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Llywodraeth Cymru  
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## Consultation – collation of responses

# Energy Efficiency Strategy Call for Evidence

Date of issue: **June 2015**



## **Overview**

A call for evidence on energy efficiency was launched on 16 October 2014 and was open for responses until 8 January 2015. A total of 10 questions were set out within the call for evidence and responses could be submitted electronically via e-mail or in hard copy by post.

The purpose of the call for evidence was to seek the views of stakeholders on a potential vision for energy efficiency in Wales and to gather evidence to develop a way forward.

There was strong support for the strategy. In total, 103 responses were received for this call for evidence from a wide range of stakeholders. A large amount of evidence was submitted as part of this call for evidence.

All responses have been considered fully in creating the evidence and developing the strategy further. The Welsh Government would like to thank stakeholders for their positive and useful contributions.

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## 1. List of Questions

**1: Potential impact.** Do you have any evidence or experience you would like to share on the potential impact in Wales of energy efficiency on saving money and on supporting jobs and green growth?

**2: Vision.** Do you agree with the vision? If not, please explain your reasons.

**3: Barriers to householders and communities.** What do you think are the barriers to people recognising the benefits of energy efficiency and taking action? Do you have any suggestions for improving and extending household take up of energy efficiency? What are the current strengths and successes and how can they be developed further?

**4: Barriers to businesses.** What do you think are the barriers to businesses recognising the benefits of energy efficiency and taking action? Do you have any suggestions for improving and extending business take up of energy efficiency? What are the current strengths and successes and how can they be developed further?

**5: Barriers to the public sector.** What do you think are the barriers to the public sector recognising and acting to realise the benefits of energy efficiency? Do you have any suggestions for improving and extending public sector action on energy efficiency? What are the current strengths and successes and how can they be developed further?

**6: Supply Chain.** What are the strengths and weaknesses of the supply chain and how can we build on the strengths and tackle the weaknesses?

**7: Skills and Education.** What opportunities and barriers are there for skills and education to develop a qualified and skilled workforce in the field of energy efficiency?

**8: Innovation.** What are the opportunities for innovation to help remove the barriers to improving our energy efficiency in Wales?

**9: Finance.** Are there any particular gaps in financing to support the take up of energy efficiency? Which financing models work best to address the energy efficiency needs in Wales for different target audiences?

**10: General.** We have asked a number of specific questions. If you have any related issues that we have not specifically addressed, please use this space to report them.

## 2. List of respondents

URN	Name of Organisation
1	Edward Grist
2	Llysfaen Village Hall Management Committee
3	Jean Margaret Davies
4	Mark Tinkerman
5	Energy Bill Revolution
6	Morgan Advanced Materials
7	Stephen Marks
8	NSA Afan
9	Merthyr Tydfil
10	Tony Leahy
11	Cert Sure
12	Pembrokeshire County Council
13	ICE
14	ETI
15	Wolseley
16	Miller Research
17	Ynni Glan
18	Torfaen Housing
19	Cardiff University
20	Anglesey County Council
21	Ceredigion County Council
22	Ofgem
23	Energy Savings Trust
24	Neath Port Talbot CBC
25	Climate Change Commission
26	Wrexham CBC
27	Glass and Glazing Federation
28	Citizens Advice Bureau
29	Sustainable Energy Association
30	Royal Institute of Chartered Surveyors
31	Constructing Excellence in Wales
32	British Gas
33	Saint Gobain
34	CLA Cymru
35	PLANED
36	Knauf Insulation
37	WWF
38	Hywel Dda University Health Board

39	NHS Wales
40	Rhondda Cynon Taf County Borough Council
41	Community Housing Group
42	Grwp Cynefin
43	Low Zero Carbon Hub
44	Age Cymru
45	Rockwool
46	SSE
47	National Trust
48	Gwynedd County Council
49	GBSPM
50	British Standards Institute
51	Flintshire Council
52	Egnida
53	NEA
54	Scottish Power
55	WLGA
56	Carmarthenshire County Council
57	Friends of the Earth
58	Pembrokeshire Coast National Park
59	Michael O'Brian
60	Hafod Renewables
61	Housing Renewal Team, Torfaen County Borough Council
62	Butler & Young Wales.
63	Carmarthenshire County Council
64	KFS Consultancy Ltd
65	South West Insulation & Extractions LTD
66	Gwent Energy CIC
67	Greenfield Energy Solutions
68	DK Property Services
69	SPMS (Wales) Ltd
70	Greendealshop.com Ltd
71	First Phase electrical
72	Torfaen County Borough Council
73	J D Energy Services
74	City of Cardiff Council
75	Taff Housing Association
76	Joyner PA Cymru Ltd
77	City and County of Swansea
78	Site Services
79	Vale of Glamorgan Council
80	Energy Saving Direct

81	Rounded Developments Enterprises Ltd
82	Grwp Cynefin
83	Grwp Cynefin
84	J.R.Davies Property Services
85	Pembrokeshire Housing Association
86	3-e Electrical Ltd
87	Architype Ltd
88	Energy Effective Ltd
89	RCT Homes Ltd
90	City Energy South Wales Ltd
91	E.W.Consultancy
92	Robert Owen Community Banking Fund
93	Bron Afon Community Housing Ltd
94	Brecon Beacons NPA
95	Torfaen County Borough Council
96	Torfaen County Borough Council
97	Groundwork North wales
98	M Williams Energy Assessments
99	adever engi cyf
100	Glyndwr University
101	Business Step Up
102	Joyner
103	Caerphilly County Borough Council

### 3. Responses in full

	<p><b>Question 1 responses: Potential impact.</b></p>
	<p><b>Do you have any evidence or experience you would like to share on the potential impact in Wales of energy efficiency on saving money and on supporting jobs and green growth?</b></p>
<p><b>8</b></p>	<p><b>NSA Afan</b></p> <p>NSA Afan has a number of community based activities in 7 premises in the constituency of Aberavon linked to training for the unemployed and community engagement events such as the promotion of community well being, healthy eating, the alleviation of poverty through the provision of community venues for the elderly, youth and local activities and a Community Energy Efficiency programme. Annually we have face to face contact with over 5,000 individuals throughout the course of our activities.</p> <p>We have been pro-active in the promotion of national campaigns such as Keep Well This Winter, Warm Wales, Stop smoking, healthy eating, NEST and others. We promote energy efficiency and renewable technologies and we are a 'point of contact' for the ECO programme, Warm Wales, NEST and Green Deal making referrals and offering free and impartial advice.</p> <p>We have found, from our activities, that there is a significant amount of interest in these programmes and our experience shows that they offer a life line to many households in need. The urban areas of Sandfields and Aberafan are in the top 10% of multiple deprivations and as such we would urge the Welsh Government to consider the following as possible solutions to some of the immediate issues around the alleviation of poverty and especially fuel poverty.</p> <p><u>Our experience</u></p> <p>We have installed 60 domestic solar panel arrays in the area under our Community Energy Programme PV4FREE. These installations both help low income families and generate a sustainable income for the organisation. We have assisted over 300 households to access energy efficiency measures such as external wall insulation, replacement boilers and cavity wall insulation. We provide a free and impartial energy efficiency advice service and work with partners to provide support and assistance to low income families. (NEA, EST, NEST, Warm Wales, Age Cymru and others)</p> <p>We have evidence that the current ECO and Green Deal programmes are</p>

not delivering their anticipated levels of energy efficiency measures to the low income families and that access to programmes such as NEST are too stringent in their qualifying criteria and that there is virtually no face to face free advice service with many relying on either phone or internet contact for registration. The elderly and vulnerable households have difficulty in accessing these services. The Keep Well This Winter, Warm Wales and NEST has been supportive in raising the profile of energy efficiency to many households and we applaud the work of these organisations.

We recommend:

1 – Consider incentivising third sector organisations to promote energy efficiency to householders in WIMD areas – thereby targeting some of the most disadvantaged members of the Welsh Community living in some of the oldest housing stock and consequently most energy inefficient homes. This could take the form of free training for Communities First staff to train as Energy Efficiency Advisors (City and Guild courses) and Fuel Debt advisors (NEA courses) thus enabling the C1st clusters to actively promote the benefits of energy efficiency and to raise the profile of energy efficiency measures as a route to saving money and reducing household bills. The Welsh Government, by making energy efficiency part of the reporting procedure for C1st, can proactively promote energy efficiency with little additional cost within the C1st budget. The Welsh Government’s targets for the alleviation of poverty could be addressed using this mechanism. It is well known that energy efficiency and the installation of energy efficiency measures reduces energy bills and thereby provides a source of additional income for households in poverty

2 – Consider a pilot programme (possibly using the services of NEA) aimed around the concept of community energy champions whereby individuals from the community, working in partnership with third sector organisations, can offer their services (a mix of volunteering and paid work) to take the advice and support out into the community. This can be achieved by making presentations to community groups that otherwise would not have access to this advice and establishing an advice surgery in the community. This pilot could be part sponsored by one of the energy companies, manufacturers and/or installers to help reduce the overall cost of the pilot. EST has experience of this type of programme and could be incentivised to support C1st clusters in providing this type of community based support.

