Housing Executive

Insight briefing

www.nihe.gov.uk Issue 9 – April 2019

Future-proofing our Housing: *Context and Approaches*

At March 2018, it was estimated that there were around 790,000 dwellings in Northern Ireland[1]. As the majority will still be in use in 25 years' time, the Housing Executive's March 2019 *Insight* housing market intelligence exchange looked at issues and evidence on how to ensure that our housing remains fit for purpose as both the wider socio-demographic context and the needs of residents change. Delegates heard about:

- **the contextual evidence that has emerged from the 2016-based household projections for Northern Ireland;**
- **findings, based on the 2016 Northern Ireland House Condition Survey, on the energy efficiency of the housing stock across all tenures, the estimated costs to improve it, and innovative approaches being developed elsewhere; and**
- **guidance developed by housing, health and architecture professionals in Ireland to help take account of residents' mental health when designing homes.**

This Insight Briefing summarises the information that was shared and the discussions that took place, and provides signposts to related policy documents and other recent research.

2016-based Household Projections for Northern Ireland

In 2003, the Housing Executive joined the then Departments for Regional Development and Social Development and the Northern Ireland Statistics and Research Agency (NISRA) on a steering group to look at developing a systematic approach to the production of household projections for Northern Ireland. The steering group commissioned NISRA to develop a model for household projections and to produce figures that could be used in a review of the housing growth indicators that had previously been calculated for the Regional Development Strategy.

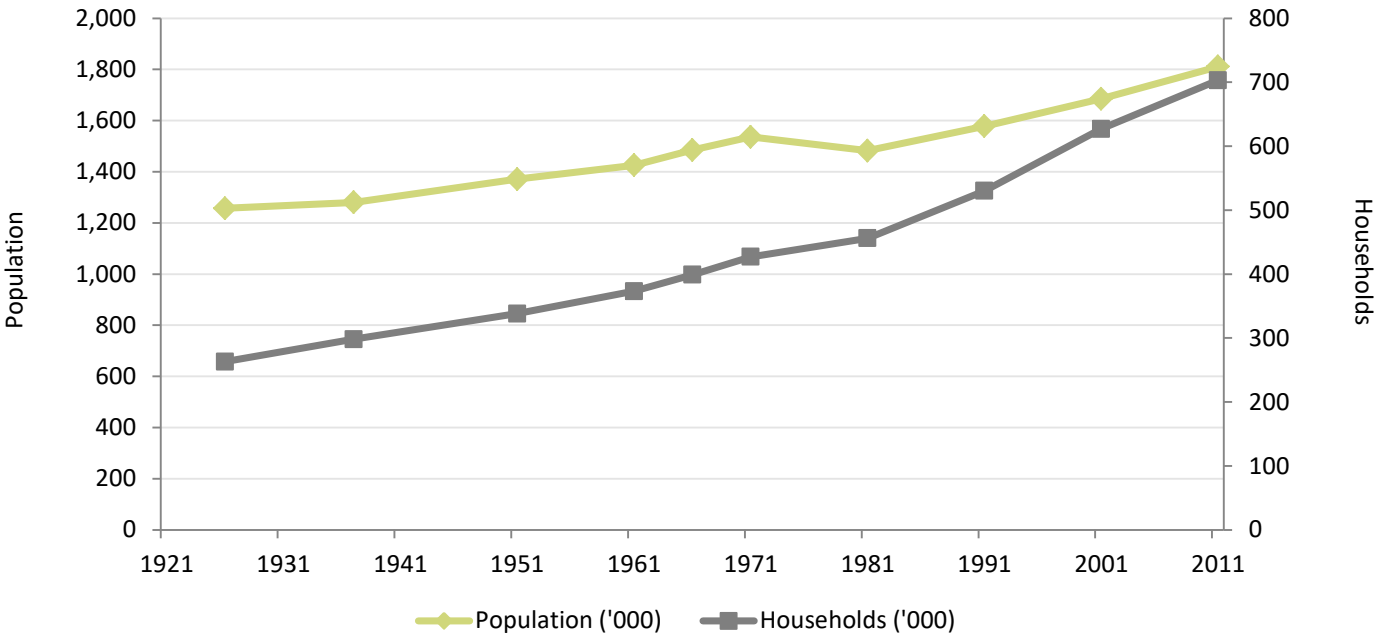
As a result, the first in what has subsequently become a series of statistical outputs on household projections for Northern Ireland was published in January 2005, setting out the 2002-based projections. Further updates were produced in 2008, 2010 and 2015, and in 2018 the Housing Executive asked NISRA to carry out a further, 2016-based update of the projections. The resulting statistical bulletin and tables were published in December 2018. Dr Jos IJpelaar of NISRA, who has worked on the Northern Ireland household projections since the 2006-based update, gave an overview of the background to the work, population projections, the household projections methodology, and the 2016-based results.

[1] *Source: LPS, in Northern Ireland Housing Statistics 2017-18*

Building blocks: Census, Population Estimates and Population Projections

Household projections are derived by using Census data to create age-sex-specific household membership rates, which are then applied to the population projections. The Census is the only official estimate of the number of households in Northern Ireland, and Census outputs indicate that over the last century the number of households increased more rapidly than the overall population (Figure 1). As a result, average household size has gradually fallen, from 4.54 in 1926 to 2.54 in 2011.

Figure 1: Total population and number of households ('000s) in Northern Ireland



Using the 2011 Census data on population by age and sex, and taking account of births, deaths and migration, NISRA has produced estimates of the population as at 30 June in each subsequent year. Assumptions about fertility, mortality and migration are then applied to these Mid-Year Population Estimates to produce population projections on a biennial basis; the most recent 2016-based Population Projections, which cover the period from 2016-2041, were used to calculate the 2016-based household projections. Table 1 summarises some of the key components of recent and projected population change that have been calculated by NISRA. One notable feature of the projected trends is that older people are likely to outnumber children from 2028 onwards.

Older people are likely to outnumber children from 2028 onwards.

Table 1: Population change 1971-2017 and projected population change 2017-2063, Northern Ireland

Group	Population change 1971-2017	*Projected* population change 2017-2063
Total population	**increased by 21%** (330,000), *from 1.540 million to 1.871 million*	projected to **increase by 8%** (147,000), *from 1.87 million to 2.018 million*
Children	**decreased by 19%** (93,000), *from 483,000 to 390,000*	projected to **decrease by 8%** (29,000), *from 390,000 to 361,000*
People of working age	**increased by 32%** (286,000), *from 892,000 to 1.117 million*	projected to **decrease by 6%** (71,000), *from 1.117 million to 1.107 million*
Older people	**increased by 83%** (137,000), *from 166,000 to 303,000*	Projected to **increase by 81%** (247,000), *from 303,000 to 550,000*

Household Projections

The projected population can be split by residential type into those living in *households* and those living in *communal establishments* such as students' halls of residence, army barracks, prisons and residential homes. The 2016-based analysis indicates that, due to the ageing population, the number of people living in communal establishments is projected to rise at a faster rate than the population in other residences. Even so, by 2041 the population in communal establishments is only expected to account for 1.5% of the total projected population. After the number of people living in communal establishments has been projected, a number of other steps are then employed to arrive at the projected number of households. Figure 2 summarises the process applied for each year of the projection period.

