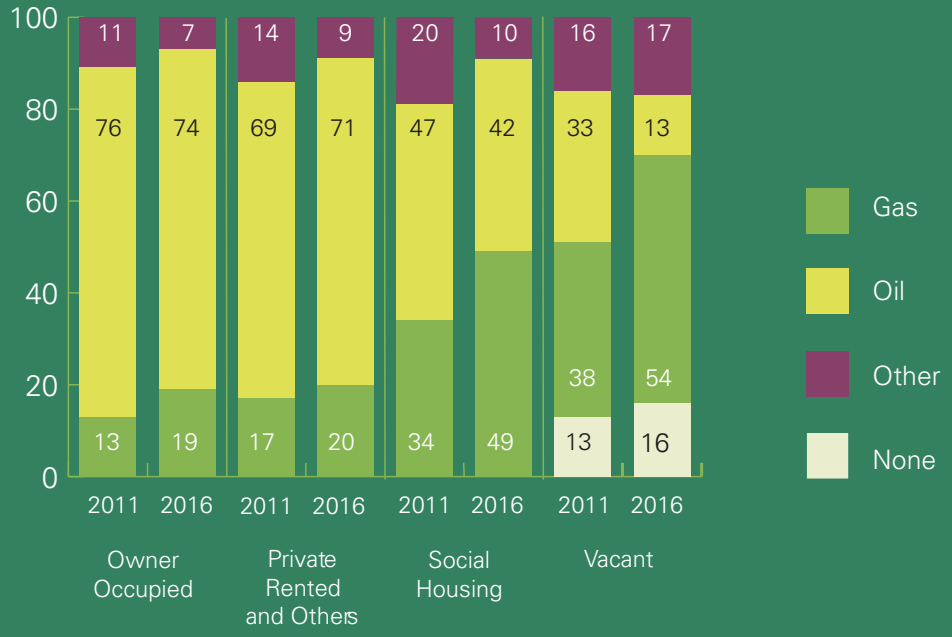
The overall SAP rating for Northern Ireland in 2016 was 65.83, using the latest SAP model.[1]

Social housing had the highest SAP Mean rating (72.63) and vacant dwellings had the lowest SAP rating (51.78), as adjacent.

As previously mentioned, there has been a total investment of £300m in energy efficiency works during the 5-year period from 2011 to 2016, which has contributed significantly to achieving higher levels of energy efficiency.[2]

Mean SAP and Tenure (2016 HCS)

1. The SAP model was modified between 2011 and 2016 in order to improve the accuracy of energy efficiency ratings.
2. 2016 NIHE HCS.



Domestic Heating (fuel sources)

At present, Northern Ireland has the highest dependency on high carbon fossil fuel - with 68% dependency on home heating oil.

The natural gas network is being developed in the west of the province, however, dispersed rural communities will limit the feasibility to fully exploit this network.

As reported in the 2016 HCS, "oil is the predominant fuel source in both urban (58%) and rural (84%) locations".

By contrast, there is only a 4% dependency on home heating oil across GB, admittedly with a more mature natural gas network, albeit in the context of a higher population density.

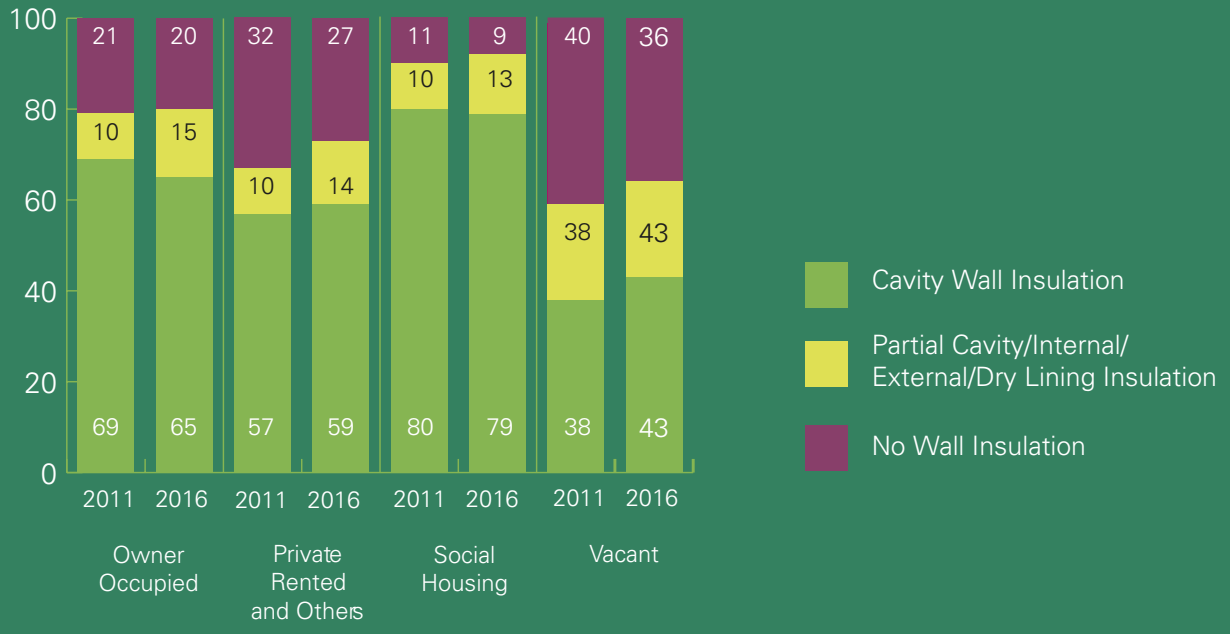
With gas central heating being the preferred option for the Housing Executive, heating replacement schemes and new build housing installing gas where available, gas has overtaken oil as the predominant fuel source for social housing, since 2011.

Home Insulation

The proportion of housing stock with full cavity wall insulation is 65%, based on the 2016 HCS; this figure has remained static since the findings of 2011 HCS.

As the 2016 HCS noted, 'this was expected, as there hasn't been the same level of investment in cavity wall insulation as there has been in loft insulation, double glazing or the replacement of solid fuel heating.'

As part of the 2016 HCS, an examination of the extent of cavity wall insulation (by tenure), provided the following results.



Energy Consumption and Carbon Dioxide (CO2) Emissions within Northern Ireland's Housing Stock

The Housing Executive commissioned the Building Research Establishment (BRE), to interrogate the 2016 HCS data to produce an updated assessment of progress against the original HECA baseline statistics identified in 1996.[1]

Key findings

In the 2016 HCS, the improvement in energy efficiency, since 1996, was 29.1% from the occupied pre-1996 housing stock. This was measured, in the 2011 HCS, as a 22.5% improvement in energy efficiency and the latest data demonstrates continued progress in this key measurement.[2]

Methodology

The analysis provides the CO_2 emissions from dwellings in Northern Ireland from the following activities:

- Space heating
- Water heating
- Lights and appliance use
- Cooking

1. BRE is the world's leading building science centre, and provides training, publications, advice and digital tools for the construction industry.
2. Based on measurement of modelled standardised consumption by BRE.

Energy Consumption Results

The consumption and emissions results are also presented for space and water heating only, thereby excluding lights, appliance use and cooking. This approach can be useful when analysing the effect of improvements to the building fabric and heating systems.

It is clear that the general trend since 1996 has been a reduction in energy consumption. This is consistent with improvements to dwellings' fabric energy efficiency (in particular cavity wall insulation) and heating system improvements (condensing central heating systems replacing older, less efficient systems).