NSA Afan would be happy to discuss with the Welsh Government the development of this programme and offer our full support in the development of this programme.

<p><b>9</b></p>	<p><b>Merthyr Tydfil County Borough Council</b></p> <p>MTCBC has engaged with a number of programmes over recent years including CERT, CESP, Arbed and ECO – so we have gained significant experience. Evidence however is in shorter supply.</p> <p>MELIN Homes can provide the evidence for the Arbed 2 Schemes and the forthcoming ECO scheme.</p> <p>Of concern – is the disconnect and delay between different energy programmes. There are often many months or even years between different schemes – so there is no continuity of work for contractors. This often results in new workers/apprentices and tradesman having to find alternative employment – with their loss of skills to the wider workforce.</p>
<p><b>11</b></p>	<p><b>Cert Sure</b></p> <p>From our experience of being a licensed operator of a number of UK Government Schemes such as the Microgeneration Certification Scheme, Green Deal and Competent Persons Scheme, we have had experience of being involved with investigations in relation to fraud with schemes that offer a ‘cash back’ incentive. For example, Solar PV installations where there was a boom and bust scenario that started when the UK government changed the payments rates which resulted in a number of fraudulent installations where money was being claimed for installations that didn’t exist.</p> <p>It is essential that if any payments or grants are offered that the Welsh Government has confidence that this money is being used to benefit the end user by reducing energy use and bills and also improving the efficiency of the buildings in Wales.</p> <p>Also consideration needs to be given to a continuous program of education to the end user of today and tomorrow on how to use energy wisely, and the part we all can all play in the efficient use of energy, for example efficient use of energy could be included in the national curriculum for children. This must include highlighting the benefits, both financially and environmentally, from the efficient use of energy.</p> <p>We do have concerns over the long term sustainability of an industry to ‘install’ energy efficient systems and measure to buildings. Once the buildings, as far as reasonably practicable, are ‘efficient’ then the industry</p>

that has evolved to meet this demand will no longer be needed.

To ensure the local economy benefits from the work to be carried improving the efficiency of buildings in Wales any firm undertaking this work must use local labour and resources. This will also ensure products are sourced local to reduce transportation emissions and production energy usage.

**12 Pembrokeshire County Council**

Acting in an energy efficient manner example:

Pembrokeshire Leisure Centre Energy Champions. See article from Carbon Trust:

<http://www.walesonline.co.uk/news/wales-news/energy-champions-lead-wayreducing-1835187>

The Display Energy Certificate (DEC) Ratings have improved at all sites:

<b>Pembrokeshire County Council Leisure Centres</b>		
	<b>Original DEC rating</b>	<b>Latest DEC rating</b>
<b>Crymych Leisure Centre</b>	C62	C53
<b>Fishguard Leisure Centre</b>	D88	C66
<b>Haverfordwest NEW Leisure Centre</b>	D82	C62
<b>Pembroke Leisure Centre</b>	D92	C74
<b>St Davids NEW Sports Hall</b>	NEW SITE NO RATING	B40
<b>Tenby Leisure Centre</b>	C60	B45
<b>The Meads Leisure Centre</b>	D87	C62

The site energy champions have ensured staff are very energy efficient and aware.

Investment has been made in energy efficient lighting & lighting controls, variable speeds drives to pool pumps, pool covers, combined heating and power, boiler upgrades, natural ventilation, timeclocks to electrical equipment, heating/hot water/ventilation controls, pipe and valve insulation, water efficient taps and flush controls. Acting in an energy efficient manner

	<p>and investing in energy efficiency improvements ensures running costs are controlled and ultimately ensures the viability of leisure centres and maintains a vital public service and retains jobs. This message is transferable to all sectors.</p>
<p><b>13</b></p>	<p><b>ICE</b></p> <p>I agree that energy efficiency benefits households, businesses and the public sector, by saving them money, by reducing energy security risks, and by supporting more sustainable business practices and lifestyles. It is the most cost-effective way to support the move to a low carbon energy system. ICE has a Sustainable Development Charter which supports sustainable forms of energy in favour of carbon impact forms of energy production.</p>
<p><b>14</b></p>	<p><b>ETI</b></p> <p>The ETI does not yet have any specific evidence on the potential impact of energy efficiency on saving money and on supporting jobs and green growth in Wales, but we are working with Bridgend County Borough Council as one of the three preferred hosts for a potential Smart Systems and Heat demonstration. We are also developing our EnergyPath Networks tool which will enable identification of the most cost-effective local energy systems (both heat and power) for Bridgend and other local areas. Our general comments on energy efficiency are discussed below.</p> <p>We believe that consumer engagement is key to changing behaviour significantly in order to improve and extend household take-up of energy efficiency measures. Research<sup>1</sup> shows that when renovating their properties, only around 10% of people actually are driven primarily by energy savings versus other considerations. There is a possibility that improved insulation may lead those in fuel poverty to enhance the temperature in their homes, or heat more rooms in their home, rather than to achieve savings. Therefore raising awareness solely on potential savings could be misleading - there needs to be a mix of benefits to raise consumer awareness and interest.</p> <p>Many of the easier energy efficiency measures have been done so the question remains about economics/financing of remaining measures. Even a zero per cent interest rate to finance the remaining interventions</p>

<sup>1</sup> Wilson, C., Chryssochoidis, G., and Pettifor, H. (2013) Understanding Homeowners' Renovation Decisions: Findings of the VERD Project.

	<p>is unlikely to be attractive to the fuel poor so an approach that either provides intervention “for free” or pays for fuel usage may be required for these consumers.</p> <p>Regarding the affordability of the future energy system, there is a balance between supply and demand measures; EnergyPath Networks explores this and we will work together with Bridgend CBC to assess options for cost-effective routes to a lower carbon energy system. After validating the software tool with Bridgend CBC, our ambition is to make the software tool as widely accessible as possible. We have also developed a UK Treasury Green-book compliant software model, the “EnergyPath Economics” tool which will estimate economic benefits, such as carbon reduction, energy cost reduction, job creation, reduction in fuel poverty and health improvements, to a local area from a number of energy efficient interventions. We plan to work with Bridgend CBC to estimate the economic benefits for its local area. It may then be possible over time to widen this to include the whole of Wales.</p>
<p><b>15</b></p>	<p><b>Wolseley</b></p> <p>There is an abundance of evidence to show that the relative return on investment made from demand-side measures comfortable exceeds investment in supply-side measures. The economic benefits associated with high-efficiency boilers, heating controls and decent insulation provide prompt paybacks especially when compared with centralised energy generation plants.</p> <p>The report produced by Verco/Cambridge Econometrics entitled ‘The economic and fiscal impacts of making homes energy efficient’<sup>2</sup> has described detailed modelling to assess the economic, fiscal, and environmental impacts of energy efficiency. It concludes that the economic case for making the energy efficiency of the UK housing stock a priority is strong including an estimate that an energy efficiency programme will deliver:</p> <ul style="list-style-type: none"> <li>• £3.20 returned through increased GDP per £1 invested by government</li> </ul> <p>The subsequent demand for measures will be a welcome fillip to those in the plumbing, heating and insulation markets.</p>

<sup>2</sup> <http://www.energybillrevolution.org/wp-content/uploads/2014/10/Building-the-Future-The-Economic-and-Fiscal-impacts-of-making-homes-energy-efficient.pdf>

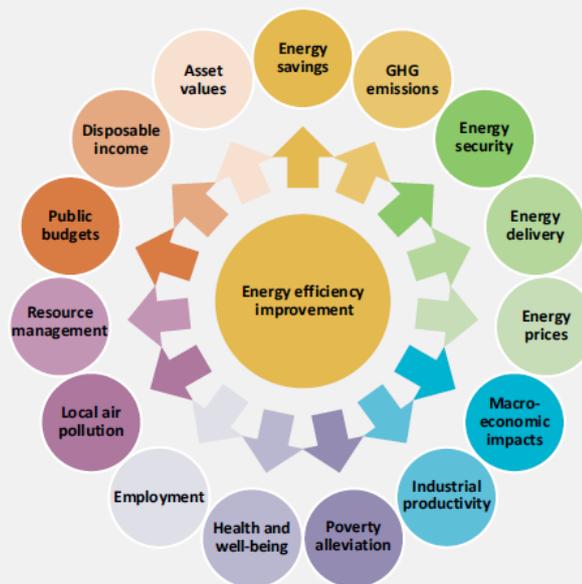
16	<p><b>Miller Research</b></p> <p>Our evaluation of NEST provides some indicators here, but we agree that a much broader study of the economic linkages here would be beneficial in making the case for widespread efficiency measures.</p>
17	<p><b>Ynni Glan</b></p> <p>Yes.</p> <p>A) Managing the project to install the first commercial fuel cell in Wales.</p> <p>Fuel cells generate electricity and heat (CHP) very efficiently without burning fuel. They can reach electrical efficiency of 60%, and efficiency that includes heat of 90%.</p> <p>With the support of FITs, a payback period of between 5 and 7 years is expected, which means the site saves thousands in energy costs annually.</p> <p>B) Present a study creating a hydrogen microgrid from renewable energy sources to avoid grid connection and to supply heat and electricity to a site in Wales.</p>
18	<p><b>Torfaen County Borough Council</b></p> <p>Torfaen has been heavily involved in leveraging in Welsh Government funding and other funding streams to deliver energy efficiency measures. Working in partnership with local providers has enabled a number of benefits to be realised and savings made.</p> <p>Torfaen recently carried out energy efficiency work using Arbed funding to properties in the North of the borough, in an area that had been identified as deprived and as having poor energy efficient properties. 201 properties were included in the scheme and a number of measures were implemented to make the properties more efficient. The benefits of these measures have included:</p> <ul style="list-style-type: none"> <li>• 2.14 tonnes of CO2 per annum saved per property</li> <li>• £292 has been saved each year per property.</li> </ul> <p>Torfaen also accessed CERT and CESP funding to provide energy efficiency measures in Torfaen which led to similar savings to householders</p>