Figure 2: From projected population to projected households: the main steps in the process

Total projected population

minus

Projected population in communal establishments

=

Household population

↓

Allocate children to households with 1 or 2+ adults, by size

↓

Add adults (by age and sex) to households with children

↓

Allocate remaining adults to childless households, by size
(following 2001-2011 census trend)

↓

Divide total people in households by respective household size
(e.g. 100 people in 4-person households = 25 no. 4-person households)

=

Number of households by size (and type)

↓

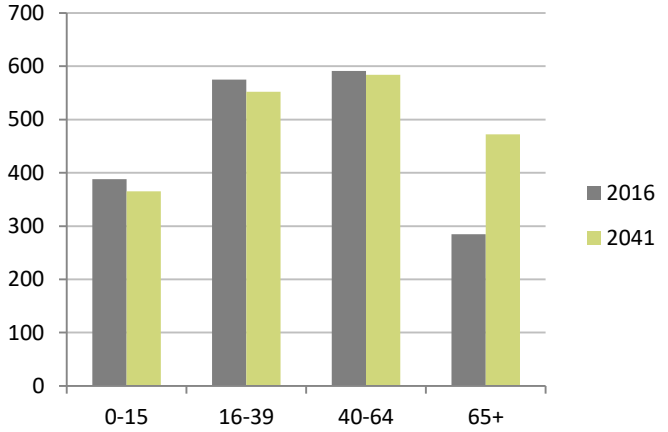
Aggregate the projected number of households by size

=

Total number of households

Having outlined the methodology used to derive the household projections, Jos went on to highlight some of the key 2016-based findings. The total population is projected to rise by 7.6% between 2016 and 2041, with the household population growing by 7.3%, but the communal population set to increase at a much greater rate (33.5%).

Figure 3: Projected household population by age, 2016 and 2041 ('000s)



When analysed by broad age bands, the greatest change in the overall household population is the growth in the number of people aged 65 and over (Figure 3). By 2041, the number of people aged 65 and over living in households is projected to rise by 186,800 (65.5%). This likely change, and the general ageing in the population that it exemplifies, is of importance in the household projections, because children and their parents/siblings tend to live in relatively larger households, while older members of the population predominantly live in one- or two-adult households.

Overall, it is projected that the number of households will grow by 43,300 (6.0%) between 2016 and 2026, and by 88,700 (12.2%) between 2016 and 2041.

Household Type

Household projections are derived by dividing the projected total population living in each household type by the average household size. Table 4 indicates that, between 2016 and 2041, the numbers of each of the household types *without children* is projected to grow, while the number of households *with children* is projected to decrease.

Table 4: Projected households by household type, 2016-2041

Household Type	Projected Households			Projected change 2016-2041	
	2016	2026	2041	Households	%
One adult without children	201,700	219,000	239,300	37,600	18.6
Two adults without children	197,700	220,600	251,000	53,300	27.0
Other households without children	109,900	113,400	120,400	10,500	9.6
One adult with children	46,600	45,900	43,300	-2,700	-5.9
Other households with children	169,700	169,500	159,800	-10,000	-5.9
All households	**725,100**	**768,500**	**813,800**	**88,700**	**12.2**

Some of the key trends suggested by the *household type* projections are that:

- Continuing improvement in life expectancy (particularly for males) means that more couples are likely to age together;
- Nonetheless, the overall numbers of both females and males living alone are projected to increase over the 25 years from 2016, with the greatest rates of growth for both being among those aged 65 and over;
- While more women than men will still be living alone in 2041, the difference will have declined substantially: in 2016 it was estimated that there were 12,000 more women of all ages living alone than men, but by 2041 the difference is projected to fall to 5,700;
- In 2016, around half (51%) of the estimated 122,500 women living alone were aged 65 or over; the proportion is projected to increase to around 58% by 2041. Of around 95,000 males living alone in 2016, a lower proportion (29%) were aged 65 or over; however, the number in this group is projected to increase by around 60% between 2016 and 2041, to 44,000;
- By 2041, people aged 65 and over are projected to account for just under half (48%) of all those living in one-adult households without children;
- While the number of households with children is projected to increase by 4,700 between 2016 and 2022, the projections from 2022 onwards point towards a fall in the number of households of this type, and therefore the overall picture between 2016 and 2041 is projected to be one of decline.

Household Projections for Local Government Districts

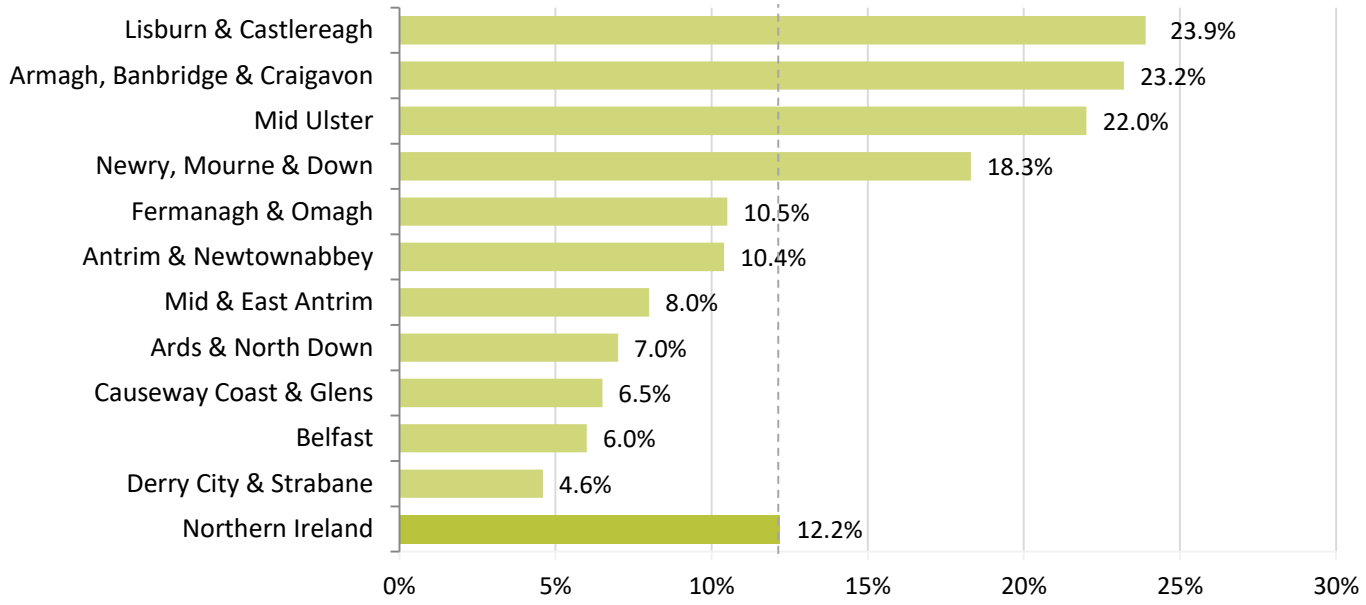
As well as providing analysis at Northern Ireland level, the 2016-based calculations incorporate projections on the number of households by type and size at local government district (LGD) level. Table 5 and Figure 4 show that while

