Paper 3/4 Buildings session
For information

1. Purpose

1.1 To provide Commissioners with background information on agenda item 2, an information gathering session considering the opportunities and challenges associated with decarbonisation of the buildings sector.

2. Background

2.1 This note provides detail of the participants who have been invited to give evidence as part of this session. Further background information is also included in the Annex to help inform the session.

What	Agenda item 2: Buildings information gathering session
Who	Laura McGadie, Head of consumer advice, Energy Saving Trust Nigel Holmes, CEO, Scottish Hydrogen and Fuel Cell Association Liz Marquis, Existing Homes Alliance and Director Energy Agency
Why	An opportunity to examine the opportunities and challenges associated with further decarbonisation in the buildings sector. Participants in this session have knowledge and experience of the opportunities and challenges associated with decarbonisation in the buildings sector. They will be well placed to answer questions on: • Opportunities/challenges for employment in the sector resulting from further decarbonisation. • Wider potential opportunities/challenges resulting from this transition. • Barriers to realising the opportunities and action needed to manage the challenges.
Additional background information	• Annex A: Centre for Energy Policy – Potential wider economic impacts of the Energy Efficient Scotland programme (Policy Brief) • Annex B: submission from Energy Saving Trust • Annex C: submission from Scottish Hydrogen and Fuel Cell Association • Annex D: submission from Existing Homes Alliance • Annex E: Dumfries & Galloway Fuel Poverty Assistance Scheme Year-end Report 2019 • Annex F: Link between energy efficiency measures and health outcomes • Annex G: submission from UNISON Scotland

Annex A: Centre for Energy Policy – Potential wider economic impacts of the Energy Efficient Scotland Programme (Policy brief)

A pdf copy of this briefing has been included in the dropbox for this session. It is also available online here

Annex B – submission from Energy Saving Trust

- **What are likely the main employment impacts (good and bad) of the transition to a low carbon future in the buildings sector?**

Opportunities

Higher levels of investment in energy efficiency will result in increased numbers of installations and the associated installer and manufacturing jobs. Scottish Government's Energy Efficiency Scotland route map notes that '*every £100 million spent on energy efficiency improvements in 2018 (is) estimated to support approximately 1,200 full-time equivalent jobs across the Scottish economy*'.

By ensuring there are appropriate training facilities and apprenticeships in Scotland, it should be possible to ensure that these jobs benefit those living in Scotland. The apprenticeships and training provided under the Scottish Government's Warmer Homes Scotland (WHS) scheme is a useful example here. The programme's objectives include that WHS will '*provide benefits to the wider community through vocational training and employment opportunities*'. To date almost 100 apprenticeships in the supply chain have been created, which are roles that will provide training opportunities and additional skills.

By being a leader, and supporting Scottish manufacturers to produce low carbon solutions, there is also the potential for Scotland to then benefit from exports.

Challenges

If contractors working in high-carbon industries, including installers of natural gas and oil technologies, are not reskilled, there is a risk of redundancy.

If new technologies overall require less maintenance and repair than current technologies (e.g. super-insulated homes meaning there is no need for heating system that would need maintenance and servicing), then potentially there would be a reduction in employment in this sector. However, this will in the short and medium term (i.e. decades) be far outweighed by the opportunities of installing this new kit.

- **Are there any wider opportunities and challenges from this transition?**

Opportunities

To improve/reduce the deterioration of the physical and mental health of those currently living in cold or damp homes that they cannot afford to run; and increase their disposable income by reducing fuel costs. The most recent delivery report for the Scottish Government's HEEPS programmes, for example, notes that '*In 2016/17, Warmer Homes Scotland helped 5,326 customers, who benefited from the installation of over 13,500 separate measures, giving them an* ***average saving of £357 off their annual fuel bills***[1]*'*. Local economies also benefit from having residents with additional disposable incomes. Having a warmer and more affordable to heat homes also means that people can live in them for longer thus reducing the economic and social costs of providing care home places.

Challenges

We should ensure that people who are not able to invest in low carbon technologies are not penalised directly or indirectly for failing to act, e.g. with higher tariffs/fuel charges, lack of access to technologies that will make their homes warmer/damp free/cheaper to run. Otherwise they run a risk of being left behind when they are the group that need this most.

Without full inclusion it will not be possible to get the necessary public buy-in for transformation -

There is a risk with all significantly increased activity in installation of new technologies that rogue companies enter the market and deliver poor quality installations and/or overcharge and/or cause distress to their customers. The more vulnerable the householder the more at risk they are from approaches from such companies. This can then damage trust and have a negative knock-on effect on the market for companies delivering high-quality work. Such risks can be mitigated by having a single channel through which to access all Scottish Government and UK/GB energy efficiency programmes as is currently provided by Home Energy Scotland.