	and supported jobs and businesses locally.
21	<p><b>Ceredigion County Council</b></p> <p>Over the past 3 years, a number of projects have been completed in the county under Arbed, CESP and ECO that have seen an improvement in the energy efficiency of the housing stock. Further research is currently being planned to assess the real savings in monetary terms for a recently completed Arbed project in conjunction with the project managers Willmott Dixon. Furthermore, a project called Keep Cosy run locally by Ymlaen Ceredigion, a community development and regeneration organisation, has demonstrated energy bill and carbon savings from behaviour change and low level energy efficiency measures fitted in the home. This project was funded from the Welsh Government Regeneration Area Programme, County Council and Environment Wales. The learnings from this project are now currently being rolled out through the Ceredigion Fuel Syndicate Project and Maximising ECO revenue projects (also funded by Welsh Government).</p> <p>With regard to evidence of support for job creation, we have some evidence of this for the local (county boundary) workforce in the private sector. The employment of local contractors has occurred when housing improvement work programmes have been in place where local building tradesmen have been sub-contracted but this work has been time-limited for the duration of the work programme. The local Registered Social Landlord Tai Ceredigion to which the local authority housing stock was transferred 4 years ago, has successfully trained its direct labour force to be competent to PAS2030 accreditation level, in order to carry out energy efficiency/ECO measures on its own housing stock which has seen in the region of 400 properties improved, therefore this provides evidence of creating and sustaining local employment and training.</p> <p>Ceredigion County Council made a commitment to carbon reduction with the employment of the Authority's first Energy and Carbon Reduction Programme Manager in 2012. It is the Energy Manager's responsibility to plan, regulate and monitor energy usage within the authority, and to implement new policies and schemes to improve energy efficiency. Following the introduction of this post, the Authority reviewed and updated its Carbon Management Plan. During the first two years of the new plan, the Authority achieved a 7.38% reduction in CO2 emissions, which has in turn reduced energy costs. In addition to this, the Authority now has a Cabinet Member responsible for Carbon Management, further highlighting the corporate priority given by the County Council to carbon</p>

	<p>management/energy efficiency.</p> <p>There are a number of renewable energy companies located within the county, these companies are generally small and often find it difficult to compete with larger companies based outside the area when following the Authority's procurement requirements due to economies of scale.</p>
<p><b>22</b></p>	<p><b>Ofgem</b></p> <p>According to a recent DECC report <i>Estimated impacts of energy and climate change policies on energy prices and bills</i><sup>1</sup>, on average, household gas use was around 10% lower last year than it would have been, and electricity use 17% lower, as a result of energy efficiency policies, such as the ECO and policies, such as the Energy Company Obligation (ECO) and its predecessor policies, and EU-wide minimum standards of efficiency for energy using products. The report estimates that ECO and Green Deal reduced average dual fuel bills by £6 per year, while historic energy efficiency policies reduce bills by £67.</p> <p>By 2020, household energy bills are estimated to be, on average, around £92 lower than they would have been in the absence of these policies. The energy efficiency savings delivered through policies such as Smart Meters, ECO and the Green Deal, Products Policy, and Building Regulations are expected to increase to 2020, continuing to more than offset the costs of policies on bills, on average.</p> <p><small><sup>1</sup> <i>Estimated impacts of energy and climate change policies on energy prices and bills</i>  <a href="http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/384404/Prices_Bills_report_2014.pdf">www.gov.uk/government/uploads/system/uploads/attachment_data/file/384404/Prices_Bills_report_2014.pdf</a></small></p>
<p><b>23</b></p>	<p><b>Energy Savings Trust</b></p> <p>There is considerable opportunity for an energy efficiency strategy, developed appropriately to significantly reshape the Welsh economy, jobs and green growth. Recent research by IEA has shown the multiple benefits of energy efficiency improvements as being much broader than solely energy savings, financial and environmental savings.</p>

Figure ES.2

## The multiple benefits of energy efficiency improvements



Note: This list is not exhaustive, but represents some of the most prominent benefits of energy efficiency identified to date.  
Source: Unless otherwise noted, all material in figures and tables in this chapter derives from IEA data and analysis.

<http://www.iea.org/Textbase/npsum/MultipleBenefits2014SUM.pdf>

The broader benefits of a macro UK level energy efficiency refurbishment have been analysed by Verco and Cambridge Econometrics, in their report “Building the future: the economic and fiscal impacts of making homes energy efficient”. <http://www.energybillrevolution.org/wp-content/uploads/2014/10/Building-the-Future-The-Economic-and-Fiscal-impacts-of-making-homes-energy-efficient.pdf>

In 2012, EST was commissioned by WWF Cymru to consider the cost and benefit of improving the worst-performing houses in Wales. More than half of Welsh homes are in bands E to G, and our report shows that bringing these homes up to a better standard (band D) would achieve the following:

- Cut fuel poverty by 40 per cent, benefiting 132,000 households that spend more than 10 per cent of their income on heating.
- Create 14,600 jobs – 6,300 directly (such as in the building trade and supply chain) and the remainder as a knock-on effect on the economy from the increased employment and money saved on fuel.
- Cut the housing sector’s current carbon emissions by a quarter, helping the Welsh Government achieve its aim of reducing all greenhouse gas emissions in Wales by 40 per cent by 2020, compared with 1990.

This would cost around £2.1 billion and would reduce annual energy bills by £423 million in the homes treated.

[http://www.energysavingtrust.org.uk/organisations/sites/default/files/Cutting\\_carbon\\_emissions\\_in\\_welsh\\_homes\\_](http://www.energysavingtrust.org.uk/organisations/sites/default/files/Cutting_carbon_emissions_in_welsh_homes_)

[pdf](#)

However there are also further non-numerical benefits from undertaking such action, namely the skills and information generated in the delivery of the work. The skill base of the supply chain from manufacturers through installer to longer term maintenance would increase skills and experience that can readily be exported beyond Wales or adapted to deliver further benefits to the remaining housing stock. The information generated would also be an exportable commodity, but much further afield than just England. Building the comprehensive understanding of large scale retrofit in Wales would certainly position Wales as a European, if not world leader in the field. This draws further benefits of greater world visibility if the activity delivered by a country with strong aspirations to make a difference to the lives of its inhabitants. This visibility is likely to lead to engagement and subsequent investment in research and technology around the activities delivered, building on an approach to deliver a country fit for the wellbeing of future generations.

Further modelling carried out by EST, showed that 60% of Welsh households in fuel poverty in 2008 could be removed from fuel poverty for £333m by installing basic measures costing no more than £3,300 per house (2008 prices), with a greater reduction through scale, if done as a mass retrofit programme. Measures such as loft insulation, cavity wall insulation, draught-proofing and new boilers coupled with specific, relevant and credible advice on behaviour changes would maximise and embed reduced wastage while maintaining adequate warmth and comfort. Adequate warmth would have the consequence of improvements to health and wellbeing and a positive impact on health budgets in Wales. This compares favourably to the current refurbishment projects which are working to a figure closer to £6,000 per house.

We can also evidence the real impact of investing in energy efficiency works through our delivery programmes. Energy Saving Trust uses in-house economic impact modelling software to estimate the gross added value of energy efficiency work. Our tool is routinely used to evaluate past energy efficiency work; below are some examples of the outputs from EST projects completed in 2013/14:

- EST arranged for the insulation of 94 off-gas properties using ECO funding for a total cost of £752,000. In terms of direct economic impact these measures gave a gross value added of £398,819. This represents pre-installations (i.e. design, surveying), installations (i.e. actual installation of the measure) and post installation. The scheme resulted in financial savings of £40,800/year to residents and

reduced carbon emissions by 168tCO<sub>2</sub>/yr. There were further indirect positive effects felt by the supply chain and householders of £243,700. This represents the GVA directly generated by the installation and through supply chain expenditure, employee wage spend and re-spend of money saved on fuel bills. In terms of jobs, this work supported 7.6 FTE roles in administration, construction and management.

- A block of electrically heated flats in Pontypridd received solid wall insulation via a funding mechanism established by EST. The block was in the private rented sector, with all 7 flats occupied by people on low-income or benefits. The property suffered extreme cold and damp problems, as residents were unable to use the electric storage heaters due to high cost. The cost of the work was £27,448 which included all materials, labour, scaffolding and ground-works. The lifetime money savings directly to the low income residents is approximately £543/yr per flat or £95,190 for the whole block over 25 years. Post installation evaluation work showed a dramatic improvement in the quality of life for residents, with the mould problem disappearing and residents able to afford to use heating effectively to deliver adequate comfort for the first time in many years.