Table 5: Projected household change by Local Government District, 2016-2041

Local Government District	Projected Households				Projected change	
	2016		2041			
	No.	% of NI	No.	% of NI	No.	%
Antrim & Newtownabbey	55,200	7.6	60,900	7.5	5,700	10.4
Ards & North Down	65,900	9.1	70,500	8.7	4,600	7.0
Armagh, Banbridge & Craigavon	79,200	10.9	97,600	12.0	18,400	23.2
Belfast	143,500	19.8	152,100	18.7	8,600	6.0
Causeway Coast & Glens	55,200	7.6	58,800	7.2	3,600	6.5
Derry City & Strabane	57,500	7.9	60,200	7.4	2,700	4.6
Fermanagh & Omagh	42,900	5.9	47,400	5.8	4,500	10.5
Lisburn & Castlereagh	55,300	7.6	68,500	8.4	13,200	23.9
Mid & East Antrim	55,600	7.7	60,100	7.4	4,500	8.0
Mid Ulster	50,100	6.9	61,200	7.5	11,100	22.0
Newry, Mourne & Down	64,600	8.9	76,500	9.4	11,800	18.3
Northern Ireland	**725,100**	**100.1**	**813,800**	**100.0**	**88,700**	**12.2**

all LGDs are projected to have growing numbers of households between 2016 and 2041, the rates of growth vary. The projected percentage increase in the number of households ranges from 4.6% in Derry City & Strabane district to 23.9% in Lisburn & Castlereagh.

Figure 4: Projected percentage change in households by LGD, 2016-2041



As in Northern Ireland as a whole, the LGD level analysis shows that the greatest projected growth is in the number of *one- and two-adult households without children* and in most LGDs – with the exception of Antrim & Newtownabbey, Causeway Coast & Glens and Derry City & Strabane – projected growth in the number of two-adult households without children *exceeds* that of one adult households without children. In Mid Ulster, for example, the number of one- and two-adult households without children is projected to increase by 28.4% and 45.4% respectively between 2016 and 2041.

Jos noted that the projected change in the number of households by both household type and size over the period from 2016 to 2041 varies between districts; more information is available in the full statistical bulletin and tables.

Comparisons with 2012-based Household Projections

In conclusion, some broad comparisons were made with the 2012-based Household Projections. As there was insufficient evidence to justify diverting from the 2012-based methodology, the same approach was retained for the 2016-based analysis. Over the horizon to 2026, the 2016-based analysis results in a slightly lower overall projected number of households (768,500) than the 2012-based analysis (772,900). With no change in the methodology, it appears that the main reason for this is the lower population base. At sub-regional level, the variations between the 2012- and 2016-based projections are marginal, as indicated in Table 6.

Table 6: 2012-based and 2016-based household projections at LGD level, 2026

Local Government District	2012-based ('000)	2016-based ('000)	Difference ('000)	Local Government District	2012-based ('000)	2016-based ('000)	Difference ('000)
Antrim & Newtownabbey	58.7	58.2	-0.5	Fermanagh & Omagh	46.0	45.4	-0.6
Ards & North Down	69.1	69.3	0.2	Lisburn & Castlereagh	60.9	61.3	0.3
Armagh, Banbridge, Craigavon	87.5	87.3	-0.2	Mid & East Antrim	57.9	58.4	0.4
Belfast	148.4	146.4	-2.0	Mid Ulster	55.8	55.1	-0.6
Causeway Coast & Glens	57.5	57.6	0.1	Newry, Mourne & Down	71.6	70.1	-1.5
Derry & Strabane	59.6	59.4	-0.2	**Northern Ireland**	**772.9**	**768.5**	**-4.5**

Household Projections: Conclusions

The Housing Executive commissioned the 2016-based Household Projections because this data is fundamental to any estimates of the future need and demand for housing in Northern Ireland. While ***population projections*** are an important source of information on the level and location of future housing requirements, it is the rate of ***household formation*** that is the more important driver of the housing market.

However, it is important to note that the projections are **not** forecasts. They are extrapolations based on detailed analysis of data and trends to date, but are policy-neutral, and do not attempt to predict the impact that future government and local government policies or changing economic circumstances might have on household formation. Nevertheless, they do provide a robust estimate of the future number, size and type of households in Northern Ireland and must be seen as a key starting point for estimates of the future need and demand for housing in the private and social sectors.

The Existing Housing Stock: Innovation and the Cost of Improving Energy Efficiency

Key findings from the 2016 Northern Ireland House Condition Survey, which was the twelfth such survey carried out by the Housing Executive since 1974, were shared at the autumn 2018 Insight event. The survey includes housing of all types and tenures across Northern Ireland, provides a wealth of information on the stock and the households living in it, and enables analysis of a number of key measures including:

- → **unfitness**
- → **state of repair**
- → **fuel poverty**
- → **performance against the Decent Homes Standard and Housing Health and Safety Rating System, and**
- → **energy efficiency (SAP and Energy Efficiency Rating bands)**

Further analysis specifically relating to energy efficiency had subsequently been carried out, and Matthew Custard of BRE Housing, provided an overview of the wider context of national and international policy developments and targets, how Northern Ireland's housing stock performs on energy efficiency, and some examples of approaches to improving energy efficiency in the housing stock elsewhere.

Context: National and International Emissions Targets

It has increasingly been acknowledged that action needs to be taken as soon as possible to minimise the potential future impacts of rising global temperatures. To date, more than 180 countries have ratified the Paris Agreement, which aims to strengthen the global response to the threat of climate change by keeping a global temperature rise this century well below 2 degrees Celsius above pre-industrial levels and pursuing efforts to limit the temperature increase even further, to 1.5 degrees Celsius. The Paris Agreement requires participating nations to make their best efforts towards this goal through 'nationally determined contributions' (NDCs). The EU has a combined NDC under the agreement to reduce greenhouse gas emissions by at least 40% by 2030 (compared to 1990 as baseline).

At UK level, the Climate Change Act 2008 commits the UK government by law to reducing greenhouse gas emissions by at least 80% of 1990 levels by 2050; this includes reducing emissions from Scotland, Wales and Northern Ireland, which account for around one fifth of the UK's emissions. In Northern Ireland, the 2011-2015 Programme for Government set a target of continuing to work towards reducing the region's greenhouse gas emissions by at least 35% (compared with 1990 levels) by 2025.