We are also aware that concerns have been raised about the potential for minimum standards in the private rented to make rented properties more expensive for tenants. Landlords will have the option of increasing rents to cover the costs of meeting new regulated standards and as such we think that it will be important to protect, as far as possible, consumers from unnecessarily high rent increases. There could, for example, be scope for the Scottish Government to fund work with both landlords and tenants to inform them about likely costs and savings resulting from the installation of measures and to encourage the take up of loans so that landlords can spread the cost of the work and therefore increase the period of time that costs need to be recouped over. There is also scope to undertake further work with tenants to ensure that any rent rises are (at least to some extent) offset by savings from energy efficiency behaviour change (ensuring that heating controls are appropriately set etc.). Impacts on rental prices should also be monitored.

- **In your opinion, what are the main barriers to realising any opportunities from this transition? What action should be taken to mitigate against any adverse consequences?**

Current levels of poor building maintenance. Good building maintenance is critical to energy efficiency. The Scottish Government's Home Energy Scotland Homecare pilot 2017 – 2019 which was managed by the Energy Saving Trust and focussed on supporting vulnerable households whose health was adversely affected by their living conditions, found that many homes were

[1] See: https://www.gov.scot/publications/home-energy-efficiency-programmes-scotland-delivery-report-2016-17/

unable to benefit from energy efficiency measures without first having repairs and maintenance carried out, often significant, from unblocking gutters which were causing dampness in walls to compromised building fabric. See also http://www.thepebbletrust.org/sustainablerenovation.asp

If the support available to low income households is limited to just the measures that will deliver the low-carbon outcome and not all the enabling measures, including repairs, respite care, dealing with infestation, etc., required to make these installations possible, then the lowest income and most vulnerable households who are unable to organise the necessary works are likely to be disadvantaged. Any scheme that offers support to households to make their home low-carbon needs to include access to funding/support to tackle the underlying issues that would otherwise prevent the low-carbon measure being installed/effective.

Vulnerable households may struggle with organising work and may be disadvantaged as a result. One Home Energy Scotland Homecare client commented '*if it wasn't for you I wouldn't have bothered*'. We found through this project that some vulnerable customers need a lot of time, patience and handholding to be able to take up measures that are being offered at no cost to them. This support needs to be in place to ensure the most vulnerable do not miss out/get left behind.

Householders/tenants may resist new technologies if the benefits and difference of these compared to alternatives are not explained clearly. In some cases changes to behaviour may be needed. Tailored, personalised advice is critical to supporting householders and tenants to get the most out of low-carbon technologies. When homes change hands/tenancies there is then a need to provide advice to the incoming building occupant at this point too; without this, occupants may not know how to operate their building/heating optimally at best and at worst may revert to high-carbon alternatives. For example, we are aware of people removing solar technologies because they do not understand how to use them and cannot find installers to maintain them; tenants demanding the removal of air source heat pumps because they have not been advised on how these operate and how to use them; people choosing to use bottled LPG heaters instead of cheaper central heating because they do not have enough information about the running cost of the central heating.

Procurement that is focussed on lowest cost results in a race to the bottom – resulting in poor quality installations, cost-cutting and low-paid workers. Models of procurement need to be wary of this and focus on quality, without which carbon savings won't be realised and jobs may be of poor quality.

Making improvements to blocks of flats requires coordination and in particular requires investment of time to get all building occupants on board with the change. Because of the additional effort this requires, there is a risk that occupants of flats are left behind and therefore disadvantaged. We believe there is a need for an energy advice service to provide this resource.

Advice and support as provided through HES is key to mitigating many of the adverse consequences identified. Some of the support HES provides is detailed above (for example the HES Homecare pilot, the provision of a single channel through which to access all Scottish Government and UK/GB-wide energy efficiency programmes). However, much more of what HES does is relevant here and will have an important role to play in mitigating the risks identified. For this reason we provide a brief list of the advice and support that HES offers below:

- Support householders across Scotland to increase energy efficiency and lower their fuel bills. These include information, expert advice and access to financial support such as loan and grant schemes, including direct referrals to schemes such as the Scottish Government's Warmer Homes Scotland and area-based insulation programmes.

- Acts as the key contact point for the fuel poor in accessing Scottish Government and other support. In particular, HES supports householders to claim any benefits they are entitled to, reduce the total amount of energy they need through energy efficiency improvements in their homes, ensure the tariff they are on is the most efficient and effective for their needs, refers clients for support from local agencies (e.g. Care and Repair) and for money advice.

- Builds referral pathways with trusted intermediary organisations (including health and social care organisations) for vulnerable householders to encourage them to access the support available.

- Provides advice in a way that suits people. This includes in the home where specialist advice is required or where households are vulnerable and unable to access advice in other ways.

- Uses the information provided by householders (by questioning the householder about their home and heating) to inform advice provision and to generate a Home Energy Check (HEC). A large part of the work of Home Energy Scotland advisors involves suggesting actions for householders based on their HECs by discussing the document with them. Based on this information, advisors offer knowledge on schemes that they would be eligible for and recommend energy efficiency and renewable energy measures for their homes.