*“Internally, the external wall insulation has made a massive difference. The tenants and I are extremely happy with the result. I will be looking to install this on my other properties in the area” – Clas Glyn Landlord*

There are a large number of such blocks in Wales that require such investment. It can be demonstrated that the benefits of such work go far beyond purely monetary or carbon savings.

But it's not just the installation of measures that can help householders save money on their energy bills. Last year Cyd Cymru / Wales Together helped over 1,500 households in Wales to switch to a cheaper energy tariff, saving on average £185 per household <http://www.cydcymru-energy.com/content.asp>

We would like to see this locally delivered programme supported as an annual pan-Wales fuel switching project as this sort of focus helps prompt householders to review their property and energy use patterns, re-engaging them with their energy use.

Nest Annual report 2013/14 <http://www.nestwales.org.uk/publications> sets out the achievements of Nest in its third year of operation. From the advice and support provided to householders and the benefits generated from installing free home energy improvements in low income homes in all local authority

	<p>areas in Wales, to the contribution that Nest has made to green growth, supporting Wales-based small and medium sized enterprises (SMEs) that provide employment for over 300 operatives.</p> <p>The EST's <i>Domestic Sustainable Energy Economic Impact Model</i> estimates the direct and indirect effects of installing a range of different microgeneration technologies and domestic energy efficiency measures. It calculates both Gross Value Added (GVA) and supported jobs (in the form of full-time equivalency). The model also generates estimates for carbon emissions and energy consumption reductions and financial savings based on the UK housing stock. EST has experience using this tool to measure the impact of domestic energy efficiency measures, PV feasibility studies and impact assessments for community wind turbines. Our experience of these projects show that often the wider impacts of energy efficiency work and renewable energy are not well understood and fail to sufficiently capture the full positive impacts on individuals, communities and businesses in Wales.</p> <p>Through our work with the supply chain in Wales we are aware of current programmes securing jobs and enabling some growth in the sector. The creation of a longer term strategy for energy efficiency in Wales will strengthen the sector further as current growth has tended to be reactive rather than proactive.</p>
24	<p><b>Neath Port Talbot CBC</b></p> <p>The following Neath Port Talbot County Borough Council (NPTCBC) schemes/projects are key exemplars of the overall benefit of energy efficiency in regard to reducing energy/carbon, monetary savings, supporting jobs, demonstrating innovation and achieving green growth:</p> <ul style="list-style-type: none"> <li>• Sustainable Product Engineering Centre for Innovative Functional Industrial Coatings (SPECIFIC). Project focusing on the development of steel and glass coated with photovoltaic cells to enable walls and roofs in new and existing buildings to generate, store and release energy.</li> <li>• Matilda's Planet - Energy Technology Product Development</li> <li>• Hydrogen Research Centre – Port Talbot</li> <li>• NPT Warm Wales Housing Efficiency Scheme; three year scheme implemented to improve the energy efficiency of households within NPT CBC helping to alleviate the number of households in Fuel Poverty. Exemplar partnership arrangement of co-operation between Warm Wales, NPT, Transco and NPOWER which enabled a co-</li> </ul>

	<p>ordinated large scale domestic energy efficient improvement programme to be delivered.</p> <p>Scheme achieved the following benefits:</p> <ul style="list-style-type: none"> <li>a) 49,831 households assessed (81% of the households within the Authority)</li> <li>b) 18,762 tonnes CO2 emissions per annum saved</li> <li>c) 2,305 households were removed from fuel poverty</li> <li>d) Approximately £10.3 million was invested within the Authority as a result of the scheme, additional advice on benefits received by 3,476 households resulting in extra income generation of over £2,100,000</li> </ul>
<p><b>25</b></p>	<p><b>Climate Change Commission</b></p> <p>We would like to reiterate the above points and recommendations, as well as endorsing the points made in the Wales Low Zero Carbon Hub’s response, as their work on the built environment reports directly to the CCCW. Specifically we would like to highlight the areas where we can make significant progress within devolved accountability, such as a greater focus on resource efficiency skills in ESDGC.</p> <p>As recognised in the consultation paper, direct energy and electricity use in existing housing and businesses in Wales account for approximately half of the emissions included in the Welsh Government’s target to reduce emissions; the residential sector is responsible for 22% of emissions covered by the 3% target. Whilst residential emissions showed a 16.5% decrease (2011 data), they increased by 10.6% (2012 data) which is a concern. The Welsh Government 2014 Climate Change Annual Report<sup>3</sup> states that this is largely due to a return to colder temperatures in 2012 and increase in natural gas consumption compared with 2011. Whilst this highlights the vulnerability of the sector to annual variations in weather and associated fuel consumption, it also highlights the importance of securing energy efficiency measures for all homes in Wales, especially the homes most vulnerable to fuel poverty. This would reduce the impact of extreme cold weather events which are more likely in the changing climate.</p> <p>In terms of multiple benefits we would certainly support links with climate</p>

<sup>3</sup> <http://wales.gov.uk/topics/environmentcountryside/climatechange/publications/2014-climate-change-annual-report/?lang=en>

change, fuel poverty and green growth. Green Growth was identified as a key priority for the Commission back in 2012, and the Chair of the Commission co-chairs the Green Growth Steering Group which reports to the Ministers for Economy and Natural Resources. They are also supporting Welsh Government's Green Growth Wales Prospectus<sup>4</sup> launched in July 2014.

<sup>1</sup> <http://wales.gov.uk/topics/environmentcountryside/climatechange/publications/2014-climate-change-annual-report/?lang=en>

<sup>1</sup> <http://wales.gov.uk/docs/desh/publications/140623-green-growth-en.pdf>

## **26 Wrexham CBC**

Through our non-domestic energy efficiency projects we have been able to support the local supply chain and local labour, support SMEs in reducing their operational cost, provide energy efficiency awareness and generate income via FITs and RHI. More non-domestic energy efficiency projects will help to further local growth in the green low carbon industry. Arbed/ECO projects have enabled a reduction in our tenants and private homeowners fuel bills, increased the external appearance of properties and have allowed energy efficiency awareness to be incorporated as part of the projects. Arbed has worked well as a whole house and whole community approach in comparison with the fragmented nature of ECO. Our domestic solar project in our council housing stock has enabled tenants to reduce their fuel bills, increased the local workforce in the delivery of the project and has provided income generation via the feed in tariff. Further renewable energy installations would increase the knowledge and local workforce and would provide income generation via FIT and RHI for the local authority.

It will be important the strategy enables and supports local authorities to support innovation and research and development if we are to maximise the benefits from spending public money on energy. We are spending a large amount of time micromanaging schemes and sticking to safe projects. We are a signatory to Cyd Cymru, but for it to really scale up there needs to be more intensive frontline support to help households to switch (for fuel poor and vulnerable households), and it needs to be an ongoing programme on the lines of a comparison site (for net savvy households). Will the strategy set out how we intend to reduce the demand for energy? This is the first step in the energy hierarchy and should go hand in hand with energy efficiency. Will the strategy link to the Welsh Government Smart Living mapping work?

<sup>4</sup> <http://wales.gov.uk/docs/desh/publications/140623-green-growth-en.pdf>

	We would be happy to share best practice when the Strategy is developed.
27	<p><b>Glass and Glazing Federation</b></p> <p>The GGF are wholly supportive of the move by the Welsh Government to improve energy efficiency and also highlight the multiple benefits to business and the consumer of the improving energy efficiency of housing stock. The GGF is supportive of measures that will further incentivise and support the installation of energy efficient glazing in domestic properties. The installation of energy efficient glazing plays an important role in helping to create more energy efficient housing. Given its many benefits, the GGF believes that energy efficient glazing should be incentivised further in government schemes. A report<sup>5</sup> by the Energy Saving Trust confirmed that replacing inefficient windows is one of the key measures necessary to improve certain E and F energy-rated homes. In addition, the results of a twelve month project recently completed by the GGF have proven that Energy Efficient Windows in all properties of the existing housing stock would reduce national emissions by 10% and would also reduce national domestic energy expenditure by 10%.</p> <p>GGF research suggests the average yearly saving made by converting all existing UK housing stock windows to Energy Efficient Windows would be:</p> <ul style="list-style-type: none"> <li>• 3,970,663 tonnes of carbon</li> <li>• 14,559,098 tonnes of CO<sub>2</sub></li> <li>• £2,363 million</li> </ul> <p>The average yearly energy bill savings made for installing Energy Efficient Windows in a typical GB house would be:</p> <ul style="list-style-type: none"> <li>• £150.49 in a single glazed house (up to £325 in an electrically heated house)</li> <li>• £44.88 in a double glazed house (per 2002)</li> </ul> <p>44% of the windows in Europe's buildings are still single glazed. Independent studies show that savings of more than 100 million tonnes of CO<sub>2</sub> could be achieved annually if all Europe's buildings were fitted with advanced energy saving glass.<sup>6</sup></p> <p>The GGF also welcomes of the support for business and industry outlined</p>

<sup>5</sup> "F & G banded homes in Great Britain: Research into costs of treatment" Energy Saving Trust, July 2010

<sup>6</sup> TNO Built Environment and Geosciences – Potential impact of low-emissivity glazing on energy and CO<sub>2</sub> savings in Europe –TNO Report 2008-D-R1240/B – November 2008.

in the Welsh Government's call for evidence. The GGF estimates that funding Energy Efficient Windows through the Green Deal could potentially create jobs for 10,000 installers UK-wide, as well as additional jobs within the rest of the supply chain. This is crucial for both national and Welsh industry given that, in 2010, figures for windows installations were almost 30% lower than in 2004, and the workforce had fallen by almost 10,000 people during the same period.