The EU has a combined 'nationally determined contribution' under the Paris Agreement to reduce greenhouse gas emissions by at least 40% by 2030.

The UK Government has committed to reducing greenhouse gas emissions by at least 80% by 2050.

The Role of Housing in meeting Emissions Targets

The Clean Growth Strategy, which was published in October 2017, set out the UK Government's proposals for decarbonising all sectors of the UK economy through the 2020s. The document notes that, while improved building and products standards, uptake of insulation and other energy efficiency measures, and greater awareness of potential energy savings at UK level have led to a reduction of around 17% in average household energy consumption since 1990, homes still account for 13% of the UK's emissions. The Strategy includes a number of policies and proposals in relation to improving homes and reducing bills, some of which are outlined in Figure 5.

Figure 5: Housing-related policies and proposals included in the UK Government Clean Growth Strategy

Upgrade one million homes in GB through the **Energy Company Obligation** (ECO) scheme, under which obligated suppliers (i.e. those who meet a number of thresholds) must promote measures which improve the ability of low income, fuel poor and vulnerable households to heat their homes.

All **fuel poor homes to be upgraded to EPC band C by 2030**, and as many homes as possible across the entire housing stock to reach a similar standard by 2035, where practical, cost-effective and affordable.

As many **private rented homes** as possible **to be upgraded to EPC band C by 2030**, where practical, cost-effective and affordable, and consideration to be given to how **social housing** can meet similar standards on the same timetable.

Ensure every home to be offered a **smart meter** by the end of **2020**.

Provide support for innovative **low carbon heat technologies** in homes and businesses, such as heat pumps, biomass boilers and solar water heaters.

Phase out installation of high carbon fossil fuel heating in new and existing off-gas grid residential buildings (mainly in rural areas) during the 2020s, starting with new homes.

More recently, in February 2019, the Committee on Climate Change published a major report, *UK Housing: Fit for the Future?* , which highlighted the challenges faced in making the required improvements to the housing stock. The Committee, an independent statutory body established under the Climate Change Act 2008 to advise central and devolved government on emissions targets and report to Parliament on progress in reducing greenhouse gas emissions and preparing for climate change, noted that:

- → We cannot meet our climate objectives without a **major improvement** in UK housing
- → We will not meet our targets for emissions reduction without near complete **decarbonisation** of the housing stock
- → The housing stock is **not well-adapted** for the current or future climate

The *Fit for the Future?* report emphasises that, in order to meet emissions targets, urgent change is needed on a number of issues including retrofitting the existing stock and the approaches that should be taken to new build properties in future. Arguably the most headline-grabbing recommendation was that by 2025 at the latest, no *new homes* should connect to the gas grid and that they should instead have low-carbon heating systems such as heat pumps and low-carbon heat networks. Matthew commented that electric heating could be a solution, but only if its generation is itself low-carbon, and while much can be done with carbon-free energy sources such as wind, there are challenges that need to be considered, for example the intermittency of supply.

The drive to aim for increasingly challenging emissions targets also raises questions about the most appropriate policy approaches on heating. A common strategy has been, first, to reduce the energy demand (for example through insulation), then improve the efficiency of the dwelling by using more energy efficient products and, finally, to provide renewables – where appropriate – to generate heat or power. Matthew noted that the question, in light of the greater impetus towards *de-carbonising* heat, is how far we should go in improving the efficiency of the fossil fuel technologies already in the market.

How far should we go in improving the energy efficiency of the fossil fuel technologies already in the market?

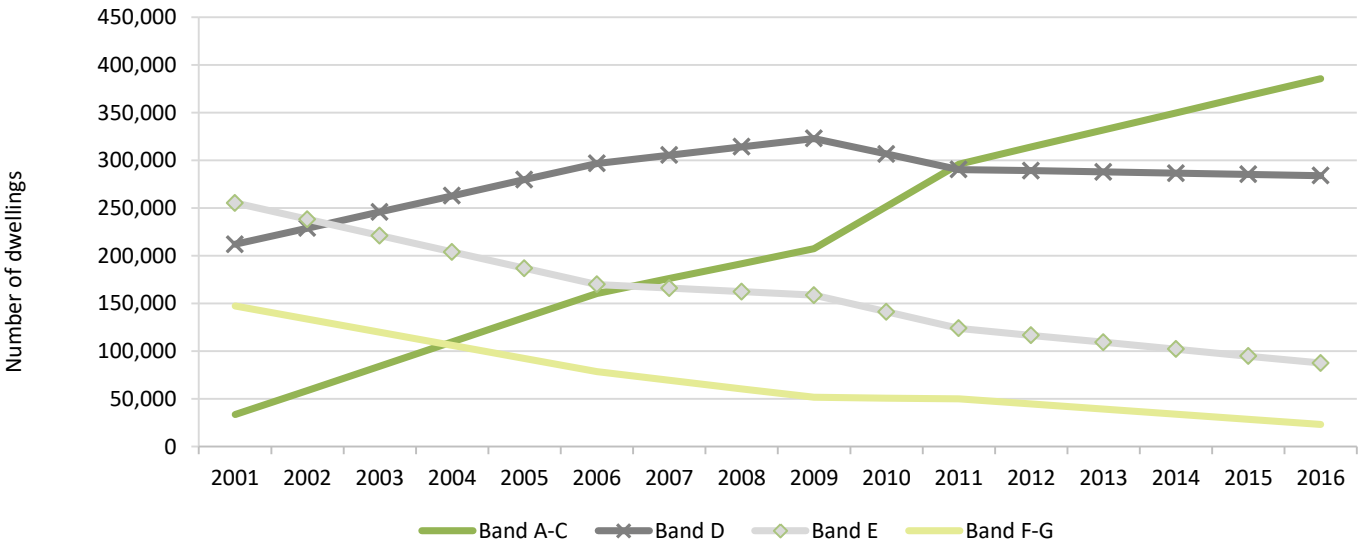
Where are we now? Evidence from the 2016 Northern Ireland House Condition Survey

The Northern Ireland House Condition Survey involves a comprehensive, non-intrusive physical survey of each sampled dwelling and an interview with its occupants, and it therefore provides rich data on the housing stock in the region and the households living in it. In 2016, just under two thirds (63%) of dwellings were owner occupied, while similar proportions (17% and 16% respectively) were rented either privately or in the social sector, and around four per cent were vacant. Furthermore, the total estimated dwelling stock on which the survey is based has increased over time, from around 455,500 dwellings in 1974 to 705,000 in 2006 and 780,000 in 2016. The ongoing additions to the stock, and substantial programmes to replace unfit dwellings during the 1970s and 80s mean that Northern Ireland has a relatively new dwelling stock; around 40% of homes in the region were built after 1980, compared with around one quarter (24%) in England. These characteristics are important because:

- → Different types of property owners (owner occupiers; private or social landlords) may have different capacity and incentive to invest in the energy efficiency of their dwellings, and different strategies and programmes may be required for each group, and sub-groups within them.
- → It is a challenge in itself to reduce the greenhouse gas emissions from an *increasing amount of dwellings*.
- → Northern Ireland has newer dwellings which should be more energy efficient – but also reduces the scope to achieve savings and meet emissions targets through simple energy efficiency measures.