The decrease in energy consumption over the latest five year period, 2011 to 2016, for the occupied stock only, is similar to the previous 5-year period (2006 to 2011).

There has, however, been a larger reduction in energy consumption for the whole stock (occupied and unoccupied) between 2011 and 2016, compared with the previous five year period. This is partly due to there being fewer vacant dwellings in the 2016 stock (4%), compared with 2011 (7%).

Energy consumption in pre-1996 dwellings (Terajoules/year), 1996-2016

	1996	2001	2006	2009	2011	2016
Total energy consumption						
All dwellings	83,384	80,423	71,557	71,315	69,581	57,920
Occupied dwellings	78,860	75,445	67,388	66,937	61,091	55,935
Space and water heating consumption						
All dwellings	77,301	72,753	63,427	63,231	61,506	49,461
Occupied dwellings	73,034	68,127	59,658	59,258	53,641	47,714

Carbon Dioxide Emissions Results

The emissions are constructed by taking the consumption and then applying associated emissions factors (from the SAP specification) for each fuel being used in the dwelling.[1]

This will be dominated by the space and water heating fuel in use in each dwelling, typically oil, gas or electricity. Emissions from lights and appliances use are calculated using the carbon dioxide factor for electricity.

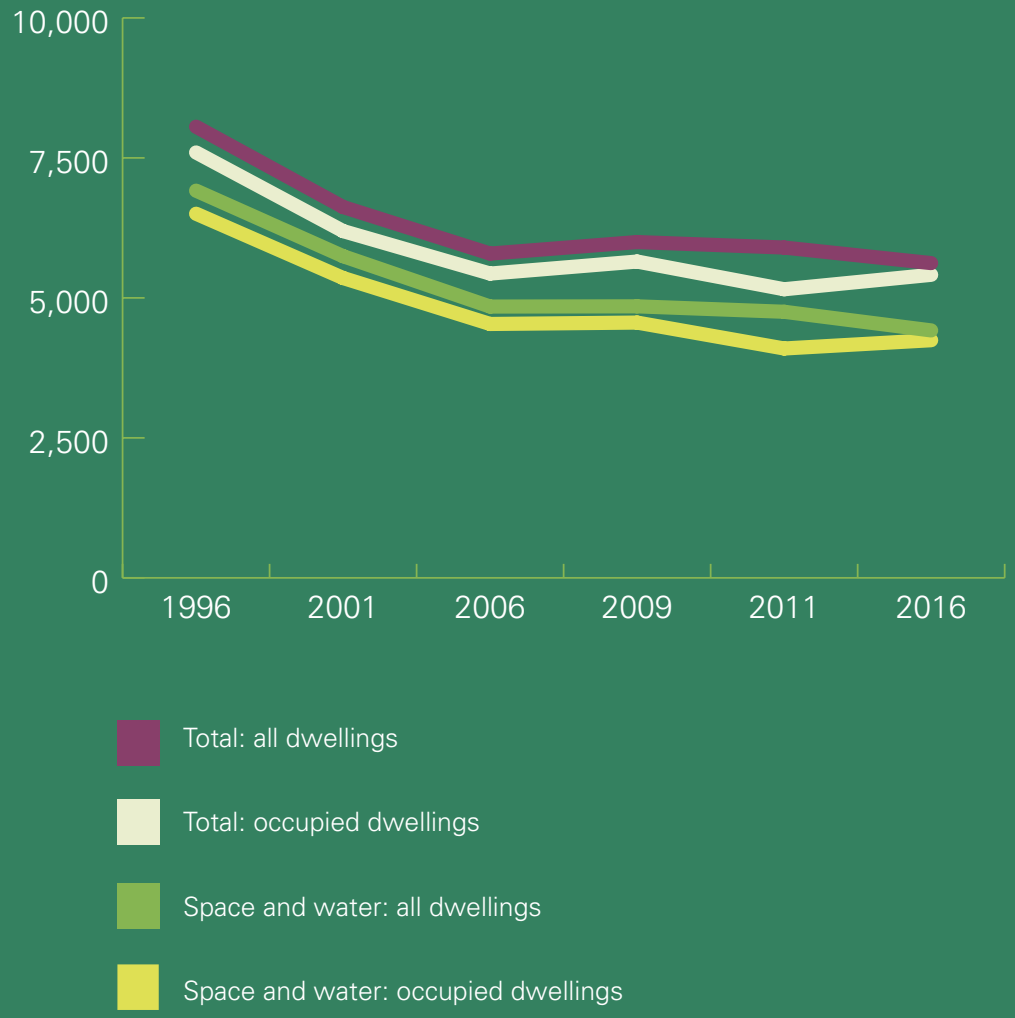
The results presented here use different emissions factors for different years to reflect the fact that the carbon mix of electricity generation has changed over the years as has the carbon intensity of other fuels, and the understanding of emissions associated with each fuel.

CO_2 emissions exhibit a similar pattern of reduction to energy consumption, apart from in 2009.[2]

As with the energy consumption, the CO_2 emissions decreased more for all dwellings compared with occupied dwellings between 2011 and 2016. This is partly due to the smaller proportion of vacant dwellings in 2016 compared with 2011.

This shows a decrease in emissions consistent with what would be expected given the observed reduction in energy use.

Carbon dioxide emissions from pre-1996 dwellings (Kilotonnes/year), 1996-2016.



1. The CO_2 emissions are taken from the pre-1996 dwelling stock.
2. In 2009, the modelling switched to using the SAP 2009 carbon emissions factors which incorporated factors for electricity which are significantly higher than in the SAP 2005 specification.

Marketing the Energy Efficiency Message

The Housing Executive actively promotes the energy efficiency message through various media. During 2017/18, our staff took part in several radio interviews, delivered presentations at key seminars and promoted energy efficiency message in various press and media publications. We continue to promote energy conservation to the public through annual regional events and campaigns.

Northern Ireland Energy Advice Line (EAL)

The HECA marketing message is partly delivered in partnership with Bryson Energy through the delivery of a fully resourced Freephone number (0800 1422 865), to provide an independently-managed, free energy efficiency advice service to all domestic energy users within Northern Ireland. This service provides impartial energy efficiency advice to over 7,000 customers annually.

Schools Energy Efficiency Awareness Programme (SEEAP)

Key Stage 2 pupils from primary schools across Northern Ireland have availed of an interactive Schools Energy Efficiency Awareness Programme, delivered by Bryson Energy through a project funded by the Housing Executive.

The Bryson Energy education team successfully delivered a total of 160 school visits to Primary 6 and 7 pupils across Northern Ireland between 1 April 2017 and 31 March 2018.

Approximately, 7,970 pupils participated in the Programme, with 82 of the 160 school visits made to rural schools.

The Schools Energy Efficiency Awareness Programme encourages awareness of energy use, and under the 'World Around Us' area of learning from the Northern Ireland Curriculum Primary, the Programme encourages action through informative presentations and activities.

The Bryson Energy education team successfully delivered a total of 160 school visits to Primary 6 & 7 pupils across Northern Ireland between the 1st April 2017 and the 31 March 2018. Approximately 7,970 pupils participated in the programme with 82 of the 160 school visits made to rural schools.

National Energy Action (NEA)

NEA, is a charity working to end fuel poverty across the UK. Supported by Housing Executive funding, it also provides essential energy efficiency training and awareness outreach in Northern Ireland to householders and community groups.