<sup>1</sup> "F & G banded homes in Great Britain: Research into costs of treatment" Energy Saving Trust, July 2010

<sup>1</sup> TNO Built Environment and Geosciences – Potential impact of low-emissivity glazing on energy and CO2 savings in Europe –TNO Report 2008-D-R1240/B – November 2008.

## 28 Citizens Advice Bureau

Citizens Advice Cymru recognises the financial benefit to individual domestic consumers of reducing their energy consumption. We deliver energy advice programmes such as the Energy Best Deal programme and Big Energy Saving Week which raise awareness of the savings available to consumers through energy efficiency. There is clearly potential for businesses and public sector organisations to make similar savings by understanding how they may be wasting energy through their behaviour, changing where they receive energy from (e.g. introducing micro-generation), and improving the energy efficiency of their built estate.

Consumer Focus' *Jobs, Growth and Warmer Homes (2012)* report was an assessment of the economic and environmental impacts of investing in energy efficiency in fuel poor households. It found that:

"Investment in the UK housing stock is one of the best investments possible in terms of boosting short-term employment and economic activity"

and that

"Investing in energy efficiency measures in fuel poor households has a similar or more positive macro-economic impact than an equivalent stimulus package either through increases in government current spending (e.g. NHS, education) or government capital spending (e.g. roads, building hospitals), or reductions in VAT or fuel duty.

"(*Spending on fuel poor households*) causes an increase in economic output, but investment in energy efficiency has the added and persisting benefit of also reducing natural gas imports. If households spend less on energy imports, they are able to spend more on other products and

services, which are in part supplied domestically. Energy security is also improved.”

The Energy Bill Revolution’s<sup>3</sup> (EBR) more recent report, *Building the future (2014)*, which builds on *Jobs, growth and warmer homes*, provides further evidence of the economic case for energy efficiency. Essentially, it found that a major energy efficiency programme funded by government has a net positive impact on GDP due to the extra revenue from taxes. It also included modelling which predicted thousands of potential new jobs for Wales<sup>4</sup> as a result of such spending.

Importantly, however, the modelling for the EBR research was based on English Housing Survey (EHS) data. There is no equivalent to the EHS for Wales which provides a comparable level of detail on Welsh housing stock. So whilst the conclusions of the report are positive, it would be more difficult to produce an similar piece of modelling specifically for Wales. This presents challenges for the Welsh Government in targeting any energy efficiency investment, and ultimately in monitoring and reporting on the success of any new programmes.

<sup>2</sup> i.e. C2DE households

<sup>3</sup> EBR is an alliance of children’s and older people’s charities, health and disability groups, environment groups, consumer groups, trade unions, businesses, politicians and public figures ‘committed to ensuring warm homes and lower bills for all’.

## **29 Sustainable Energy Association**

The Sustainable Energy Association published simple cost-based analysis in the summer of 2014 which shows quite clearly that investing in demand-side measures such as energy efficiency offers greater economic returns for £s spent than most other energy interventions. The payback in terms of energy savings on installing insulation measures, smart controls, and more efficient heating solutions is much quicker than that for, for example, investing in large scale energy generation.<sup>1</sup>

Using the Government’s own numbers we have also been able to demonstrate that if the UK Government chose to pursue an energy strategy that was focussed on interventions such as energy efficiency, they could meet their energy objectives and save around £12bn per annum against current trajectories.<sup>2</sup>

In addition, recent analysis by Cambridge Econometrics and Verco for the Energy Bill Revolution have shown that there are significant distributed benefits from prioritising the rollout of energy efficiency measures, and of choosing the right financial incentives or regulatory support to enable them.<sup>3</sup> We would be happy to discuss how any of this modelling and how it might

	<p>apply specifically to Wales' Energy Efficiency Strategy.</p> <p>1 <a href="http://sustainableenergyassociation.com/resources/infographic-clean-energy-measures-buildings-cheaper/">http://sustainableenergyassociation.com/resources/infographic-clean-energy-measures-buildings-cheaper/</a></p> <p>2 <a href="http://sustainableenergyassociation.com/wp-content/uploads/2014/07/ManifestoSEA.pdf">http://sustainableenergyassociation.com/wp-content/uploads/2014/07/ManifestoSEA.pdf</a></p> <p>3 <a href="http://www.energybillrevolution.org/wp-content/uploads/2014/10/Building-the-Future-The-Economic-and-Fiscal-impacts-of-making-homes-energy-efficient.pdf">http://www.energybillrevolution.org/wp-content/uploads/2014/10/Building-the-Future-The-Economic-and-Fiscal-impacts-of-making-homes-energy-efficient.pdf</a></p>
<p><b>31</b></p>	<p><b>Constructing Excellence in Wales</b></p> <p>Constructing Excellence in Wales has been working in the construction sector for more than twelve years and our considered view is that procurement is key to the success of any programme in which behaviour change has significance. As an example, we refer to the work we carried out in relation to the Welsh Housing Quality Standard. A report was produced (attached as part of this response) which highlighted the potential for significant sums (in excess of £40 million) to be squandered if this work was carried out without having due regard for the waste which would arise from the refurbishment process. Had the impact of the programme been given appropriate consideration before commencement significant savings could have been realised. The average quantities of waste anticipated to arise from the WHQS was estimated as 1.8 tonnes per average house which has a substantial associated cost. Schemes such as Nest and Arbed may not create as much waste as this, given that they are not full refurbishment work programmes. However, as the schemes are said to have provided over 18,000 homes with energy saving measures, it is fair to assume that waste will have been produced. It is considered likely that there would be at least one skip per household to deal with any waste arisings - this equates to approximately £2 million in skip hire alone. A change in delivery to consider and prioritise waste with regard to energy efficiency schemes could divert funds from skips to additional improvements.</p> <p>It should also be recognised that the drive for energy efficiency in buildings needs to consider the impact of the products and materials used in the end of life of the building. Material changes to building fabric can have a seriously negative effect on the future potential for reuse and recycling of the building. If we pursue the energy efficiency of buildings without thought of the types of material and the ways it is used, we are potentially laying a foundation of trouble for the future with regard to deconstruction, the recovery of materials and its future use. Currently a lot of external wall insulation is not recoverable and disproportionately fills up landfills. As such, there will be an ongoing cost to bear with regard to the disposal of</p>

	<p>difficult composite materials after they have been replaced or removed from properties. Every consideration needs to be given to the type of material and the way materials are used in what would appear to be obvious methods of improving energy efficiency. A lot of the materials used in energy efficiency improvements can be difficult to deal with when removed. It would make sense to take this into consideration prior to improvement works taking place and to look at the whole lifecycle impact of energy efficiency products.</p> <p>By considering waste in the energy efficiency agenda it would help to ensure that available funds are used to maximum benefit.</p> <p>In terms of the non-domestic construction sector (e.g schools) our CEW Exemplar Programme<sup>1</sup> contains numerous examples where the incorporation of energy efficiency measures has led to significant savings in energy costs which have helped to support the overall sustainability of these, and other, facilities. Coleg Cymunedol y Dderwen 2 is an educational facility in the Bridgend area which shares Combined Heat and Power (CHP) facilities with an adjacent leisure complex and a residential care home facility. This shared use has enabled far greater energy efficiency, reduced initial capital costs and will have supported the longer term sustainability of the individual facilities – including the existing jobs. The use of sustainable technologies and improved building fabric is providing Newport and Llanwern High Schools 3 with alternative and additional income sources to support their core services. Other examples are available via CEWs’ Exemplar Programme case studies. 4</p> <p><sup>1</sup> <a href="http://www.cewales.org.uk/best-practice/best-practice-programmes/exemplar-programme/">http://www.cewales.org.uk/best-practice/best-practice-programmes/exemplar-programme/</a></p> <p><sup>2</sup> <a href="http://www.cewales.org.uk/cew/wp-content/uploads/7072-Exemplar-GatewayToValleys-B.pdf">http://www.cewales.org.uk/cew/wp-content/uploads/7072-Exemplar-GatewayToValleys-B.pdf</a></p> <p><sup>3</sup> <a href="http://www.cewales.org.uk/cew/wp-content/uploads/7007Exemplar-LlanwernHighSchool-D-.pdf">http://www.cewales.org.uk/cew/wp-content/uploads/7007Exemplar-LlanwernHighSchool-D-.pdf</a> / <a href="http://www.cewales.org.uk/cew/wp-content/uploads/Llanwern-Post-Occupancy-Case-Study1.pdf">http://www.cewales.org.uk/cew/wp-content/uploads/Llanwern-Post-Occupancy-Case-Study1.pdf</a></p> <p><sup>4</sup> <a href="http://www.cewales.org.uk/best-practice/best-practice-programmes/exemplar-programme/">http://www.cewales.org.uk/best-practice/best-practice-programmes/exemplar-programme/</a></p>
32	<p><b>British Gas</b></p> <p>With one in every four pounds that householders spend on their energy bills being wasted due to a lack of sufficient energy efficient measures, British Gas is committed to helping customers make their homes more energy efficient.</p> <p>Over the past five years, British Gas has insulated more than three million customer homes, saving 45 million tonnes of lifetime carbon emissions. During 2013, the last full year for which figures are available, British Gas</p>

helped to install 236,000 energy efficiency measures in the UK's homes – over half of which were for the elderly, disabled or those in most need. As a result of measures such as loft and cavity wall insulation and support for more energy efficient boilers, the typical British Gas customer uses 20 per cent less gas than they did five years ago. But 12 million homes are still without adequate insulation. British Gas is working with both the Welsh Government and the UK Government to reduce this number.