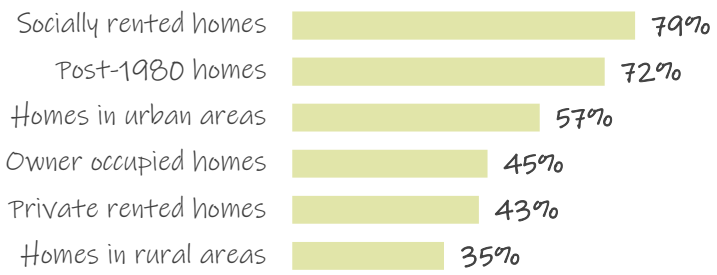
The energy efficiency of dwellings is measured using the **Standard Assessment Procedure** (SAP). SAP takes account of a range of factors that contribute to energy efficiency, such as materials used for construction, the efficiency and control of heating systems and fuel used for space and water heating. The higher the SAP score, up to a maximum of 100, the higher the efficiency of the dwelling. For ease of understanding, SAP energy efficiency ratings (EER) are often reported using an A-G banding system. EER band A represents low energy costs (i.e. the most efficient band), while EER band G is the least efficient band, with the highest energy costs. Figure 5 illustrates the change since 2001 in the composition of Northern Ireland's housing stock by EER bands. By 2016, around half of the stock was in bands A-C (although most of these were in Band C).

Figure 5: Number of dwellings by Energy Efficiency Rating Band, Northern Ireland, 2001-2016



Looking in more detail at the 2016 House Condition Survey findings, Figure 6 shows that the proportion of dwellings achieving an energy efficiency rating in Bands A-C varies by age, location and tenure. The findings are not surprising, but they once again highlight that a range of strategies and solutions need to be adopted if Northern Ireland is to work towards or contribute to the wider UK targets such as those set in the Clean Growth Strategy and the *Fit for the Future?* report.

Figure 6: Percentage of homes with energy efficiency rating A-C



The Cost to Make Dwellings in Northern Ireland Energy Efficient

In light of this 2016-based evidence on the housing stock, Matthew went on to outline findings from a report produced for the Housing Executive by BRE on the estimated costs associated with improving the energy efficiency of dwellings in the Northern Ireland housing stock. BRE carried out analysis based on applying eight different energy improvement scenarios (Table 7).

Table 7: Modelled energy improvement scenarios applied to 2016-based House Condition Survey data for cost analysis

Scenario	Description
Heating 1	• Dwellings with central heating are given a condensing boiler if one is not already installed. • Where a water cylinder is already present in the dwelling, a standard condensing boiler is installed; otherwise a condensing-combination boiler is installed. • Where mains gas is available, a gas condensing boiler is installed; otherwise an oil condensing boiler is installed.
Heating 2	• Dwellings with non-central heating are given central heating with a condensing boiler, on the same basis as above.
Heating 3	• Combines *heating scenarios one and two*.
Insulation 1	• Dwellings with unfilled cavity walls (partial or full) with a U-value of >0.6 W/m^{2}K are given cavity wall insulation.*
Insulation 2	• Dwellings with lofts and <=150mm of loft insulation are given 270mm of loft insulation
Insulation 3	• Combines *insulation scenario one and two*, to give dwelling cavity wall and/or loft insulation where appropriate.
Double glazing	• Dwellings with single glazing or pre-2006 double glazing, are improved to modern double glazing, with a U-value of 1.6 W/m^{2}K.
All	• Combines *heating scenario three* with *insulation scenario three* and *double glazing*, to give dwellings all appropriate heating and insulation measures.

** The U-value is a measure of the thermal transmittance of a material. More information on this and other technical details of the calculations is available in the full report.*

Although there is no set threshold above which a dwelling is considered to be 'energy efficient' and in need of no further improvement, a SAP rating of 65 (which falls at the higher end of EER band D) is often used as an indicator of an energy efficient dwelling. BRE's analysis therefore looked at *the proportion of the housing stock taken above a SAP rating of 65 by the various improvement scenarios*. It is worth nothing that the mean SAP rating of all dwellings in Northern Ireland is already over 65 and more than 60% of dwellings already achieve this level.

Nevertheless, under the criteria applied by BRE's analysis, it was estimated that a substantial proportion of dwellings in Northern Ireland (632,000 of the 780,000 in 2016) would be in a position to receive at least one of the improvement measures. Double glazing was the most common single measure and was relevant for 455,000 dwellings, of which 50,000 were single glazed and the remainder were considered to require an upgrade on the basis of having double glazing installed before 2006. The modelling exercise suggested that the energy efficiency of 457,000 dwellings could be improved through heating scenarios: 436,000 dwellings through Heating Scenario 1, and a further 21,000 by Scenario 2. Across both scenarios, 59 per cent of the improvements were estimated to be relevant for oil fired central heating systems, and 41 per cent for systems run on gas.

Table 8 summarises the key findings from the analysis in terms of the impact on SAP ratings and the estimated costs of the various energy improvements. Some of the key points are that:

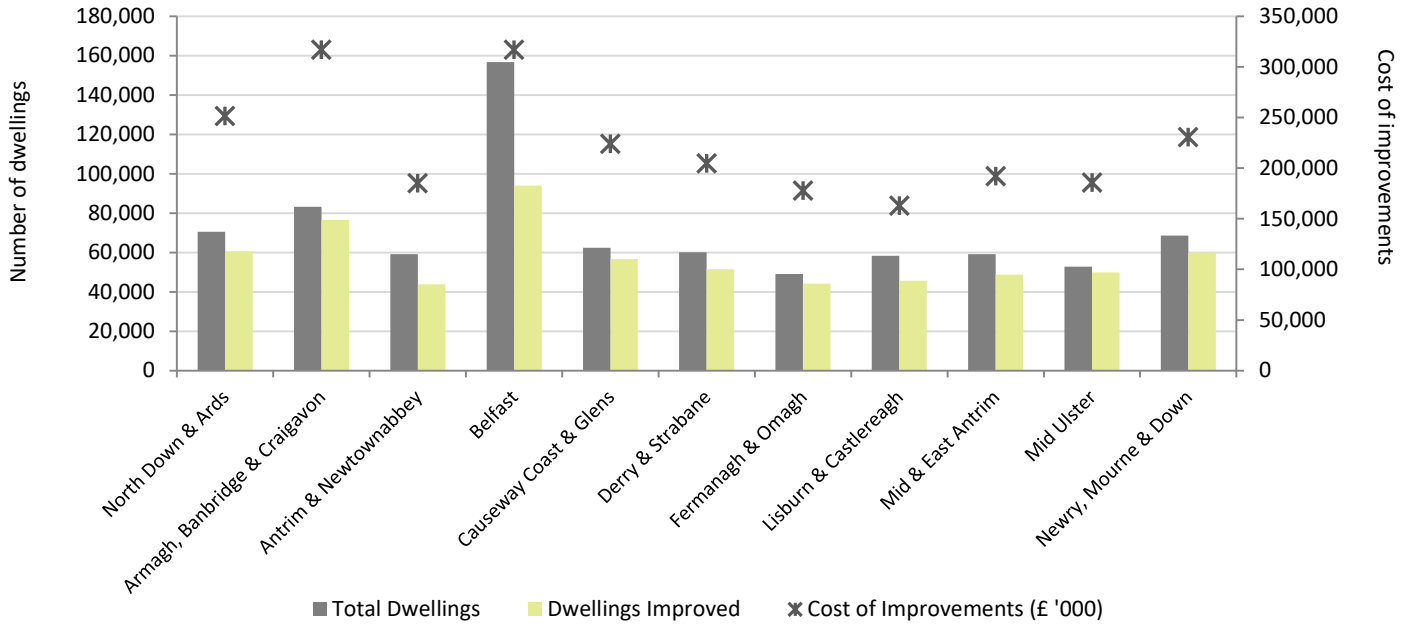
- → Including all appropriate improvement measures results in an estimated increase in the mean SAP rating of eight SAP points, from 65.8 to 73.8. A SAP rating of 73.8 would fall within EER band C.
- → Applying all eligible improvements results in a significant increase in the number of dwellings achieving a SAP rating of more than 65, from 61.8% to 91%. Of the individual improvement scenarios, Heating Scenario 1 (installing a condensing boiler where central heating exists) accounts for most of this increase.
- → The cost of applying all relevant improvements to the housing stock is around £2.4 billion. Of this, Heating Scenario 1 has the highest associated total cost of an individual measure, partly due to the high number of dwellings (56%) that would benefit from this measure.
- → Overall, the figures indicate that investment of around £4,000 per dwelling in the homes that would benefit most from improvements would lead to a *mean* improvement of 10 SAP points.

Table 8: Modelled outcomes under each energy improvement scenario

Scenario	Mean SAP rating	% of dwellings achieving SAP >65	Cost of improvements applied (£'000s)	Mean Cost (improved only) (£)	Mean Cost (all dwellings) (£)
Base (Do nothing)	65.8	61.8			
Heating 1	71.3	84.2	1,483,902	3,401	1,902
Heating 2	66.4	62.6	102,984	5,000	132
Heating 3	71.9	85.0	1,586,885	3,473	2,034
Insulation 1	66.3	63.8	76,312	1,000	98
Insulation 2	66.5	64.0	49,072	225	63
Insulation 3	67.0	65.9	125,385	482	161
Double Glazing	67.2	66.5	731,615	1,609	938
All	**73.8**	**91.0**	**2,443,885**	**3,869**	**3,133**

Finally, the report also provides information on the number of dwellings that would require energy improvements under the 'All' scenario – and the associated total costs – at LGD level (Figure 7). At Northern Ireland level, around 81% of all dwellings would benefit from at least one of the eight improvement scenarios. In most District Council areas, with the exception of Belfast (60%), Antrim & Newtownabbey (74%) and Lisburn & Castlereagh (78%), the proportion was higher than the Northern Ireland average. The pattern of overall costs was generally in line with the amount of dwellings with improvements applied (figures are available in the full report).

Figure 7: Total dwellings, dwellings improved and cost of improvements under 'All' scenario, by LGD



Innovation and Approaches elsewhere

Much progress has been made in home energy efficiency and associated reductions in emissions. However, in order to meet the UK's climate change targets, Matthew noted that it would be necessary to improve nearly every home in the UK with energy efficiency measures at a rate of more than *1.5 homes every minute until 2050*. And to carry out that work would require a 'whole house' approach, rather than the type of incremental improvements that will necessitate further retrofits because all the issues haven't been addressed.

The presentation concluded with an overview of some projects that have explored ways in which the necessary savings can be achieved in 'one hit', while also considering the financing of the works and the impact of the scale of intervention on both the dwelling and its residents.

Arbed 	Arbed was a strategic energy performance investment programme run by the Welsh Assembly Government. It focused on 'whole-house' thinking and tried to work on a community or street-by-street approach to provide social benefits and drive down the unit cost. The Programme was delivered in two phases. Phase 1 focused on Registered Social Landlords in regeneration areas. Funding provided by the government was used to leverage similar levels of funding from the landlords and energy companies. More than 6,000 homes were retrofitted, with the main interventions being solid wall insulation, PV, solar thermal, heat pumps and fuel switching. Phase 2 treated a further 6,500 properties and a third phase runs until 2021. An evaluation of Arbed 1 was produced by Cardiff University.
EnerPHit 	The Passive House Institute has developed the EnerPHit approach for certified energy retrofits with Passive House components. It is based on the PassivHaus approach developed for new build, but takes account of the fact that, in retrofits, certain elements – such as the orientation of the dwelling – cannot be adjusted. To comply with EnerPHit the dwelling must achieve: • A space heating and cooling demand of 25kWh/m^2/year (compared to the Passivhaus standard of 15kWh/m^2/year); and • An airtightness performance of 1.0 air change per hour (by comparison with 0.6 for PassivHaus). (The Building Regulations for new homes require between 5 and 15, according to the Chartered Institution of Building Services Engineers) To give an indication of the challenge, the primary energy target for PassivHaus is 60 kWh/m^2/year, while for EnerPHit it would probably be in the region of 100. The average for the Northern Ireland stock (using SAP default assumptions) is in the region of 270 kWh/m^2/year.
Energie sprong 	Energiesprong is an innovative approach to deep retrofit pioneered in the Netherlands. It achieves a near net-zero energy property with a performance guarantee for 30 years. The performance guarantee allows the housing organisation to charge the occupier a fee, which creates an income and this, alongside the savings in maintenance and management costs, covers the cost of the work, which incorporates: • a new thermally-efficient wall envelope created with prefabricated panels manufactured offsite • PV built into a thermally-insulated roof cassette, also manufactured off-site • air source or ground source heating • removal of gas to create an electricity-only property.

New website!

The Housing Executive has updated its website, with a simpler, easier to navigate structure and a host of new features. You can still access the site at www.nihe.gov.uk. To find research reports, click on 'Working With Us' and then select the 'Research' option and 'Our Research'. Unfortunately links to research content embedded in previous online reports may no longer work.