- Trials, and where appropriate integrates, innovative approaches to advice provision, for example, the provision of advice on heating controls and other energy efficient behaviours, the provision of more detailed and tailored advice informed by smart meter data, encouraging disengaged customers to switch, and the provision of person centred in-home support by Energycarers,

- As a one stop shop service it also provides an essential referral route to other Scottish Government and UK/GB energy efficiency, renewables and sustainable transport programmes.

Annex C – submission from Scottish Hydrogen and Fuel Cell Association

Main employment impacts of the transition to a low carbon future in the buildings sector:

- Temporary employment from deployment of retrofit of suitable building energy efficiency measures, including insulation and installation of energy efficient low carbon heat systems and appliances

- Temporary employment from repurposing gas network for decarbonised gases including hydrogen, upgrading electricity networks, and installing new district heat networks & heat pump (DH-HP) low carbon energy infrastructure

- Continued skilled employment for those currently working in the gas network sector with skills adapted from natural gas to hydrogen and other low carbon gases

- Ongoing skilled employment to maintain repurposed gas, upgraded electricity, and new DH-HP low carbon energy infrastructure

- Temporary employment from system design and installation of energy efficient & low carbon distributed heat & CHP into existing building (Hydrogen combi boilers, Fuel Cell CHP, Heat Storage, Heat Pumps, etc)

- Ongoing employment to maintain energy efficient & low carbon distributed heat & CHP into existing building. This includes Hydrogen combi boilers, Fuel Cell CHP, Heat Storage, Heat Pumps, etc.

- Ongoing employment from building energy optimisation services

Wider opportunities and challenges from this transition:

- Reskilling of existing workforce and training new workforce

- Lack of cross-disciplinary skills for optimum building level solutions (gas, power, and heat storage)

- Lack of accredited training modules and vocational standards for new technologies such as H2 boilers and fuel cell CHP

- Need to develop cross-disciplinary skills for optimum building level solutions (gas, power, and heat storage)

- Early opportunities for hydrogen deployment may link into low carbon industry clusters

- Learning by Doing => First Mover Advantage => Export Opportunities (goods & services)
- Potential lack of engineers in sectors like gas if the long term potential to convert to low carbon gas isn't recognised in training and accreditation

What are the main barriers to realising any opportunities from this transition:

- Current capacity and skills in the workforce

- Equipment and installation standards

- Lack of strategy and supporting roadmap for hydrogen deployment - eg links between early low carbon industry clusters and hydrogen for building heat

- Sufficient lead time needed to develop and deliver the significant resources to deliver the transition to low carbon heat after policy decisions

Actions which should be taken to mitigate against any adverse consequences:

- Further work to promote STEM subjects as skilled engineers will be needed for a transition whichever technologies are pursued to decarbonise heat, transport and the remaining power

- Develop skills across electricity, gas and new fuels like hydrogen until long term policy is clearer and ensure the skills of engineers can be adapted for new technologies

Annex D: submission from Existing Homes Alliance

Introduction
The Existing Homes Alliance is a broad coalition of housing, environmental, anti-poverty, energy advice, consumer protection and industry organisations arguing for urgent action to transform Scotland's existing housing stock to make it fit for the 21st century.

We believe bold improvements to our existing housing stock are necessary to:
- remove poor energy performance of the home as a driver of fuel poverty; and
- reach our ambitious climate targets, recently moved forward to net-zero by 2045.

The transition to warm, low carbon and affordable to heat homes can and should be an exemplar for what a 'just transition' looks like. Not only does the shift to highly insulated and low carbon homes help address climate change and fuel poverty, it supports and creates jobs throughout Scotland, improves health and well-being, and provides greater energy security.

This is why we welcomed the Scottish Government's commitment to an infrastructure priority on energy efficiency of buildings in 2015. Research shows that this is a value for money investment, with a cost to benefit ratio of 2:1.[2] We are working to ensure that priority is delivered in reality – in terms of investment and change on the ground.

Warm, low carbon and affordable heat homes for all
The imperative of a just transition to warm, low carbon homes has never been more urgent. In its report, *UK Housing: Fit for the Future?*, the UK Committee on Climate Change stated that "We will not meet our targets for emissions reduction without near complete decarbonisation of the housing stock."[3]

[2] Economic impact of improving the energy efficiency of fuel poor households in Scotland, Consumer Futures Scotland (now Citizens Advice Scotland), 2014
[3] UK Housing: Fit for the Future? 2019 UK Committee on Climate Change

At the same time, the Scottish Parliament is going through the final stages of scrutiny of the Fuel Poverty (Scotland) Bill, which will set a target to reduce fuel poverty: The target is that in the year 2040, as far as reasonably possible no household in Scotland is in fuel poverty and, in any event, no more than 5% of households in Scotland are in fuel poverty."[4] There is also a target to reduce extreme fuel poverty to no more than 1% of households.

How can we achieve climate and fuel poverty goals together?
We believe that no household should be left behind in the low carbon transition. This means the following support will be necessary:

- Off-gas areas: Fuel poverty and energy efficiency programmes should fund the transition to renewable heat in off-gas areas and no longer fund replacements of oil and LPG boilers.