Through the Energy Company Obligation and Nest, we are working to reduce the number of homes in Wales that are energy inefficient.

#### Case study: Nest

The Welsh Government's fuel poverty programme is managed by British Gas, and has now reached the end of year three of a five year contract. The scheme provides households in Wales with access to a range of advice and support on saving energy, money management, fuel tariffs, benefit entitlement checks and referral for Warm Home Discount.

Additionally, Nest offers a package of free home energy improvement measures to households who are in receipt of a means tested benefit and who live in a privately owned or privately rented home that is very thermally inefficient, with an Energy Performance Certificate rating of F or G.

Packages may include measures such as a new boiler, central heating system, loft insulation and cavity wall insulation. Newer technologies such as air source heat pumps and external wall insulation may also be included. By the end of the programme's third year, over 13,400 homes across Wales have benefited from a free home energy improvement package. Over 16,300 measures have been installed and more than 56,000 households have received advice and support.

Home energy improvement packages deliver benefits averaging around £475 per household per year. Delivery of the Nest programme has been supported by over 30 small and medium enterprises across Wales.

As a result of advice given to households who contact Nest, we have seen average increases per household for benefits being claimed of between £1,900 and £2,000 per year.

Nest has been leveraging Energy Company Obligation in to Wales during 2013 - providing an opportunity for more fuel-poor households in Wales to benefit from home energy improvements.

British Gas meets with Welsh Government on a regular basis to update officials on progress to date. We are keen to work with Welsh Government on looking at the support that will be offered beyond the end of the current

	Nest scheme.
33	<p><b>Saint Gobain</b></p> <p>We only have one study which is specific to Wales, but have many at EU and UK level:</p> <ul style="list-style-type: none"> <li>• Saint-Gobain has undertaken a comprehensive study of the benefits to retrofitting a typical end of terrace solid wall property using recognised test experts and academia, which showed a resulting 63% reduction in the energy use of a notional family. The results can be found on the following link: <a href="http://www.saint-gobain.co.uk/products-solutions/retrofitting-existing-buildings/">http://www.saint-gobain.co.uk/products-solutions/retrofitting-existing-buildings/</a></li> <li>• The award winning Loudoun Square development in Butetown, Cardiff shows the benefits of a local energy efficiency and sustainable regeneration project in Wales: <a href="http://www.ccha.org.uk/News/2012/Jun/12/Loudoun_officially_open/">http://www.ccha.org.uk/News/2012/Jun/12/Loudoun_officially_open/</a> (The link to the case study is not working so please see the document in the evidence section).</li> <li>• The Energy Bill Revolution report by Cambridge Econometrics and Verco, entitled 'Building the Future: The economic and fiscal impacts of making homes energy efficient', has been carried out to look at both the macro and fiscal impacts of an ambitious UK retrofit programme (<a href="http://www.energybillrevolution.org/wp-content/uploads/2014/10/Building-the-Future-The-Economic-and-Fiscal-impacts-of-making-homes-energy-efficient.pdf">http://www.energybillrevolution.org/wp-content/uploads/2014/10/Building-the-Future-The-Economic-and-Fiscal-impacts-of-making-homes-energy-efficient.pdf</a>) . The modelling has established that this energy efficiency programme would deliver: <ul style="list-style-type: none"> <li>• £3.20 returned through increased GDP per £1 invested by government</li> <li>• 0.6% relative GDP improvement by 2030, increasing annual GDP in that year by £13.9bn</li> <li>• £1.25 in tax revenues per £1 of government investment, through increased economic activity, such that the scheme has paid for itself by 2024 and generates net revenue for government thereafter</li> <li>• 2.27:1 cost benefit ratio (Value for Money), which would classify this as a "High" Value for Money infrastructure programme</li> <li>• Increased employment by up to 108,000 net jobs per annum over the period 2020-2030, mostly in the service and construction sectors. These jobs would be spread across every region and constituency of</li> </ul> </li> </ul>

the UK.

This release proves that the proposed strategy (to bring all low-income homes up to Band C on an Energy Performance Certificate by 2025 through energy efficient measures - it would like all other households to be offered 0% interest loans to improve their EPC standards by 2025, delivered as part of a major infrastructure investment programme) is in fact very good value for money with a high revenue return in the medium term.

Saint-Gobain UK supports the campaign led by the Energy Bill Revolution for the treatment of retrofit, especially of those households at risk of fuel poverty, as a national infrastructure priority.

- See also the UKGBC report, A housing stock fit for the future: Making home energy efficiency a national infrastructure priority: <http://www.ukgbc.org/resources/publication/housing-stock-fit-future-making-home-energy-efficiency-national-infrastructure> , benefits are: reduced carbon emissions, economic growth and job creation, improved health and wellbeing, increased energy security, reduced energy bills and fuel poverty. More detail is available in the report.
- The most comprehensive piece on multiple benefits at EU level is the recent IEA study 'Capturing the Multiple Benefits of Energy Efficiency'. Here is the link to a presentation from Nina Campbell from the IEA: [http://www.eceee.org/events/eceee\\_events/Brussels-launch-of-IEA-2014-report/nina-campbell-seminar-21October](http://www.eceee.org/events/eceee_events/Brussels-launch-of-IEA-2014-report/nina-campbell-seminar-21October) . The full study is available from : [http://www.iea.org/w/bookshop/475-Capturing the Multiple Benefits of Energy Efficiency](http://www.iea.org/w/bookshop/475-Capturing%20the%20Multiple%20Benefits%20of%20Energy%20Efficiency) and executive summary including an overview of the benefits: <http://www.iea.org/Textbase/npsum/MultipleBenefits2014SUM.pdf>
- According to E3G analysis, a 40% energy efficiency target at EU level compared to a 30% target could reduce gas imports by 18%, spending on energy imports by €154bn, create in excess of 5 times more jobs in the construction sector and provide an additional €457bn more for the European economy. <http://www.e3g.org/news/media-room/making-sense-of-the-numbers-what-does-the-commissions-30-energy-efficiency> . Note that retrofit tends to create local jobs which should be a very positive benefit in Wales where unemployment is above that in the UK.

Other reports that may be of interest are:

- Multiple Benefits of Investing in Energy Efficient Renovation of Buildings by Copenhagen Economics: <http://www.renovate->

	<p><a href="http://europe.eu/Multiple-Benefits-Study">europe.eu/Multiple-Benefits-Study</a></p> <ul style="list-style-type: none"> <li>• E3G, The macroeconomic benefits of energy efficiency; April 2012, <a href="http://www.e3g.org/images/uploads/E3G_The_macro-economic_case_for_energy_efficiency-Apr_2012.pdf">http://www.e3g.org/images/uploads/E3G_The_macro-economic_case_for_energy_efficiency-Apr_2012.pdf</a></li> <li>• The business case for Green buildings, World Green Building Council, 2013 <a href="http://www.worldgbc.org/files/1513/6608/0674/Business_Case_For_Green_Building_Report_WEB_2013-04-11.pdf">http://www.worldgbc.org/files/1513/6608/0674/Business_Case_For_Green_Building_Report_WEB_2013-04-11.pdf</a></li> <li>• Ecofys, “Renovation Tracks for Europe up to 2050: Building renovation in Europe - what are the choices?” October 2012, <a href="http://www.eurima.org/resource-centre/publications/eurima-publications">http://www.eurima.org/resource-centre/publications/eurima-publications</a></li> </ul>
<p><b>34</b></p>	<p><b>CLA Cymru</b></p> <p>Energy efficiency has the potential to deliver against all three facets of sustainability with potential benefits to all households and business in Wales. As highlighted in your consultation, Wales is fortunate in having an energy efficiency supply chain within its boundaries and could become a world leader in the field with appropriate investment.</p> <p>The term “energy efficiency” encompasses and is influenced by a wide remit and is capable of delivering benefits to many areas of policy. As identified in the consultation, these include climate change, fuel poverty and green growth, but we should also consider areas such as renewable energy, waste and recycling and natural resource management. Planning, housing and building regulation also have a fundamental influence on how energy efficiency can be delivered. If energy efficiency is to be realised, it must become a cornerstone of all considerations with regard to related fields - silo thinking and action will not achieve your proposed vision.</p> <p>For the average householder or business, benefits will substantially be realised through changing the way we perceive and utilise energy. This will be problematic as such culture change is difficult to achieve.</p> <p>Job creation and green growth will be realised through the birth of a resilient energy efficiency industry based on private enterprise. This will not be realised through extensive regulation and red tape and Welsh Government must seek to adopt an attitude of flexibility based on sound evidence if they are to see their vision succeed. CLA Cymru has had many members reporting difficulties of excessive bureaucracy and time delays when they have sought to embrace energy efficient technologies, indeed in some</p>