It raises public awareness through an extensive range of activities, including accredited training courses which cover fuel poverty, fuel debt, affordable warmth and delivering practical energy advice.

Level 3 City & Guilds 6281-01 qualification

This course is aimed at those who are required to give domestic energy advice to householders, equipping our staff to provide better energy advice to customers.

It has provided a sound understanding of the causes and consequences of fuel poverty and has taught how improving energy efficiency can help provide householders with affordable warmth, which was linked to physical and mental wellbeing modules.

The four key modules are:

- Home heating
- Fuel Poverty and Paying for Fuel
- Reducing Heat Loss
- Condensation and Dampness.

Staff from Regional Services successfully completed NEA's 3-day City & Guilds Level 3 Award in Energy Awareness in March 2018.

HECA: Energy Efficiency Promotional Events

SelfBuild Live Belfast Show 16-18 Feb 2018

Our Housing Executive staff showcased energy efficiency at the Belfast SelfBuild Show, from the 16-18 February 2018.

With over 250 exhibitors, SelfBuild gave attendees the chance to get inspiration, ideas and advice about building or improving their home, with a range of clinics and workshops at the event in the Titanic Exhibition Centre.

On the day, we provided energy efficiency advice and tips to the public and discussed energy saving measures for their homes.

The Housing Executive's participate in the launch of the SelfBuild Show at The Titanic Exhibition Centre, Belfast.

Energy Saving Week 30 Oct-3 Nov 2017

The Housing Executive joined the Energy Saving Trust (lead partner) as well as Phoenix, NIFHA, Choice Housing Ireland Ltd, National Energy Action (NEA), Bryson Energy, NI Consumer Council, Firmus Energy and SGN Natural Gas to promote Energy Saving Week 2017 which took place from 30 October-3 November 2017.

During the course of the week we provided tips and information on how to save energy in the home at roadshows across Northern Ireland and via social media.

Fuel Poverty Awareness Day 23 Feb 2018

We joined forces with voluntary and statutory agencies to support Fuel Poverty Awareness Day.

(L-R) Lucy Cochrane, NEA (National Energy Action); Patrick Thompson, EST (Energy Saving Trust); Nigel Brady, Bryson Energy; Pat Austin, NEA Director; Robert Clements, our Sustainable Development Manager & Sinead Dynan, Consumer Council.

Home Energy Schools Poster Competition

In February 2018, we launched a Home Energy Schools Poster Competition, in partnership with the Education Authority.

The competition required P7 classes across Northern Ireland to create a poster showcasing how people could save energy in their home.

The judging panel, made up of staff from the Housing Executive, Bryson Energy and the Education Authority, sifted over nearly 70 entries, before deciding on the 3 prize winners.

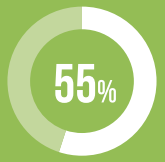
First prize winner, Hazelwood Primary School in Ballymena won £1,000 and a free educational trip to the Titanic Centre, Belfast.

Runners up Maralin Village Primary School and St Colmcille's, Ballymena also received cash prizes of £750 and £500.

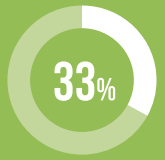
Reducing fuel poverty

% In Fuel Poverty

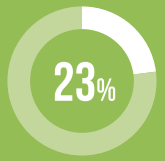
(10% definition) against gross income



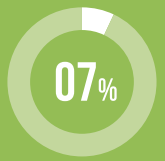
<£10,399



£10,400-£15,599



£15,600-£20,799



£20,800-£31,199

£31,200-£46,799

£46,800+

Source: HCS 2016

Analysis of Fuel Poverty Data

Northern Ireland has around 160,000 fuel poor households. This represents an average fuel poverty rate of 22%. A key driver to deliver energy efficiency within refurbishment of housing in Northern Ireland is the need to help reduce fuel poverty.

The 2016 HCS, reports the two different methods of measuring fuel poverty, namely:

- 10% Definition, used in previous HCS and referenced in the DfC Fuel Poverty Strategy.
- Low Income High Cost (LIHC) method, used to measure Fuel Poverty in England.

10% Definition

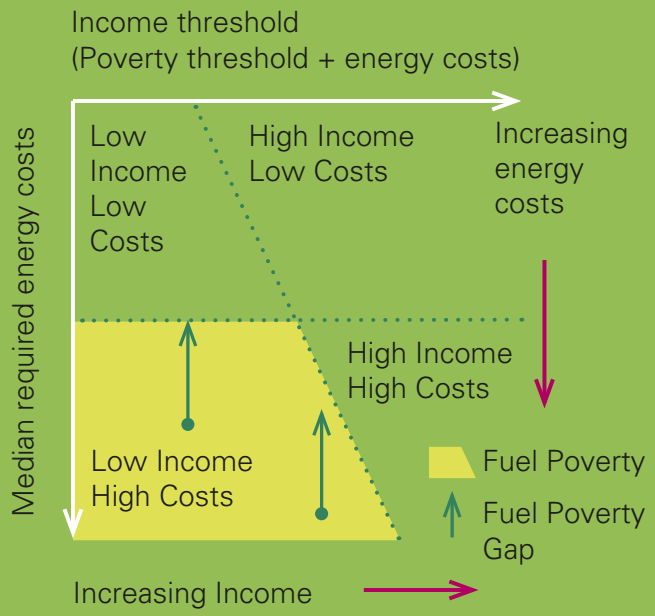
This methodology (which is used in NI, Scotland and Wales) requires the householder to maintain a satisfactory level of heating (21˚C for the living area and 18˚C for other occupied rooms) and the householder is required to spend in excess of 10% of its household income on all heating and electric bills. The three factors which determine fuel poverty model within the 10% definition are:

- Fuel prices
- Energy consumption (based on energy efficiency)
- Household income

Low Income, High Cost Definition

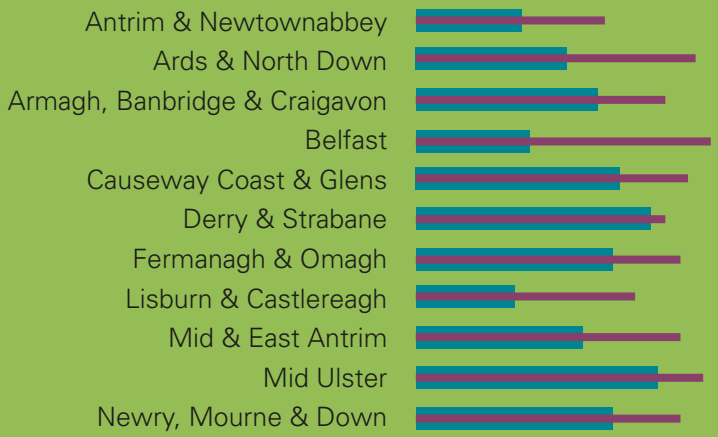
In England fuel poverty is measured using the LIHC methodology. A household is considered to be fuel poor if:

- Fuel costs are above average (national median level).
- After paying for fuel costs the remaining household income is below the official poverty line. (See figure below). Although not incorporated within the DfC Fuel Poverty Strategy, this method provides baseline data to compare with England.

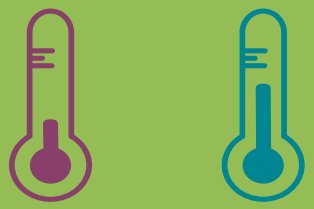


This diagram illustrates that fuel poverty is distinct from general poverty: not all poor households are fuel poor, and some households would not normally be considered poor but could be pushed into fuel poverty if they have high energy costs.