- On-gas areas: Fuel poverty and energy efficiency programmes should fund and support energy efficiency and heat upgrades, which are either low carbon or 'low carbon ready.

- Self-funding households should receive significant financial and fiscal incentives to help make the transition, acknowledging the upfront costs of changing heating systems. This is not unlike programmes which incentivised and ultimately regulated the move to efficient gas boilers.

This will require an increase in the budget for these programmes, and we believe this investment will pay big dividends for individuals and the public good as outlined in our answers to the questions below.

What are likely the main employment impacts (good and bad) of the transition to a low carbon future in the buildings sector?
We believe there is potential for up to 8-9000 jobs per year just to reach Energy Performance Certificate band C by 2030.[5] These would be jobs in SMEs all over Scotland, involved in the manufacture, installation and maintenance of energy efficiency and low carbon heating measures.

The Existing Homes Alliance recently conducted a survey of the supply chain in relation to meeting Energy Efficiency Scotland targets. The preliminary results[6] show that 95% of respondents had capacity to respond to the growth in demand for energy upgrades, with growth expected in turnover, employees, and business expansion.

Several noted the need to develop more skills through apprenticeships, and the need to send "clear signals to technology suppliers so that training and recruitment can be accelerated."

70% of respondents thought there was a need for further training in their business to deliver the standards and expand into new areas – "Funding for skills development is vital, but so is the

[4] Fuel Poverty (Target, Definition and Strategy) (Scotland) Bill, as amended at stage 2, 2019, Scottish Parliament.
[5] Energy Bill Revolution: Building the Future: the economic and fiscal impacts of making homes more energy efficient (2014)
[6] The final results will be made available to the Just Transition Commission in June 2019.

setting of long-term standards and high-profile leadership and support from government." Some gaps were noted in terms of suppliers in certain regions of Scotland.

Some suppliers are supporting their own training and apprenticeships to prepare for the growth in demand, and industry bodies are developing updated standards that are fit for new technologies.

The College skills sector is moving rapidly towards increased training for young people and adult returners in renewables and energy generation. This training is expected to be delivered from Colleges across Scotland – this is ideal for ensuring skilled workforce in most geographical areas.

Are there any wider opportunities and challenges from this transition?

Opportunities - health
There are significant opportunities in the health sector. Homes with a high energy performance standard provide a practical, preventative approach to addressing ill-health and poor mental health in Scotland. It is estimated it can reduce costs to the NHS by between £48m to £80m per annum.[7]

Spending time in a cold, damp house can aggravate conditions such as heart disease, strokes and flu and increase the risk of mental health problems.[8] And there's an increased risk of illness and death among older people, young children and those with a disability.[9]

Research with the NHS, Energy Agency and Glasgow University is examining the relationship between area-based solid wall insulation programmes and health outcomes.[10]

Opportunities – the negawatt and energy security
In Scotland, and indeed the UK, there is a huge energy saving (or negawatt – energy not used is the cheapest form of energy) potential: a recent study found cost-effective improvements in home energy efficiency and low carbon heating could reduce energy demand by 25% over the next 20 years – equivalent to the annual output of six nuclear power stations the size of Hinkley Point C.[11]

Scotland's economy and its households would be less vulnerable to energy price fluctuations, less dependent on imports of fossil fuels, with less need to build expensive new generating capacity.

Parity of standards across the housing sector
The just transition to low carbon housing should lead to a parity of standards across the social and private housing sectors. Social housing tenants have enjoyed better standards and lower energy bills for years, thanks to the Social Housing Quality Standard and more recent energy efficiency standards. Now everyone should be able enjoy these benefits – whether you are private tenant or first-time buyer.

This also means it will be easier to undertake programmes to upgrade properties in mixed tenure buildings/areas.

[7] Economic impact of improving the energy efficiency of fuel poor households in Scotland, 2014
[8] Fuel Poverty Evidence Review, Scottish Government
[9] Building the future: the economic and fiscal impacts of making homes energy efficient. 2014
[10] NHS Ayrshire and Arran with the Energy Agency – latest evidence to be provided.
[11] Unlocking Britain's First Fuel, 2017 UKERC

In your opinion, what are the main barriers to realising any opportunities from this transition? What action should be taken to mitigate against any adverse consequences?

Consumer protection and quality assurance:
Mis-selling and rogue traders can pose problems. However, the Scottish Government is putting in place an Energy Efficient Scotland Quality Mark[12] and quality assurance measures to help address this problem. The Colleges should be involved to ensure quality and inspection in monitoring and accreditation for installers. The challenge is to ensure that the regulation is not so onerous that smaller traders are excluded. At the same time, appropriate consumer protection is necessary to build consumer confidence in the transition to low carbon heat.

The example of the project in Dumfries and Galloway funded by the Council and managed by the Energy Agency demonstrates a way to ensure local installers are essential for energy efficiency delivery. Within the first 12 months of the project out of 30 active installers, 28 of these are working within 20 miles of their office base. This ensures local companies benefit and are easily on hand to assist with future maintenance if required.