Taking Account of Wellbeing: Design for Mental Health

Having looked at the evidence on the existing housing stock in Northern Ireland and the type and level of investment that might be needed to make sure that it is fit for the future – both in terms of the future size and structure of households and the challenges relating to energy efficiency and conservation – attention then turned to look at ways that housing providers and other professionals can seek to ensure that housing meets current and future needs, in the area of residents' health – particularly *mental* health.

Isoilde Dillon of The Housing Agency and Áine O'Reilly, OT Manager with Dublin South Central Mental Health, gave an overview of guidance on Design for Mental Health which was produced by The Housing Agency and Health Service Executive. The guidelines identify ways in which homes can be designed to help overcome the barriers to independent living experienced by people diagnosed with certain mental health conditions. The guidelines offer a perspective on housing type and design for people considering alternatives to congregated settings.

Background: Why consider mental health?

It is estimated that around one in four people experience mental health difficulties at some stage in their lives. In most cases these are temporary, but a small minority of people have a well-defined set of difficulties that make activities of daily living more demanding. As a result, they experience difficulties with community living that are more enduring and debilitating.

For this group of people, difficulties with independent living are caused by a range of factors, including features of the condition they live with and the treatments involved, as well as features of the physical and social world that surrounds them.

The World Health Organisation (WHO) describes 'mental health' as: "A state of wellbeing in which the individual realises his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community."

Occupational Therapy professionals have found that some people who use mental health services struggle to cope in their homes, while others live with parents into adulthood and middle age or live in shared accommodation provided by the health service. In light of opportunities that arose in Ireland a number of years ago to provide new accommodation for people who use mental health services, and alongside wider de-institutionalisation policies, a group of housing and health professionals came together to look at the role of design in facilitating mental wellbeing. They quickly found that there was little guidance available but, recognising that a well-designed environment can support people with a variety of physical and cognitive disabilities by compensating for impairments and maximising independence and integration into the community, they set out to consider design-orientated solutions to some of the challenges that people experience with independent living.

Developing the Guidance

Terms of Reference

- To **identify** difficulties in independent living and environmental influences on wellbeing.
- To **investigate** how design can support people by compensating for disability, maximising independence and facilitating integration into the community; and how assistive technology can support people.
- To **develop** practical design and technology solutions.

The team made a wide range of experts and stakeholders aware of the Terms of Reference for the project and drew on a broad sphere of expertise, working with different people and organisations on different issues. They also identified some of the key barriers to independent living:

- **Cognitive** (attention, memory, executive functioning, information processing speed)
- **Physical** (decreased stamina, dexterity restrictions)
- **Social** (economic status, social life, violence, social stigma)

The aim of the guidance was therefore to address specific barriers and help develop a range of person-centred design responses. In some cases this can come down to very practical matters such as:

- outdoor spaces/gardens that are less likely to become overgrown if the resident is not in a position to maintain them;
- providing technological support that can help prevent running out of fuel for heating;
- ensuring that appliances and security measures are easy to use, so that the person living in the accommodation remains as safe, secure and healthy as possible and is confident in managing their home;
- designing homes that blend with the surrounding neighbourhood to reduce the vulnerability of residents.

The guidance looks at three main design categories, and sets out detailed principles and considerations for each of the spaces and detail designs that it covers (Figure 8). In doing so, it aims to:

→ help people understand the difficulties people have and how to address these difficulties through design;
→ provide design solutions when considering housing needs for people with mental health conditions; and
→ give an understanding of how person-centred design can help people with specific difficulties.

Figure 8: Approach to providing Guidance – the home, spaces within it and detail design

<table>
<tr><td colspan="2">The Home
Location; type of dwelling</td></tr>
<tr><td colspan="2">Principle: location can influence independence, security, social inclusion and sense of belonging</td></tr>
<tr><td colspan="2">Considerations:
• Social: loneliness and isolation is a major cause of relapse
• Environmental: noisy locations may be difficult for some
• Physical: some people experience poor stamina due to weight gain, inactivity or smoking
• Cognitive: a person may have difficulty engaging with their community

Recommendations:
• Accommodation should fit in with neighbours
• Locally based awareness campaigns can help, where appropriate</td></tr>
<tr><td>Spaces within and around the home
Hallways, living areas, kitchens, bathrooms and WCs, bedrooms, gardens and outside the dwelling
(e.g. hallways)</td><td>Detail design
Windows and natural lighting; internal lighting; electrical; ventilation; sound; colour; storage; appliances; fire safety; assistive technology
(e.g. internal lighting)</td></tr>
<tr><td>Principle: provide clear, simple, well lit, durable circulation routes</td><td>Principle: Achieve optimum levels of general lighting in each room for sight but also to support general well-being</td></tr>
<tr><td>Considerations:
• Cognitive: A person may have difficulty sorting post and organising coats and bags
• Physical: A person may have poor vision
• Social: A person may be socially vulnerable
• Environmental: narrow hallways may have obstructions

Recommendations:
Consider layout, surfaces, lighting, colour and contrasts, security and ironmongery</td><td>Considerations:
• Cognitive/sensory: a higher proportion of people with mental health issues have difficulty with visual acuity caused by visual processing issues or other visual problems;
• Physical: if a person has a history of trips and falls, providing additional lighting might help

Recommendations:
• Incorporate dedicated task lighting in addition to general lighting (and consider wiring task lighting to a separate wall switch)
• Consider sensor-activated lighting.</td></tr>
</table>

Administrative Data Research Centre Northern Ireland (ADRC-NI): Introduction and Overview

The final presentation of the day was delivered by Deborah Lyness, Head of Demographic Statistics at NISRA, who provided an overview of the Administrative Data Research Centre. ADRC-NI was formed as part of the wider UK ADR Network, an initiative funded by the Economic and Social Research Council (ESRC), with total funding to the value of £34m from 2013 until September 2018. £6.3m of this funding was for the Northern Ireland Centre, a partnership between Queen's University, Ulster University and NISRA. The core aim of the initiative is to provide access to de-identified administrative data routinely collected by Government departments and to facilitate linkage of this data to provide opportunities for innovative policy-relevant research.

Safety and security is a key priority of the partnership and essential to get the necessary buy-in and commitment from Departments. Accordingly, ADRC-NI operates five safety principles:

Safe projects	All projects are scrutinised by an approvals panel and have ethics and Privacy Impact Assessments (PIA)
Safe people	All researchers are security cleared, approved and undertake mandatory training. All NISRA staff are trained on the Data Protection Act (DPA) and have higher security clearance
Safe data	All research projects have a PIA completed and datasets are assessed for disclosure prior to being accessed by researchers
Safe environment	Researchers are supervised at all times in an Accredited Secure Research Room
Safe outputs	All outputs are assessed for disclosure risk prior to release

During the first funding phase, 12 data providers (NISRA, several government departments and a number of arms-length bodies) gave commitment in principle for access to 22 datasets. This enabled projects to be run on a broad range of areas including:

- Mothers in employment in Northern Ireland – sources of variation (individual, household and area factors);
- Exploratory analysis of factors associated with decreased representation in higher education; and
- Social Factors influencing uptake of free eye examinations in Northern Ireland.