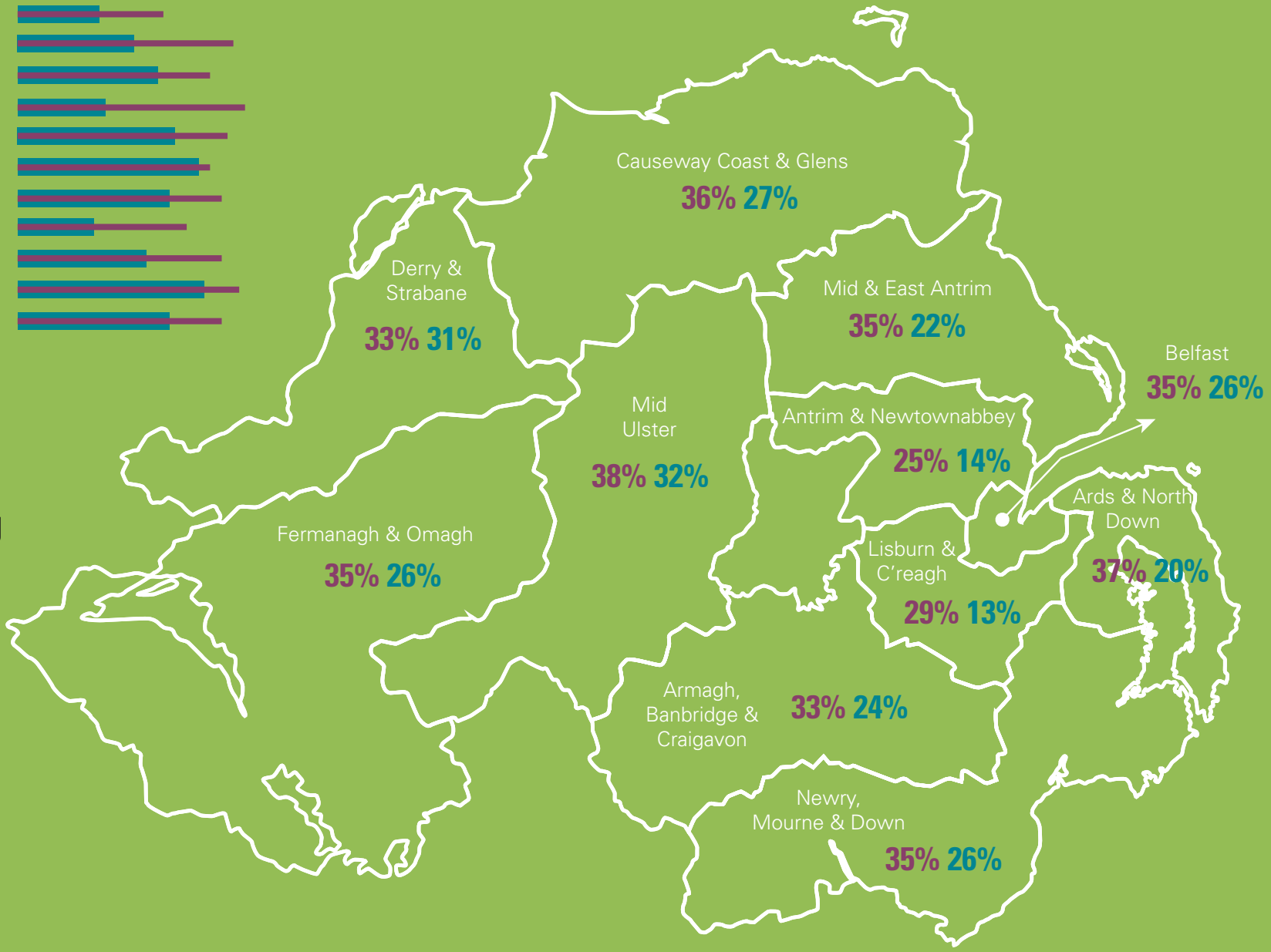
Households in Fuel Poverty (10% definition) by Council area



22%
average fuel poverty rating



2006 v 2016



Analysis using the 10% definition

a. General Findings

The 2016 HCS estimate approximately 22% (160,000 households) are living in fuel poverty. This provides a significant improvement since the 2011 HCS. This reduction can be attributed to a drop in home heating oil prices during the survey period in 2016, continued improved energy efficiency of houses and a moderate increase in incomes.

Fuel poverty has fluctuated over the last 17 years, with rising energy costs, improved energy efficiency with insulation improvements and increased household incomes.

(i) Fuel Prices: Fuel costs consider both the heating and electric costs. Average household fuel costs in 2006 were £1,400, rising to £1,700 in 2011 and £1,500 in 2016. The most volatile issue is the erratic nature of the unregulated energy supply of home heating oil which increased by 1.81 pence per kWh between 2001 and 2011, then decreased by 0.01 pence per kWh between 2011 and 2016.[1] (The oil price used in the fuel poverty methodology is based on a three year average).

(ii) Energy Efficiency: The overall SAP rating for Northern Ireland in 2016 using the latest SAP model (version 9.93 - published in November 2017) was 65.83 rising to 66.32 for occupied dwellings.

(iii) Income: Average household income increased from £20,500 in 2011 to £23,800 in 2016, a 16% increase.

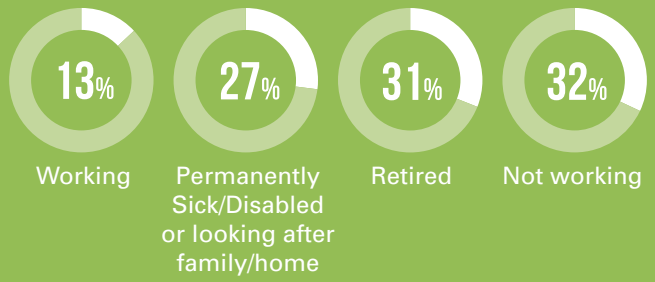
b. Age of Household

There is clear evidence those households where the household reference person (HRP) is over 75 are more likely to be living in fuel poverty. Households with children were least likely to be living in fuel poverty.

c. Employment of Household

The largest group of fuel poor is where the HRP is unemployed and the lowest rate of fuel poor households is where the HRP is working.

Households in Fuel Poverty (10% definition) by Employment



d. Household Income

There is a clear correlation between household income and fuel poverty, which is reinforced with 55% of households with incomes up to £10,399 being fuel poor.

e. Rural Fuel Poverty

As with the 2011 HCS, rural councils have the highest levels of fuel poverty. Based on the 2016 HCS the highest rates are in Mid Ulster (32%) and Derry & Strabane (31%). The lowest rate is in Lisburn & Castlereagh (13%).

Low Income High Costs is a dual indicator in that it measures not only the extent of the problem (how many households are in fuel poverty) but also the depth of the problem (how badly affected each fuel poor household is).

The depth of fuel poverty is calculated by taking account of the fuel poverty gap. This is a measure, of the additional fuel costs (in ££s) faced by fuel poor households, to meet the non-fuel poor household threshold. (Department for BEIS 2017, p6).

Unlike the 10% fuel poverty definition measure, the LIHC is a relative measure as it compares households to the national median modelled notional fuel bill and household income. (HCS 2016, p63).

Overall, findings from the 2016 HCS show that 7% of households were in fuel poverty under the LIHC definition. This compares with 11% in England (2015).