Aftercare for the householder (to ensure they understand how to use the measures and manage their energy) and post-installation inspection (to ensure good quality) are essential. This should be locally delivered through existing delivery organisations, who have experience and credibility.

Awareness and understanding in private housing sector
There is a need for a significant awareness raising and engagement campaign with homeowners, tenants and landlords. This would focus on the benefits of warm, dry, low carbon homes to individuals and society; what they need to do and by when, and who can help.

Lack of policy certainty and investment
As noted above, the supply chain has suffered from stop-go funding over the last decade and require clarity and long-term commitment in energy standards to invest.

To realise the commitment to eradicate fuel poverty, there is no doubt that funding will need to increase to support energy upgrades – otherwise we risk leaving behind the fuel poor on fossil fuel systems that ultimately will become 'stranded assets' and won't achieve the necessary emission reductions. There will also be missed opportunities in terms of heat networks in both rural and urban areas – where we can lock in emissions savings in the short-term.

There is also a need to support the 'self-funding' homeowners who may not have the capital to pay the upfront costs of low carbon heat technologies. With a mixture of advice and financial support, handholding through the process, combined with foreshadowing regulation, everyone should be able to make the transition over the next 10-20 years.

Where possible, government should support innovation on deep retrofit – taking properties from a low energy performance rating to net-zero in one intervention. There are some examples of this

[12] https://www.gov.scot/publications/quality-assurance-short-life-working-group-report/

already happening in Britain and Europe.[13] Scottish Enterprise and Skills Development Scotland have a role to play here.

It could be the proposed Scottish National Investment Bank could have a role to play here. Similar state banks in Europe have supported transformation of the building stock through loan programmes – most notably in Germany.

Remit of the Just Transition Commission in relation to Housing
We believe the Just Transition Commission can play a useful role in providing advice on how the Energy Efficient Scotland programme can realise all the benefits. Thanks to investment to date, Scotland's housing stock has improved and the average energy performance rating is ahead of England's. The programme's route map sets accelerated standards for fuel poor households, but we think we should be future proofing the whole housing stock against the risk of fuel poverty.

It is crucial that additional costs of low carbon heat are not used as an excuse for slower progress, particularly for the fuel poor. Instead, a mixture of public and private finance alongside regulation should be deployed to achieve warm, low carbon and affordable to heat homes for all.

The opportunities and risks are well-rehearsed, now we need to grasp the nettle and accept that additional public investment will be required, and that this additional spend will be rewarded with numerous benefits to society.

Annex E: Dumfries & Galloway Fuel Poverty Assistance Scheme Year-end Report 2019

The Dumfries & Galloway Fuel Poverty Assistance Scheme assists fuel poor households throughout Dumfries & Galloway. The project is part of the Council's Tackling Poverty Strategy and funding is provided for two years through the Council's tackling poverty funding. The aim is to make homes more energy efficient, boost householder's income and to improve quality and standard of living.

Annual target Year 1 - 85 measures to be installed within a measure budget of £75,000.

Scheme offers –

- An assessment of the home (EPR) to identify energy improvements
- Assistance with heating settings and controls • Energy Advice
- Referrals to other grant funded schemes • Income Maximisation referral
- Assistance with application forms • Fuel Switch assistance
- Follow up visits

Measures include -

- Draught proofing
- Upgrading heating controls
- Loft Insulation
- Cavity Wall Insulation

[13] See Energiesprong UK. https://www.energiesprong.uk/

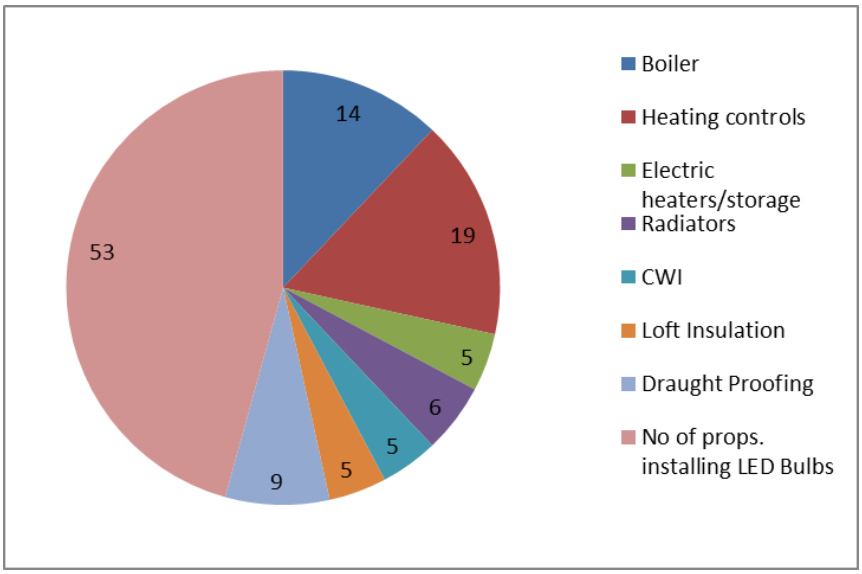
- Heating upgrades
- LED bulbs

Criteria –
Any householder who spends more than 10% of their income after rent/mortgage, on fuel for heating and cooking.