	<p>instances, the delays in decision-making have ultimately rendered the project financially unviable. Permitting (both the need for and the costs of), planning fees and the different attitudes and policies purported by 25 separate planning authorities provide significant disincentive to pursue energy efficiency.</p> <p>There is significant danger to creating artificial business conditions. The renewable energy sector was built on the back of government subsidy. Driven by the pursuit of international targets for renewable energy production this is not a secure, resilient industry. CLA Cymru would encourage Welsh Government to allow the energy efficiency sector to evolve organically in the most beneficial way for the specific challenges and opportunities we experience in Wales. Following on the back of the successful Future Generations Bill it is admirable that Wales would seek to become a world leader in energy efficiency. We must not, however, let such ambitions overshadow the need to pursue solutions that generate improvements specific to the circumstances of Wales.</p> <p>Lastly, energy efficiency is a national issue and will need to be addressed in this manner. The disparate opinions and views embraced by the twenty-two local authorities and three national parks merely lead to confusion, apprehension and, in too many cases, defeat for private individuals and businesses who want to improve their energy efficiency. Whilst we agree there are local concerns to every issue, it is essential that there is a level playing field for all.</p>
<p><b>35</b></p>	<p><b>PLANED</b></p> <p>With PLANED’s support, many Pembrokeshire communities have expressed a desire to develop community energy projects through their Action Plans and through a series of ‘Plugging the Leaks’ workshops. The latter identified major ‘leaks’ of money out of the economy including fuel bills. It was suggested that these ‘leaks’ could be ‘plugged’ by encouraging energy saving at home, in businesses and within community buildings. Local energy generated using renewable technology which is non-polluting and does not use finite resources such as coal, oil and gas is also often identified. PLANED recognises that local renewable energy can provide a significant, secure income for local communities to support community initiatives, as well as raising awareness about energy efficiency, and is keen to maximise community benefit derived from larger schemes and initiatives.</p>

	<p><a href="http://www.planed.org.uk">www.planed.org.uk</a></p> <p>Pembrokeshire Community Energy Network The aim of the Network is to provide community groups with the opportunity to learn from others who have developed energy projects, share ideas and expertise with other community groups and also to develop projects within your community. It also brings communities together with public sector organisations such as the County Council, National Park Authority and Port Authority. Events and visits to good practice provide communities with up-to-date energy information and enable communities to meet and swap information and skills.</p> <p><u>Energy Savers &amp; Recycling</u></p> <p>All ‘Plugging the Leaks’ workshops identified the need to prevent money escaping from the community by becoming more energy efficient. Experts from the Mid and South West Wales Energy Efficiency advisory Centre and ARENA Network joined forces with PLANED to develop the Energy Savers Project to help households, businesses, farms and community buildings to reduce their fuel bills, thus retaining more money in the local economy to be spent on local purchases. All households, businesses, farms and community buildings in participating areas are offered the chance to audit their energy usage and then shown how they can be more efficient by using less energy.</p> <p>Through the “Plugging the Leaks” process many tourism businesses and farmers expressed strong concerns at their inability to dispose of plastic waste in a sustainable way, therefore, PLANED funded a plastics recycling study, which was undertaken by Recoup. The results were disseminated at a major conference organised by PLANED and Cylch, the umbrella organisation in Wales for education in sustainable resource management. It was the first conference of its kind in Wales and was attended by key Government and voluntary sector organisations. Since then it is easier for farmers to dispose of their plastics, but there remains significant problems for the tourism sector.</p>
<p><b>38</b></p>	<p><b>Hywel Dda University Health Board</b></p> <p>As a UHB we have committed significant time and resources since 2010 to drive a reduction in our energy consumption. We aim to meet the target of reducing carbon emissions from energy use by the equivalent of 3% per year by 2020 from a baseline of 2006-10, in line with the WG aim.</p>

	<p>terms of efficiency, actions we will target over the 10 year period are;</p> <ul style="list-style-type: none"> <li>• Upgrades to old equipment – increased operational efficiency</li> <li>• Retrofitting technology / amending systems – increased operational efficiency</li> <li>• Retrofitting buildings - insulation, controls, heating zones, double glazing</li> <li>• Behavioural Change</li> </ul> <p>We submitted a business case to WG in August 2013 (after a 2 year feasibility process) and received £9.3 million funding. Of the projects undertaken, installation of a biomass boiler, 2 x CHP, BEMS upgrades and lighting improvements, the latter 2 have a direct impact on efficiency calculated £136,000 + VAT per annum. Efficiency savings can also be attributed to the new boiler equipment.</p> <p>The project as a whole will save 4000 tonnes of CO<sub>2</sub> but we need to reduce emissions by double this to meet the 2020 target.</p> <p>Included in Appendix 1 are the projects we have identified as vital to achieve this.</p> <p>We have already committed time and resource to this next phase of feasibilities and investigations. As this work has is still ongoing we cannot yet identify further impacts however we do predict that an investment of £3 – 4 million will provide a further saving £500,000 per annum and 2000 tonnes of CO<sub>2</sub>.</p> <p>A wide range of stakeholders have engaged with us on projects to date resulting in the employment of welsh businesses. We would hope this to increase during the next phase of works as the types of project e.g. installing insulation are suitable for local contractors.</p>
<p><b>40</b></p>	<p><b>Rhondda Cynon Taf County Borough Council</b></p> <p>Within Rhondda Cynon Taf we have been proactive in domestic energy efficiency since we developed an Affordable Warmth Strategy in 2007, and have secured various different funding streams to ensure delivery of projects to our poorest areas of non-traditional housing stock.</p> <p>We have secured CERT, CESP and more recently ECO along with the various funding streams offered by Welsh Government, to complement or enable schemes to be carried out, with a lot of success. An important</p>

aspect of the level of private homeowner take up in these schemes was the Council's commitment to offer some discretionary grant funding from its own Capital budget to close any gap in funding. This in turn maximised take up where the work was offered free to residents.

These schemes have mostly involved Welsh businesses delivering the schemes via SMEs in the locality.

The total measures delivered in recent financial years demonstrate the extent of funding brought into the Borough:-

Performance Indicator	Financial Year	Total
No. of homes that received a measure	2013-14	2617
No. of energy measures installed in homes	2013-14	2801
No. homes that received a measure	2012-13	3718
No. of energy measures installed in homes	2012-13	5572
<b>Total no. of <u>homes</u> that have received measures over 2 financial years</b>		<b>6335</b>
<b>Total no. of <u>energy measures</u> installed in homes over 2 financial years</b>		<b>8373</b>

We have also created, initially in partnership with Care and Repair, a Housing Energy Officer post, which is now fully funded by the Council and has proved extremely successful.

When the post was initially set up a pilot scheme was carried out where 21 properties were visited and at the end of the process, all the actions recommended to them by the Housing Energy Officer saved them £3,500 in total.

Subsequently, the first year's visits was estimated to have saved almost £95K, purely by adjusting the heating, claiming the Warm Home Discount, NEST funding, using correct tariff etc, therefore it was felt such an invaluable service that it could not be discontinued. A digital story has been produced to advise on this service, which has proved extremely popular. Another area of significance is showing the importance and significance of carrying out price comparisons for the energy tariffs. With only 16% of the population estimated to be actively switching, more support and advice