In 2016, the average fuel poverty gap for all Northern Ireland households (the amount needed to meet the fuel poverty threshold or what is needed to be added to income to afford fuel bills) was estimated at £436. This compares to £353 in England in 2015.

This indicates that while the extent of fuel poverty under LIHC is less in NI compared to England (7% compared to 11%), the depth or severity is greater than in England.

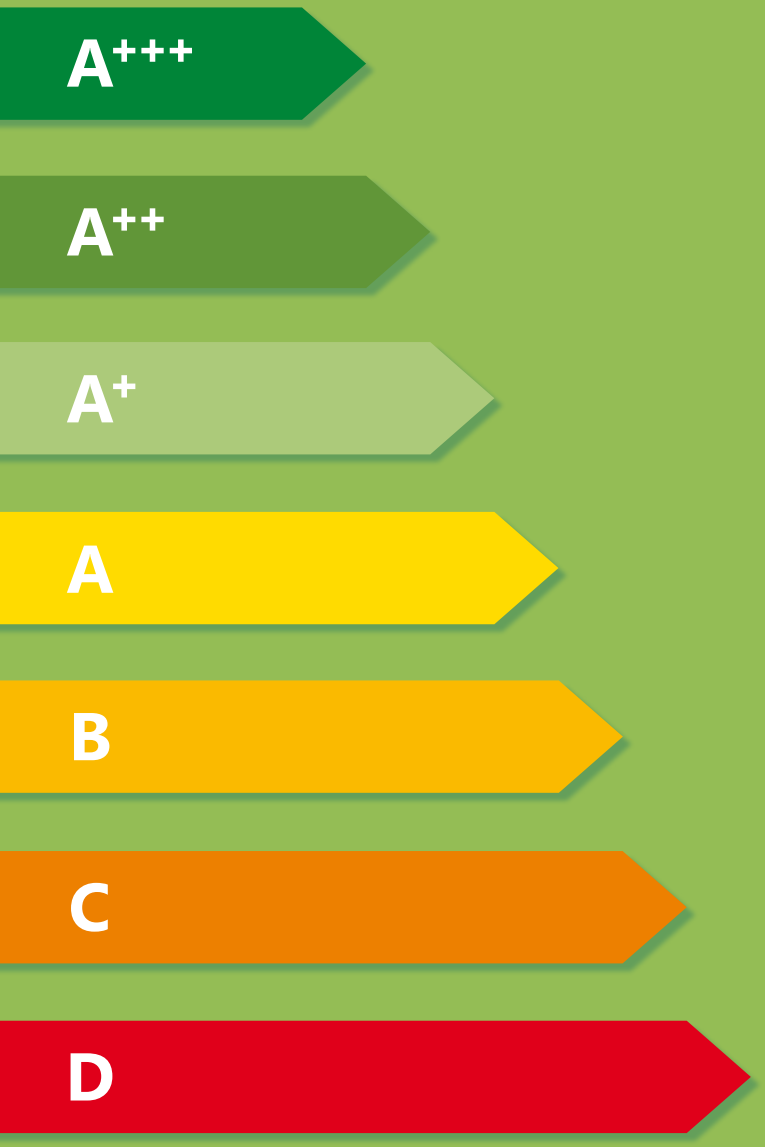
Fuel Poverty Ready Reckoner

The Housing Executive recognises the need to gather fuel poverty data on a more frequent basis, rather than at the HCS 5-year cycle and, in 2018 published a Ready Reckoner to estimate the levels of fuel poverty based on the previous HCS (2016).

This provides fuel poverty figures based on variances in fuel prices, which is the most changeable factor of fuel poverty between the cycles of HCS.

---

1. 2016 Northern Ireland House Condition Survey.



Grants for Owners and Private Rented Tenants

In 2017/18, further progress was made improving energy efficiency in private homes.

Affordable Warmth Scheme

The Affordable Warmth Scheme was introduced in September 2014. It replaced the Department for Communities' (DfC) previous Programme, the Warm Homes Scheme. The replacement Scheme is also funded by the DfC and is the Domestic Energy Efficiency Improvement Programme for vulnerable low income households. The Affordable Warmth Scheme is a central element in the NI Executive's Fuel Poverty Strategy.

Our Private Sector Improvement Services (PSIS) is active in the promotion of energy efficiency in its role as administrator of the Affordable Warmth Scheme, on behalf of the DfC.

The Scheme is designed to help reduce the effects of fuel poverty in the private sector. The Housing Executive works in partnership with local Councils to target interventions via an area based approach.

In 2017/18, the Affordable Warmth Scheme provided 8,232 measures installed in 4,148 homes at a cost of around £17m. This is a targeted Scheme for private sector households which the Department for Communities and the Ulster University, using a targeting algorithm, have identified as being within areas where fuel poverty is prevalent.

The Affordable Warmth Scheme offers a range of measures for households with an annual income of less than £20,000.

During 2017/18:

- 4,312 approvals for works were issued
- £18m value of approvals
- £17m expenditure
- 4,148 homes were improved
- 8,232 measures were installed - 19% loft insulation; 41% heating; 29% windows; 8% cavity wall insulation; 2% draught-proofing measures; 1% solid wall insulation.

The Energy Savings Trust (EST) carried out an analysis of the impact of the Affordable Warmth Scheme, by modelling the extent of carbon and energy savings. The analysis also identified reductions in fuel costs and measured the overall improvement in SAP ratings.

Three years after the launch of the Affordable Warmth Scheme, in 2018, EST carried out a project analysis. Their report indicates that during the lifetime of the installed energy efficiency measures, each participating household will manage to save, on average, around 72,000 kWh of energy; realise £3,650 of savings on fuel costs; reduce CO_2 emissions by 20,500kg. These savings vary, and strongly depend on the dwelling type. The largest anticipated savings are in detached houses and bungalows, which have larger floor areas and higher energy demand.

The overall impact of the Affordable Warmth Scheme to date is estimated to be around 1,053GWh of lifetime energy savings, £53.51M of lifetime fuel cost savings and 302kT of lifetime CO_2 emissions savings. The total measures deployed through Affordable Warmth have to date added 131,000 SAP rating points to Northern Ireland's dwelling stock; with SAP ratings increasing by an average of 17% for the homes participating in the Scheme.

Boiler Replacement Scheme

The Boiler Replacement Scheme is for owner occupiers whose total gross income is less than £40,000 and is to help with the cost of replacing gas and oil boilers, which are 15 years or older with new boilers and controls with a grant of up to £1,000. Householders may also wish to convert from oil to gas or to a wood pellet boiler. In 2017/18 3,061 boiler installations were made at a cost of £1.9m.

During 2017/18:

3,527

Approvals issued

£1.9m

expenditure

EST carried out a similar analysis on the Boiler Replacement Scheme. The first six year analysis estimates that on average household participating in this scheme will save on average around 23,000 kWh of energy, £875 of fuel costs and 8,900 of CO_2 emissions throughout the boiler's lifetime.

They will also achieve about an 8-point increase on average in their SAP rating. Overall, based on total number of boiler installations to date, the total lifetime savings of this scheme will be 745GWh of energy, 27.81M of fuel costs and 285kt of CO2 emissions and will also raise SAP ratings in the Northern Irish dwelling stock by 257,000 points in total. This scheme improved the average home's SAP score by 18%.