Results

Funds spent and committed totalled £66,890.92

116 Measures installed to date



Including Behavioural Advice

97 tonnes CO2 saved per year	Over £24,000 Fuel Bill Saving per year	424 MWh Saving per year	1452 tonnes CO2 lifetime savings	£345,785 Lifetime Fuel Bill Saving	6567 MWh Saving per lifetime

Based on EST website

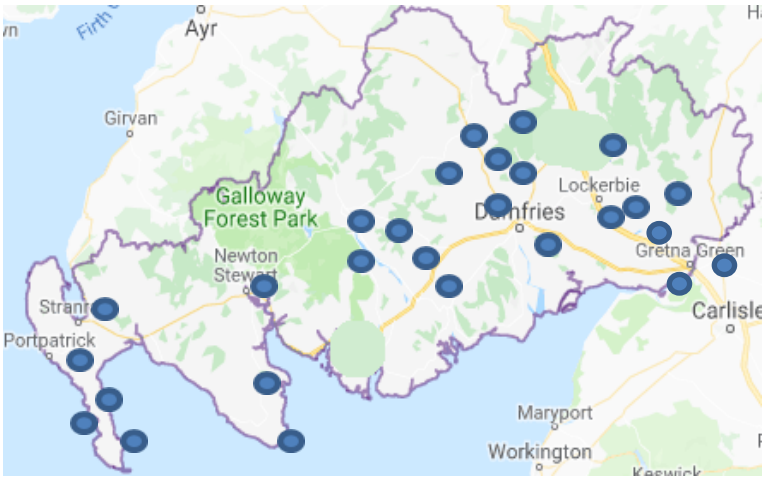
- 20 householders referred for Income Maximisation
- 74 householders referred for Fuel Switching –
  - with savings known to date of £6161
  - Fuel debt of £26,875 reduced
- 140 Householder Visits – first visits
- 11 householders referred to other schemes
- With assistance from the Project Officer -
  - 1 householder had a storage heating system replaced by the manufacturer
  - 1 householder was moved house by the estate factor
  - 1 householder had energy efficiency improvements made by the estate factor

- 1 DGHP householder had heating controls installed

Timeline

Action	Week 1	Week 2	Week 3	Week 4	Week 5
Householder contacted on receipt of referral					
Home visit & Energy Performance Assessment					
Income Max. & Fuel Switch Referral					
Contractors contacted					
Installation					
Follow up home visit					

Map of installations



Contractors

Of the 30 contractors used to install measures, 28 have been within a 20 mile radius to the householder.

SAP Ratings

Properties that required an Energy Performance Report showed that after improvement measures:

- SAP ratings increased by an average of 10 points
- 50% of properties have improved by one energy efficiency band

Case Study

Dumfries and Galloway Home Energy Assistance Scheme

'Mr W, Annan'

Measures installed:
• Cavity wall insulation
• Loft insulation
• LED bulbs

SAP Ratings:
Pre-install - 44

Mr W was referred to the scheme by a partner organisation. He had recently downsized house due to health issues and did not qualify for mainstream schemes.

A home visit was made by the Project Officer the following day and it was established that Mr W had used his savings to replace inefficient windows and doors and upgrade the electric heating system but had no funds left to insulate his home. His only income was his state pension and a small naval pension and he qualified for help with the scheme under the 10% rule.

An Energy Performance Report (EPR) was carried out by the Project Officer which showed that Cavity Wall Insulation and Top-Up Loft Insulation would benefit the property along with replacing lighting with LED bulbs. The SAP rating was 44.

An accredited insulation contractor was immediately contacted and they arranged to come out the following day. Insulation was installed two days later.

A referral was also made to 'Lemonaid' for fuel switch advice.

A follow up home visit was later made to inspect the insulation work and check fuel switch advice had been provided. Mr W was delighted at how quickly the whole process went. He noticed an improvement instantly as the house retained heat for much longer once the heating was switched off. He is also looking forward to spending less money on heating his home and having more of a disposable income.

Without assistance from this scheme, funded by Dumfries & Galloway Council, the heat would continue to be lost through the walls and roof and 'Mr W' would not have reduced his fuel bills or been more comfortable in his home.

Case Study 2

Dumfries and Galloway Home Energy Assistance Scheme

'Mr M, Stranraer'

Measures installed:
- **A-rated Boiler**
- **Room thermostat**
- **LED bulbs**

SAP Ratings:
Pre-install - 29
Post install - 42

The Home Energy Assistance Scheme received a referral from Home Energy Scotland for a householder they were unable to help.