A new phase of funding commenced in October 2018, with £5million secured from the ESRC for Northern Ireland over a 30-month period ending in March 2021. The funding is split between NISRA (£2.65m) and the Universities (£2.35m), although NISRA will continue to work in partnership with Queen's and Ulster University as well as ONS and the wider UK partnership.

The second phase of the partnership brings a switch in emphasis, with the ESRC seeking to secure a long-term, sustainable and more efficient model which, among other things, will see all research underpinned by **Strategic Impact Programmes (SIPs)** – collections of compatible research projects that serve a public good and deliver impact for data owners, policy, civil society and business. There is also a wider research capacity; while the work was previously led by academics the team now includes internal government researchers , so the funding includes provision for NISRA-led research in the form of two dedicated statisticians who are already working on securing data for the first projects.

Six Strategic Impact Programmes are being developed in Northern Ireland, five by the Universities and one ('SIP6') by NISRA. SIP6 will focus on filling evidence gaps across departments and has three broad themes which link to the Outcomes Delivery Plan (ODP) committed to by the Northern Ireland Civil Service in the absence of the Executive:

- Social Inclusion
- Education and the World of Work
- Rurality and Geography

Around 15 projects have been identified within these themes, including, for example, a study looking at how to improve the uptake of free/reduced-fare transport. More information on how to utilise the ADRC-NI is available on the Partnership's website.

Discussions

Those who were attending the event asked questions and made comments about a number of points arising from the presentations.

Energy Efficiency Issues

- In light of the fact there are high levels of private renting in some locations where there are concentrations of older, solid wall properties, a question was raised as to whether there is a case for **community heating**. It was noted that solid wall insulation can be done *well*, but cost is a challenge, perhaps especially so for private landlords. Focussing on improving the energy efficiency of the fabric of the building remains the most effective way of reducing demand for heat, particularly winter peaks.

- Given the direction of travel in terms of the use of fossil fuels for heating, there were questions about the **capacity of alternative, lower carbon, energy sources** to meet the targets that have been set, particularly in the Northern Ireland context. This is not currently entirely clear. **Solar PV** has a role to play in creating generating capacity and in decarbonising the grid, but with the removal of the feed-in tariff and the cost of installation acting as a barrier to entry, the likelihood of wide uptake at individual household level remains low under current circumstances. Air- and ground-source heat pumps are another alternative slowly rolling out at national level (mainly for new dwellings). As with all new and developing technologies, there is a role for more education of users and potential users about how best to use and work with these heat sources.

- It was noted that the EnerPHit approach is based on one air change per hour, and that appropriate ventilation would be required in very airtight properties. In this context, **mechanical ventilation systems with heat recovery** were highlighted as a potentially very effective and currently under-used technology.

- There is capacity for more research on how occupants interact with the dwelling they live in, in terms of energy use for various activities including, but not limited to, space and water heating. It is also important to understand the limitations of what can be done to a dwelling in terms of how it impacts on the health of occupants.

- Taking account of both energy efficiency and emissions targets and the ageing population, it was noted that the trend for **dispersed living** is problematic. Community planning has an important role to play where more sustainable living arrangements are concerned.

Design

- Delegates commented that the Design for Mental Health guidance could be applied much more widely; given the linkages between **housing and health**, good design is important for everyone and could be a preventative measure, helping to promote general physical and mental wellbeing as part of a broader concept of universal design that aims to help people live well and adapt their homes to changing needs throughout the lifetime.

- There was interest in the **collaborative work** to produce the guidance on Design for Mental Health. Áine and Isoilde noted that the multidisciplinary nature of the work brought challenges and took time, but the process was largely organic; experts gave what time they could, and the team leading the work were careful not to demand too much from those who were giving their time and knowledge to assist the project.

- Questioned on the role of **smart technology**, Isoilde and Áine confirmed that this is covered in the Guidance, which contains advice on how to assess the relevance of this assistance for individuals. Technology has the potential to make a huge difference for people with cognitive difficulties, but it needs to be reliable and easy to use, and the appropriate guidance and protocols need to be put in place.

Recent Research

House Price Index

The most recent report produced by Ulster University in association with the Housing Executive and Progressive Building Society was published in February 2019. Covering the final quarter of 2018, the report indicated that the average price during the quarter (£163,165) was 4.9% higher (on a weighted basis) than during the equivalent quarter in 2017. This rounded off a year of highly consistent prices; the average price over Q1-Q4 2018 (£162,448) was roughly five per cent higher than the equivalent average for 2017, and this stability was reflected in a strong level of activity, with more than 8,000 transactions captured by the survey over the year.

Continuous Tenant Omnibus Survey (CTOS)

The full report on the findings of the 2017 Continuous Tenant Omnibus Survey (CTOS) provides extensive and up-to-date information on the Housing Executive's tenant population and a valuable insight into attitudes to, and satisfaction with, Housing Executive services. It is a vital source of information, not only for guiding the development of public sector housing policy, but also for quality assessments and monitoring performance, allowing the organisation to assess the extent to which it meets key corporate objectives as set out in the Corporate & Business Plans for both Regional Services and Landlord services.

Designing for Life: New Social Housing in Northern Ireland Post-Occupancy Survey

Housing design can have a significant impact on people's well-being, and nowhere are the benefits of good design more apparent than in the home, where people eat, sleep, work, socialise and play. In 2018 the Housing Executive, in partnership with the Department for Communities (DfC), therefore commissioned a post-occupancy survey of housing association tenants to obtain feedback on the quality and design of new homes funded through the Social Housing Development Programme (SHDP) that were completed between 1 April 2015 and 31 March 2016. This report provides an overview of the main findings.

SAP Time Series 2001-2016 (RdSAP 2012 version 9.93)

This report accompanies a tabular appendix which updates SAP figures from the Northern Ireland House Condition Survey (NIHCS) for the survey years 2001, 2006, 2009 and 2011. The revised SAP figures are based on the latest model SAP 2012 (RdSAP 9.93). The 2016 figures are also included in this report to complete the time series.

Organisations represented at the Insight event included:

Belfast Health & Social Care Trust
CaCHE
Choice
CIH Northern Ireland
Clanmil
Co-Ownership
Consumer Council
Department for Communities
Department for the Economy
Department for Infrastructure
Energy Saving Trust
First Housing
Housing Rights
Land & Property Services
Macfarlane & Smyth
NEA
North West Regional College
Phoenix Natural Gas
SGN Natural Gas
South Health & Social Care Trust
Ulster University
Utility Regulator

If you would like to attend future *Insight* events, or have any comments or questions about the Housing Executive's research programme, you can contact us on 02895 982562 or **research.bulletin@nihe.gov.uk**