NI Sustainable Energy Programme (NISEP)

The NI Sustainable Energy Programme (NISEP) is a customer funded Programme, which provides energy efficiency, measures to home owners and private tenants. The NISEP, which runs on a year by year financial basis, has been successful in targeting homes with no heating or inefficient heating systems in addition to installing energy saving measures in homes including energy-efficient boilers, heating controls, loft insulation and cavity wall insulation.

NISEP funded £7 million on energy efficiency schemes in 2017/18, and is means tested. Eligibility is based on income bands depending on your circumstances. This funding was given to both private and social housing sectors to provide energy efficiency measures.

The Utility Regulator has announced that the current Programme is now open until 30 March 2019. The NISEP funds come from a levy on electricity bills paid by both Domestic and Commercial customers throughout Northern Ireland.

The Energy Saving Trust NI is the Programme Administrator of NISEP on behalf of Northern Ireland's Utility Regulator, and schemes are delivered by a range of organisations across NI.

Domestic measures installed under NISEP during 2017/18:

2,901

loft insulation

3,333

cavity wall insulation

1,089

heating

Social Housing Development Programme

The Social Housing Development Programme delivered 1,507 completed homes in 2017/18; with the vast majority being new build (87%). New build homes are constructed in compliance with current Building Regulations, which produce an average SAP rating of approximately 83 (Band B). The construction of new build social homes with a SAP rating of 'Band B' is a contributing factor for the higher mean SAP of 72.63 for social housing in comparison to the mean SAP of 65.11 across all tenures of occupied dwellings.

Housing Executive Energy Efficiency measures within Planned Maintenance Works

In 2017/18, the Housing Executive invested approximately £20 million in energy efficiency measures within its planned maintenance programme across its own housing stock.

I love the solar panels!

They were installed in less than a day and the process was really quick and simple. I now spend £20 per month instead of £20 per fortnight on my electricity bills and knowing that I am being kinder to the environment, is the cherry on top!

Ms G
Housing Executive tenant
Lisburn

Solar Photovoltaic (PV) schemes within Housing Executive stock

In summer 2016, the Housing Executive completed a solar PV scheme in partnership with Saliis Ltd, to install solar panels into 1,000 homes using private finance based on the 'rent a roof' model. The Scheme was the first large solar PV project for residential properties in Northern Ireland, and has created household savings of £150 - £200 on annual energy bills. Next year the Housing Executive's Research Deptartment will carry out an evaluation of the first three years of the scheme to analyse savings in householder energy bills.

Oil Buying Clubs across the Social and Private Sector

In 2014, the Housing Executive awarded a contract to Bryson Energy to set up a network of 27 Oil Buying Clubs across Northern Ireland. The last year has seen the highest level of heating oil purchased via this network of Oil Buying Clubs in a single year. Over 3.368 million litres of heating oil was purchased by the 4,900 members across 27 clubs, providing savings of £10-25 per order per household.

27 Oil Clubs

3.368m

litres delivered
April 2017 -
March 2018

4,900

Members
to date

7.8%

Savings

£14.46

For 500 litres*

**as per the Consumer Council weekly average price for 500 litres (Since May 2015)*

Oil Buying Clubs - Case Study

A Fermanagh householder (Mrs L) joined Crannog Oil Buying Club, Enniskillen, in March 2017.

She had placed nine oil orders up to August 2018. She reports an overall saving of £120.23 - 6.2% saving against the NI Consumer Council home heating oil weekly
price survey.

The service provided is one of great importance as everything is straight forward to when I receive my oil club text to when the oil is being delivered. I have no phoning around oil suppliers and trying to get the best quotation as this is all within the Oil Buying Club service.The savings I have made has helped towards other outgoings and I would like to thank everyone that makes the service so easy.

I n the past, I ran out of oil which there was a cost to get the boiler bled but with being part of the club I receive my text message each month so now I do not have that worry or cost again.

Also, within my community it is in a built up area with young families and the oil supplier delivers monthly which has saved on delivery lorries coming and going on an ongoing basis.

Mrs L
Fermanagh

Living sustainably - protecting the environment

Housing Executive

The energy efficiency component of the Housing Executive's Asset Management Investment strategy, is being produced in draft form, and will provide solutions to improve energy efficiency through measures across the housing stock and in particular look at energy efficient solutions within non-traditional construction.

Cuchulainn and Eithne House are two of the seven Housing Executive high rise blocks in the New Lodge area of Belfast, which had their complete external envelope thermally improved in 2015. The works included external wall insulation, new windows, and a new roof.

Works of a similar nature were also undertaken at Carnet House high rise block in East Belfast and on Whincroft House high rise block in Braniel.

A third scheme (April 2016), has provided a comprehensive cladding programme to 118 aluminium bungalows, in a range of locations including Portadown, Cookstown, Banbridge, Newry, and Omagh. Two remaining schemes are due to start on site in Lurgan & Bangor later this financial year.

Carnet House, Belfast

Cavity Wall Insulation Research Project

There is an ongoing, current focus on the performance of cavity wall insulation across all residential tenures in Northern Ireland.

In the 2016/17 HECA Progress Report, we reported that we initiated research into 1,000 social housing dwellings and 300 private dwellings (as an annex to the NI House Condition Survey), to provide an evidence base to influence future policy development.

Surveys that commenced in August 2017 are due to complete in November 2018, with a report anticipated early in 2019.

Newry Retrofit Scheme

With the Housing Executive's commitment to the importance of value for money, energy and efficient retrofit, they recently completed the Newry Retrofit Scheme. This pilot project involved energy efficient refurbishment across four Housing Executive and one owner occupied dwelling in Loanda Crescent, Newry with funding from the Housing Executive and Bryson Energy.

The Scheme involved a range of measures, to either some or all the dwellings, to allow a performance evaluation, which is ongoing. This retrofit pilot has been designed to deliver each house to a varied level of thermal performance of a SAP range between Band C to Band B (SAP 86+).

A range of measures across the dwellings included external wall insulation, demand controlled ventilation, solar photo voltaic panels, an air tightness strategy, passive standard triple glazed windows and energy efficient natural gas heating system with a smart heating thermostats.

Work has commenced on the evaluation of the Project, with results to be published at a later date. The practical completion air permeability rate indicates one of the dwellings was 2.66 m3/(h.m2), which is lower than typical air tests from existing new build standards required by Building Regulations.

Energy Efficiency & Renewable Innovation (EU Interreg Project: HandiHeat)

ARC Healthy Living Centre[1], Irvinestown, approached the Housing Executive, with a concept to provide renewable energy for a community scheme within the Sally's Wood estate in Irvinestown in 2014.

This proposal was further refined and developed into a funding application (and branded as the HandiHeat Project) which focused on identifying the means by which domestic heating solutions (utilising renewable energy sources) could be developed and implemented in rural communities across the project area of Northern Europe.

The Northern Periphery & Arctic Programme 2014-2020, supported by European Regional Development Funding, informed the Housing Executive that the application for grant funding had been successful in July 2018.

The HandiHeat Project commenced in October 2018, with the Housing Executive acting as lead partner together with a range of organisations from Northern Ireland, the Republic of Ireland, Scotland, Finland and Iceland.

The project, which has a three year timeframe, will focus on identifying renewable energy solutions for rural communities which are affected by Fuel Poverty due to heavy reliance on imported fossil fuels for the production of energy.

The development and implementation of sustainable solutions based on renewable technologies will protect rural communities from energy price fluctuations and improve the social wellbeing and quality of living throughout the participating regions.

1. ARC Healthy Living Centre is the NI Health and Social Care 'Social Enterprise of the Year 2015' and is widely regarded as a vanguard model for transformational change.