Mr M had inherited the property he lived in some years ago but had no heating or hot water. He was living in one room with an electric fire as his only source of heating and the cost of this was more than he could afford. The majority of rooms in the house also suffered from condensation issues as they were not being heated.

The Project Officer contacted Mr M the following day receiving the referral and a home visit was arranged one week later to include his Support Worker.

Confirmation of Mr M's qualification of the scheme was established and an Energy Efficiency Report (EPR) on the property was produced which gave a SAP rating of 29.

The boiler was old, inefficient and broken and there was no room thermostat. Contact was made with Gas Safe heating engineers to obtain quotes. Within one week quotes were received and a local contractor was instructed to go ahead with the work.

Four days later the boiler and room thermostat were installed and old inefficient lightbulbs were replaced with 10 LED bulbs. A return visit from the Project Officer offered assistance on using the boiler and controls. Mr M is delighted with the improvements which have been life changing. He is looking forward to being warm in his own home at a cost he can now afford. He is also looking forward to being able to use the other rooms.

As Mr M has a debt repayment plan with his current provider we were unable to offer fuel switch advice. He is currently waiting for an income maximisation check to be carried out. Any additional funds received will further improve his living standards and help to repay his fuel debt.

This scheme, funded by Dumfries & Galloway Councils Tackling Poverty funding, has improved Mr M's quality of life by making his home warmer and taking away his worry of trying to be warm and comfortable. His SAP rating has now increased to 42 and he no longer has condensation problems.

Annex F: Link between energy efficiency measures and health outcomes

The Energy Agency, in partnership with NHS (Ayrshire and Arran), is conducting an evaluation project to investigate the potential benefits of Solid Wall Insulation (SWI). The project is being delivered in conjunction with South Ayrshire Council, East Ayrshire Council and Dumfries and Galloway as part of their area based insulation projects. The study commenced in 2014 and has now become an ongoing monitoring and evaluation project involving over 350 households to date.

Evidence exists that current policy interventions may be associated with the improved health of participants and the aim of the study has been to investigate these links in more detail. The findings from the first and second year of the study have now been published and have demonstrated changes in proximal outcomes (e.g. improved housing conditions, increased indoor warmth/comfort, increased pride in the home and reduced fuel bills) which have known links to longer term health impacts. Alongside anecdotal reports of improvements to existing health conditions, such as COPD and asthma, and reports of improved mood following insulation, pre- and post- health questionnaires have also indicated increases in both physical and mental health scores for those who also perceived their home to be much warmer following the insulation works.

Although it is difficult to establish a direct causal link between this type of intervention and health outcomes, the study is also examining longer term health trends in postcodes where wall insulation upgrades have taken place. Clinical data such as hospital admissions are now being investigated in order to compare areas which have received the measures with a control group of similar postcodes who have not yet participated in the scheme. The aim is to conduct further data collection and statistical analysis with support from NHS Ayrshire & Arran (Public Health) and the University of Glasgow.

A brief summary of other results show:

Property conditions

- 94% agreed the appearance of their home had been improved by the insulation
- 79% of residents in whole-street areas felt the neighbourhood had improved a lot
- Over half of those who previously had condensation or dampness said this had now improved

Fuel Costs Based on EPC Data

- Average fuel bill savings of around £250 per year (equivalent to 23%)
- Fuel poverty rate was 45% pre-insulation and had fallen to 27% post-insulation
- The number of properties with a below average energy-efficiency rating decreased from 49% to 21%

Thermal Comfort

- 78% reported that the overall temperature had increased following the insulation work
- 88% agreed that their home was able to retain the heat more effectively

Annex G: submission from UNISON Scotland

Introduction

UNISON is Scotland's largest trade union with members across the public, private and voluntary sectors. We are the largest trade union in the gas and electricity sectors. Many of our members work directly in jobs relevant to the many areas involved in tackling climate change, including: building control, economic development/regeneration, education/training, energy, environmental health, planning and emergency planning, procurement, sustainable development, water, SEPA, and a range of other work. The public sector organisations employing most of our members must comply with the statutory public bodies climate duties, aimed at ensuring the public sector leads by example on emissions reduction, sustainability and adaptation. Our members also have a direct interest (with the general population) and a citizenship interest in the global climate emergency and how Scotland implements a just transition to meeting the forthcoming new interim and net zero legislative targets - targets based on the 2018 UN IPCC 1.5C report and the subsequent 2019 Committee on Climate Change advice. UNISON members campaigned with trade unionists internationally for the Just Transition concept to be included in the Paris Agreement and for a Just Transition Commission in Scotland. With the Just Transition Partnership and Stop Climate Chaos Scotland, we call for an independent, statutory Just Transition Commission advising the Scottish Government for the duration of the targets in Scotland's climate legislation. We welcomed the establishment by the Scottish Government of the Just Transition Commission, due to report within two years. We are pleased to submit this short introductory briefing prior to the Commission's June meeting, and will submit additional information/briefings (incl on the power sector) as/when appropriate, in discussion with the Secretariat.

General overview - buildings, transport and the public sector.