Energy Efficiency in a Northern Ireland Council

Derry City & Strabane Council recently secured European funding to increase use of energy efficiency and renewable energy solutions in housing and public infrastructures in remote, sparsely populated areas.

The Alley Theatre is a theatre based in the heart of Strabane, County Tyrone, Northern Ireland. The venue hosts an auditorium, art gallery as well as a tourist information centre. In 2016, Derry City and Strabane District Council installed a 20kW photovoltaic electric generation system on its roof through a (SECURE) project funded by the Northern Periphery and Artic Programme (NPA).

The installation of a 20 kW photovoltaic electric generation system on the roof of the theatre complex was installed under the NPA priority issue 4: Fostering Energy-Secure Communities through Promotion of Renewable Energy and Energy Efficiency. SECURE addresses the NPA priority issue 4 and its specific objective: Increased use of energy efficiency and renewable energy solutions in housing and public infrastructures in remote, sparsely populated areas.

The photovoltaic electric generation system converts the radiation from the sun into useful electrical energy, which is consumed by the normal day-to-day operations in the building. The amount of energy generated varies depending on the cloud cover and the time of year, with winter having shorter days.

The overall aim of the SECURE project, which is operational until March 2019, is to transfer good practices of energy solutions for housing and public infrastructure within the project countries. It targets local authorities which could implement similar energy solutions in their own properties and infrastructure.

Energy Efficiency within the Housing Association Sector

Old Belfast Road, Bangor

Greenisland House, Shore Road, Greenisland

Strand Road, Derry/Londonderry

A Case Study: Choice Housing Ireland Ltd

Choice Housing Ireland Ltd (Choice) is one of the largest independent housing associations in Northern Ireland providing high quality homes and care and support services to help meet the diverse needs of a wide range of customers, including older people, families, mature singles and people with complex needs.

Choice understands that energy cost is a concern for tenants. They have put various measures in place to ensure that the homes they provide are some of the most energy efficient in the country.

New Build

Choice developed 106 new dwellings at Old Belfast Road, Bangor, at a cost of around £13.2 million, alongside a scheme at Greenisland House, Shore Road Greenisland. Working in partnership with the Northern Health and Social Care Trust, and the Housing Executive's Supporting People Unit, to develop a scheme of 32 supported one and two bedroom living units of accommodation for older people.

Both of these schemes have incorporated energy efficiency measures in line with building regulations; with excellent building fabric: walls, floors, roof, window and doors and installed airtight, efficient heating systems and renewable technologies.

Remodelling / Refurbishment Schemes

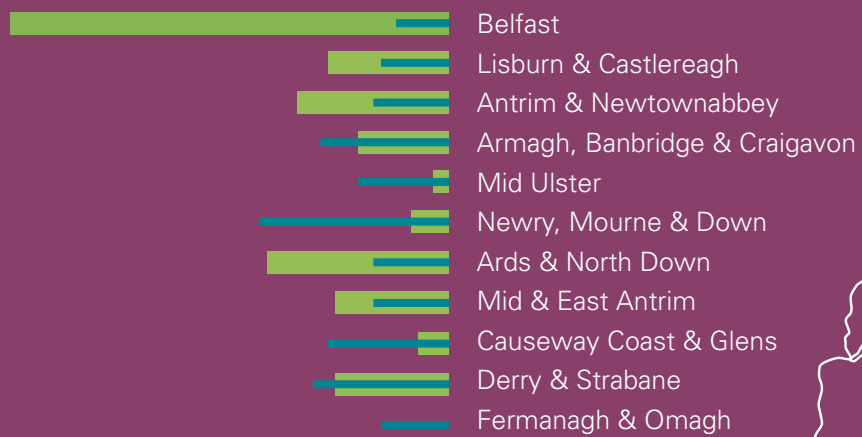
Choice carried out a £3 million remodelling scheme at 126 Strand Road, Derry/Londonderry, to provide 94 one, two and three bedroom apartments.

The refurbishment included new windows and doors, a heating upgrade to include new Quantum storage heaters, as well as low energy lighting provision.

The average energy efficiency rating for Choice Housing Ireland Ltd's housing stock is around 76 (SAP Band C), based on around 5,300 Energy Performance Certificate (EPC) surveys.

To have a more equal society

Home heating choices by Council Area



GAS **1,690**

OIL **1,414**

Measures to provide a secure sustainable energy mix

Northern Ireland needs to ensure that new investment provides greater security of energy supply through a range of fossil fuels and low carbon technologies. Securing an energy mix that will help deliver security of energy supply will require action to agree infrastructure plans and financing, develop supply chains and smart grid technologies, without putting an excessive financial burden on consumers.

Phoenix Natural Gas own and operate the gas distribution network in the Greater Belfast, Larne and East Down areas, in Northern Ireland. The Phoenix Natural Gas network makes gas available to some 330,000 properties with around 210,000 of these properties currently connected, and continues to connect around 8,000 new properties per year. They are constructing a new gas infrastructure in the East Down area, making natural gas available to some 25,000 properties in this area over the next number of years.

SGN Natural Gas continues to develop the natural gas network in counties Derry-Londonderry, Tyrone and Fermanagh. Over 200 customers are now connected to the network in Strabane with demand continuing to surpass expectations.

Firmus Energy currently has natural gas available to over 120,000 homes and businesses throughout its network area, which stretches from Newry through the central corridor in NI to Derry-Londonderry.

The Integrated Single Electricity Market (I-SEM)

The Integrated Single Electricity Market (I-SEM) is a new wholesale electricity market arrangement for Ireland and Northern Ireland. The existing market arrangements are replaced by multiple markets or auctions, each spanning different trading time frames, with separate (although related) clearing and settlement mechanisms, covering both energy and non-energy commodities.

The new market arrangements are designed to integrate the all-island electricity market with European electricity markets, making optimal use of cross-border transmission assets, which, according to the SEM Committee, is expected to "deliver increased levels of competition which should help put a downward pressure on prices as well as encouraging greater levels of security of supply and transparency".

Measuring energy efficiency investment

During 2017/18, the Housing Executive invested circa £39m to improving thermal efficiency, influencing and increasing strategic action to tackle fuel poverty and improve access to energy efficiency measures and advice across Northern Ireland working with the Deptartment of Communities.

Our indicators show:

2017/18 Energy Efficiency Investment via the Housing Executive	**£**
Housing Executive Heating Schemes	16,232,556
Housing Executive Double Glazing	3,700,000
DfC Affordable Warmth	17,000,000
DfC Boiler Replacement	1,900,000
Energy Marketing, Energy Advice Line, Oil Buying Clubs & Housing Executive HeatSmart Programme	294,000
Fund NEA	45,000
TOTAL	**39,171,556**

Above does not include the NI Sustainable Energy Programme of £7 million for energy efficiency schemes

Outcomes: Improving People's Homes and Helping to Transform their Lives				
Area of Activity	**Position at the end of 2016/17**	**Indicators**	**Action**	**Progress during 2017/18**
Improving Domestic Energy Efficiency	SAP 60 (Mean), based on 2011 HCS 68% of Households dependent on home heating oil (per 2011 HCS) Based on 2011 HCS, a 22.5% improvement in the energy efficiency of NI's (occupied) housing stock was recorded between 1996 and 2011	Initiatives/ Measures to improve energy efficiency	Evaluate/ Review data	SAP 65.83 (Mean) rising to 66.32 for occupied dwellings, based on 2016 HCS 68% of Households dependent on home heating oil (per 2016 HCS) Based on 2016 HCS, a 29.1% improvement in the energy efficiency of NI's (occupied) housing stock was recorded between 1996 and 2016
	Housing Executive Energy Staff attendance at Balmoral, Self-Build Show and Energy Saving Week Energy advice provided to 7,024 households via 0800 Freephone Energy Advice Line 6,017 Housing Executive tenants received HeatSmart energy efficiency advice Energy advice provided to 160 primary schools National Energy Action provided energy advice to a range of voluntary organisations	Improved access to energy efficiency advice (number of customers)	Market the energy efficiency message	Housing Executive staff promoted energy efficiency measures at the 2018 SelfBuild Live Belfast Show, 16-18 February 2018 Housing Executive staff promoted energy efficiency measures at the Balmoral Show, 16-19 May 2018 Housing Executive partnering the Energy Saving trusts 'Energy Week' campaign 30 Oct - 3 Nov 2017 Housing Executive participated in NEA UK wide Fuel Poverty Awareness Day 23 February 2018 Energy advice provided to 7,008 households via the Bryson Energy 0800 Freephone Energy Advice Line 6,300 Housing Executive tenants received HeatSmart energy efficiency advice Energy advice provided to 160 primary schools via the Schools Energy Educational Awareness Programme Home Energy School Poster Competition launched February 2018 National Energy Action provided energy advice to a range of voluntary organisations 16 Housing Executive staff trained in NEA Level 3, City & Guilds 6281-01 Energy Awareness qualification, March 2018£7m towards energy efficient measures

Outcomes: Improving People's Homes and Helping to Transform their Lives

Area of Activity	Position at the end of 2016/17	Indicators	Action	Progress during 2017/18
Reducing Fuel Poverty	42% (294,000) of households in NI were in fuel poverty (under the 10% definition, per 2011 HCS) 3,578 replacement boilers installed (£2.2m Investment) Installation measures for NISEP funding of almost £8m toward energy efficient measures	Measured within NI House Condition Survey Increase of affordable warmth for disadvantaged energy consumers (NI Housing Condition Survey Fuel Poverty average)	Provide fuel purchasing opportunities for low income families	22% (160,000)of households in NI were in fuel poverty (Under the 10% definition, per 2016 HCS). This is a decrease of 20 percentage points in 2011. 3,061 replacement boilers installed through the Boiler Replacement Scheme £1.9m investment. A range of installation measures for NISEP funding of almost £7m towards energy efficient measures
	27 oil clubs have been established since its inception 4,600 oil buying club members acquiring 4.9m litres (from 2014) Savings of 7% below NI average price	Implement energy efficiency schemes within social and private housing sectors	Provide fuel purchasing opportunities for low income families	27 oil clubs have been established since its inception 4,900 oil buying club members to date across 27 clubs acquiring 3.6m litres of domestic heating oil Savings of 7% below NI average price
	9,963 Affordable Warmth measures in 5,069 homes	Increase of affordable warmth for disadvantaged energy consumers (NI Housing Condition Survey Fuel Poverty average)	Implement energy efficiency schemes within social and private housing sectors	8,232 Affordable Warmth Measures in 4,148 homes. Reduction in budget from previous years.

B

Outcomes: Improving People's Homes and Helping to Transform their Lives

Area of Activity	Position at the end of 2016/17	Indicators	Action	Progress during 2017/18
Living Sustainably - Protecting the Environment	Housing Executive external Wall Insulation with High Rise Construction; Cuchulain House, Eithne House Housing Executive external cladding for 73 aluminium bungalows. Newry Retrofit Scheme for 5 dwellings on site. Research on cavity wall insulation commissioned for 1,300 public/private homes.	Increased innovation in sustainable energy efficiency	Research & install innovative measures to create more efficient homes	Housing Executive external Wall Insulation with High Rise Construction; Carnet House & Whincroft House. Housing Executive external cladding for 118 aluminium bungalows. Newry Retrofit Scheme for 5 dwellings complete. Research on cavity wall complete, awaiting the final report.
	Housing Executive apply for EU Interreg funding as Lead Partner with 6 EU partners to research energy efficiency and renewable solutions for rural dwellings Housing Executive Headquarters Building awarded ISO 14001:2015 certification	Increased innovation in sustainable energy efficiency	Seek to increase electricity consumption from renewable resources	EU Interreg funding (Euro 2m) was secured in July 2018 and commenced as the on 1st Oct 2018 as the HandiHeat Project, with the Housing Executive as Lead Partner. Housing Executive Headquarters Building maintained ISO14001:2015 accreditation

Outcomes: Improving People's Homes and Helping to Transform their Lives				
Area of Activity	**Position at the end of 2016/17**	**Indicators**	**Action**	**Progress during 2017/18**
To have a More Equal Society	Gas network extended to West throughout Londonderry, Tyrone and Fermanagh, East Down and Newry via Phoenix, Firmus and SGN Gas companies.	Reduction from 68% household reliant on oil based heating systems (HCS)	Provide measures to secure energy mix	Progress of Gas to the West, East Down and Newry via Phoenix, Firmus and SGN Gas companies.

Conclusion

This has been a productive year for Northern Ireland's energy efficiency sector. The analysis of data from the Housing Executive's 2016 House Condition Survey, has provided an evidence base, which demonstrates that there have been further reductions in energy consumption and improvements across energy efficiency, at a regional level. This compares to the position reported at the date of the previous House Condition Survey in 2011.

The continuing level of investment from the Department for Communities and the Utility Regulator, in schemes designed to alleviate fuel poverty, is also having a positive impact on the wellbeing of the wider population. It is also anticipated that, in the longer term, developments to secure an Integrated Single Electricity Market (I-SEM) will result in further downward pressure on energy prices, to the benefit of householders in Northern Ireland and the Republic of Ireland.

Fuel Poverty remains a significant issue, however, and the continuing reliance of 68% of NI households upon oil as the source of fuel for their domestic heating systems, remains a cause for concern. This issue is concentrating efforts toward finding de-carbonised heating solutions, especially in rural areas. In this context, the Housing Executive, together with academic and research partners across Northern Europe has secured a 2m Euro funding package from the European Union to investigate energy efficiency and renewable heating solutions for rural dispersed communities. This research will be conducted over the next 3 years, via the HandiHeat project.

The Housing Executive will continue to work in partnership with the Department for Communities, the Utility Regulator, local Councils and other key stakeholders, to secure further reductions in energy consumption; deliver improvements in energy efficiency and conduct research to assist in the development of de-carbonised heating solutions which will assist in the on-going effort to alleviate Fuel Poverty in Northern Ireland.

References

Dr. Brenda Boardman (1991), University of Oxford

Northern Ireland Market Review and Perspectives, 2015 - 2018

Northern Ireland Housing Executive, Cavity Wall Insulation Inspection Final Report, March 2014

The Housing Executive Corporate Plan, Regional Services, 2017/18 - 2020/21

Northern Ireland House Condition Survey 2016 (HCS)

Draft Programme for Government 2016 - 21

This document is available in alternate formats.

For further information on the HECA Progress Report please contact:

Robert Clements
Sustainable Development Unit Manager
Housing Executive
The Housing Centre
2 Adelaide Street
Belfast
BT2 8PB

Tel: 03448 920 900

Email: robert.clements@nihe.gov.uk

Housing Executive

www.nihe.gov.uk

facebook.com/housingexecutive

@nihecommunity

RS/242/01/19