Economic and industrial and ownership strategies

Economic and industrial and ownership strategies are key overall in the transition to a zero carbon economy, as well as in these three sectors. UNISON has strongly opposed the ideologically driven austerity policies of the UK Government, arguing that this was totally the wrong economic approach to deal with the aftermath of the financial crash. We have, with others, including the STUC, long called for a proper economic and industrial strategy, with sustainable jobs at the heart, and for climate change to be treated as an urgent health and safety issue for the planet. We welcome the current renewed interest in green industrial strategies here, at UK level, and internationally. Scotland must deliver on this, with a joined up approach that takes on board the arguments made by so many, including the Just Transition Partnership, about the importance of the Scottish National Investment Bank (SNIB) and Scottish Publicly Owned Energy Company (POEC) in delivering a just transition[14]. Some specific areas for UK and Scottish government investment must include Carbon Capture and Storage and hydrogen projects[15] to keep options in these areas, including conversion of the gas network to hydrogen, open in the future. Planning for the Just Transition must address issues of energy and transport ownership. In energy, we need a nationally co-ordinated plan to tackle gross underinvestment. The current spread of ownership does not allow this to happen. We believe energy and transport are best in the public sector, with the power to drive change forward under democratic control. We argued for this in recent submissions to consultations on the POEC[16] and on the Transport Bill[17].

Buildings, transport and public sector

It is impossible in a short briefing to address such wide areas in detail. We only touch on each, below, looking at: a) opportunities and challenges for jobs resulting from the low carbon transition b) wider related opportunities and challenges for the public/consumer.

[14] https://unison-scotland.org/library/Paving-the-Way-for-a-Just-Transition-Briefing-for-MSPs-June-2018.pdf
[15] https://www.unison.org.uk/news/press-release/2018/11/government-must-give-bold-hydrogen-scheme-go-ahead-says-unison/
[16] https://unison-scotland.org/library/UNISON-EJFWCttee-POEC-Sept18.pdf
[17] https://unison-scotland.org/library/UNISON-Transport-Bill-Submission-Sept18.pdf

Buildings
a) There is a recognised key opportunity for job creation in major domestic and non-domestic buildings energy efficiency programmes, including retrofit for public sector buildings where suitable. This requires urgent investment at scale, but with considerable economic benefits to communities, with local economic impact. Municipal energy schemes must also play a role, with the benefit of income generation. (See public sector.) b) Lessons must be learned from the problems of some previous schemes. Quality schemes within the public sector will deliver the best results for consumers, for addressing fuel poverty, and for skills development and job creation, with increased tax revenue etc.

Transport
a) Quality jobs could be provided through investing in much improved integrated, sustainable public transport, as well as in the switch to electric vehicles and the use of hydrogen powered buses (used in Aberdeen already) etc. We support rail nationalisation and re-regulation of the buses, more municipal bus companies, such as Lothian Transport, and a massive expansion in active travel infrastructure. Innovative pilot projects could include a trial of free public transport. This is being piloted in five German cities. Scotland should look at a trial, linking with industrial strategy on support for electric/hydrogen buses.
b) It is vital to address inequalities through improved public transport, ensuring accessibility, safety and affordability of alternatives to cars, particularly for rural areas, shift workers, families, etc. This needs redesigned city centres and travel to work pilot projects. These could help boost local economies, as well as improving air quality, health and wellbeing. Unions argue for negotiated green workplace[18] agreements covering travel to work plans.

Public sector
a) The public sector must lead by example across policy, including its key role in procurement and supporting local supply chains, relevant to trade union criticisms of broken jobs promises on EDF's offshore wind project NnG. The new Scottish publicly owned energy company should have a key role in the just transition, involved in generation and transmission, not just supply. SNIB also, as above. We need a major expansion of municipal and community energy schemes[19] [20]. Even if small job numbers, they could be a considerable local economic boost in remote/rural areas and numbers from a range of schemes will add up, also with income generation benefits for public bodies. We need a climate change resilience public services strategy and infrastructure funding programme. b) Public sector action can ensure communities are not left behind. It must be accelerated in recognition of the climate emergency[21] with adaptation/emergency planning crucial. Investment in green workplace action[22] is needed. Divestment/reinvestment protects pensions and invests for the public good[23].

[18] https://www.tuc.org.uk/sites/default/files/extras/gogreenatwork.pdf
[19] https://www.unison-scotland.org/library/EFJWCtteeDraftBudget19-20.pdf
[20] http://www.apse.org.uk/apse/assets/File/Municipal%20Energy%20Web%20version%20final.pdf
[21] https://www.apse.org.uk/apse/index.cfm/members-area/briefings/2019/19-23-climate-emergency-council-declarations/
[22] https://www.tuc.org.uk/sites/default/files/The_Union_Effect_Greening_The_Workplace_Covers_2014_All.pdf
[23] https://foe.scot/resource/divest-reinvest-councils-report/ https://www.unison.org.uk/content/uploads/2018/01/Divest-from-carbon-campaign.pdf