	<p>should be available to assist with this, such as the Cyd Cymru (Collective Switching) initiative, more targeted towards those in severe fuel poverty.</p> <p>With regard to the community and commercial energy sector, please see attached document entitled "List of Projects carried out by RCTCBC Corporate Property Energy Team". The list itemises the projects, funding sources, costs and savings (both in terms of money and carbon).</p>
<p><b>41</b></p>	<p><b>Community Housing Group</b></p> <p>To make substantive cuts in emissions we need to tackle the existing stock of housing. According to statistics, new builds will make up 1/3 of all homes by 2050 - but 2/3rds of us will be living in existing homes. Please see the evidence section, which contains examples of measured impacts from energy efficiency schemes in the social housing sector.</p>
<p><b>43</b></p>	<p><b>Low Zero Carbon Hub</b></p> <p>We welcome your approach to implement the energy hierarchy and seek reassurance that your new strategy will ensure delivery within each of the hierarchy steps. For example wider pan-Wales engagement on behaviour change to reduce energy demand is still required; much of the activity to date has focused on delivering energy efficiency measures and renewable technology installation. Retrofit projects currently focus on ensuring a property becomes more energy efficient, but with limited evaluation available from arbed phases 1 and 2, it is not possible to accurately state the savings (energy, carbon, financial) made. It is also not clear what the legacy is (e.g. home log books) should the householder who was resident at the time of measures being installed moves on and new occupiers then move in. Focus on the “reduce energy demand” and “use energy efficiently” steps is currently insufficient. This may be as simple advice on understanding how heating or ventilation controls work or how to avoid condensation, damp and mould growth, but not readily obvious to new occupants to a refurbished home.</p> <p>Understanding of the energy hierarchy within the sector is good, but we feel it requires greater communication to the public. Alongside the explanation of the energy hierarchy there needs to be the context of why action is required and what the potential impact could mean in their homes, families and communities. For example, focusing solely on the energy hierarchy shares the responsibility beyond the household (for example the last two steps of installing renewable technologies and securing low carbon energy is most likely beyond reach for many households and so can cause inertia</p>

or a lack of drive to tackle the first two steps). A parallel message needs to be found that can outline other benefits to householders beyond solely financial benefit. The Energy Bill Revolution<sup>1</sup>'s radical new approach to energy efficiency outlines how benefits reach beyond a property receiving energy efficiency measures. Their report published in October 2014<sup>2</sup>, considered the scenario that all low income homes were given measures by 2025 to bring them up to a Band C on an Energy Performance Certificate (EPC) and a mechanism by which all other households are offered a 0% interest loan to reach the same standard by 2035. The report found that:

*“In addition to making all low income households highly energy efficient, reducing the level of fuel poverty, the modelling has established that this energy efficiency programme would deliver:*

- **£3.20 returned through increased GDP per £1 invested by government**
- **0.6% relative GDP improvement** by 2030, increasing annual GDP in that year by £13.9bn
- **£1.25 in tax revenues per £1 of government investment**, through increased economic activity, such that the scheme has paid for itself by 2024 and generates net revenue for government thereafter
- **2.27 : 1 cost benefit ratio** (Value for Money), which would classify this as a “High” Value for Money infrastructure programme
- **Increased employment by up to 108,000 net jobs per annum over the period 2020-2030**, mostly in the service and construction sectors. These jobs would be spread across every region and constituency of the UK.
- **23.6MtCO<sub>2</sub> reductions per annum by 2030**, after accounting for rebound effects. This is roughly equivalent to cutting the CO<sub>2</sub> emissions of the UK transport fleet by one third.
- **Improved health and reduced healthcare expenditure**, due to warmer and more comfortable homes, and improved air quality. For every £1 spent on reducing fuel poverty, a return of 42 pence is expected in NHS savings.
- **A more resilient economy**, less at risk of shocks in gas prices, as the economy becomes less reliant on fossil fuels. Investment in energy efficiency in the domestic sector will result in a 26% reduction in imports of natural gas in 2030, worth £2.7bn in that year. ”

For Wales, these findings must be seen as encouraging and outline why the energy efficiency strategy must be embedded within larger Welsh Government infrastructure programmes. The improved health and reduced healthcare expenditure modelled could hold significant benefits for the Welsh economy.

The WLZCH understand that Welsh Government currently estimate the number of households experiencing fuel poverty to be 390,000 households in Wales, and that this is rising. The Energy Bill Revolution's approach (as analysed by Cambridge Econometrics and Verco) provides an extremely compelling argument for joined-up government, linking fuel poverty, housing and health whilst also supporting and help develop a strong supply chain and green economy.

The WLZCH is aware that funding such an ambitious programme would be challenging. Wales would be required to find £200 million per year to eliminate fuel poverty by 2025. We would be supportive of increasing activity to draw in more ECO and EU funding. This can be done by providing data that makes it easy for energy companies to choose Welsh homes to install ECO measures. Whilst ECO will close in 2017, ECO funds could help establish greater energy efficiency and momentum.

Returning the outlined energy hierarchy (your figure 1), the WLZCH remains supportive of the provision of decentralised renewable technologies and the impact that they have on reducing Wales' carbon footprint and ensuring energy security. With one fifth of Wales' homes currently off-gas there is considerable opportunity for the deployment of low carbon technology rather than extending and investing further in a carbon heavy, finite and expensive fuel. Our housing stock could benefit hugely from the decentralised and microgrid future that low zero carbon technologies and smart meters can enable.

We feel that much could be done to raise the profile and image of energy efficient buildings, particularly refurbished homes. In 2014 the WLZCH commissioned Reading University and associates to undertake an assessment of the Welsh housing stock's EPC's and property value. Their findings were in line with the growing body of evidence which correlates between energy efficiency and an increase in property values.

In November 2014 the WLZCH published their EPCs & Mortgages report which demonstrates a strong correlation may exist between EPC, annual energy bills and mortgage lending<sup>3</sup>. The report has assessed more than 100 properties through the UK and has found that fuel bills incurred by similar sized properties can vary by more than £90 per month, simply because of their different energy efficiencies. This is the first time that a link has been demonstrated between real energy bills and a property's EPC and could have a huge impact on the mortgage market, as £90 per month equates to about £15,000 potential difference in the maximum mortgage

	<p>amount over a 25 year mortgage.</p> <p>Demonstrating that EPCs can help predict more accurately a property’s annual energy bill has significant potential to impact on responsible lending, something increasingly under scrutiny by the Financial Conduct Authority in the UK. At present, the majority of mortgage lending institutions use an estimation of fuel costs that are averaged across UK homes as part of their calculations for mortgage “affordability”. The WLZCH will continue to progress this work with lenders with the aim of increasing the funding mechanisms available to owner occupiers to enable refurbishment works.</p> <p>We would be supportive of any mechanisms the Welsh Government enacted to increase EPC requirements for the privately rented sector, as outlined within DECC’s Consultation on the proposed energy efficiency regulations under the Energy Act 2011 for the domestic private rented sector, carried out in July 2014<sup>4</sup>. The WLZCH believes that an increased understanding of EPC ratings for properties, as has been achieved with white goods and vehicles, could help begin to generate a difference in the market value between low and high energy-efficiency properties.</p> <p>1 <a href="http://www.energybillrevolution.org/">http://www.energybillrevolution.org/</a>  2 <a href="http://www.energybillrevolution.org/wp-content/uploads/2014/10/Building-the-Future-The-Economic-and-Fiscal-impacts-of-making-homes-energy-efficient.pdf">http://www.energybillrevolution.org/wp-content/uploads/2014/10/Building-the-Future-The-Economic-and-Fiscal-impacts-of-making-homes-energy-efficient.pdf</a>  3 <a href="http://www.cewales.org.uk/cew/wp-content/uploads/EPCs-Mortgages1.pdf">http://www.cewales.org.uk/cew/wp-content/uploads/EPCs-Mortgages1.pdf</a>  4 <a href="https://www.gov.uk/government/consultations/private-rented-sector-energy-efficiency-regulations-domestic">https://www.gov.uk/government/consultations/private-rented-sector-energy-efficiency-regulations-domestic</a></p>
<p><b>44</b></p>	<p><b>Age Cymru</b></p> <p>Improving the energy efficiency of Welsh housing should remain a priority of the Welsh Government. The consultation document outlines the number of households in fuel poverty in Wales, a number which has risen over recent years.</p> <p>We also welcome the recognition that fuel poverty can have a direct impact on people’s health, especially those in vulnerable groups. Excess Winter Mortality is a consistent problem, occurring every year, and fluctuating broadly in line with winter temperatures. Last winter there were 1100 excess winter deaths in Wales, the vast majority of which (1000) occurred amongst people aged 65 and over. Over the past 10 years there has been an average of 1666 excess winter deaths each year in Wales. This provides strong evidence of the importance of ensuring that people live in houses which they can afford to heat.</p> <p>A recent report by Age Cymru into poverty in later life, <i>Life on a low</i></p>

	<p><i>income</i>,<sup>7</sup> found that energy bills were the aspect of household finances of greatest concern to older people. 57% of respondents stated that they were worried about how to afford gas and electricity bills. In addition, 35% of retired households reported cutting back on the amount of heating or electricity they use over recent years as a result of their financial circumstances. Major concerns over energy bills were shared across all age groups, indicating that this is a significant issue for many in society.<sup>8</sup></p> <p>Improved energy efficiency is the main lever that the Welsh Government has to help people with the affordability of energy.</p> <p><sup>1</sup> Life on a low income, Age Cymru, 2014</p> <p><sup>1</sup> ICM Opinion Poll for Age Cymru, February 2014 (sample: 1000 adults 18+ in Wales).</p>
<p><b>45</b></p>	<p><b>Rockwool</b></p> <p>There is a growing body of evidence that investment in energy efficiency improves national finances through contributions to GDP and tax revenues through increased employment and growth.</p> <p>For example, research undertaken by <a href="#">Cambridge Econometrics</a> has found that, for the UK as a whole, reducing emissions in line with our legal obligations could increase GDP by 1.1 per cent and create an additional 190,000 jobs by 2030. This research was undertaken on the UK as a whole however it is clear that the targeted support for energy efficiency from the Welsh Government will help Wales to achieve these benefits.</p> <p>In particular, as many ‘easy’ energy efficiency measures, such as cavity wall insulation, have been completed through the lifetime of previous energy efficiency schemes, hard to treat measures, such as solid wall insulation, now represent a greater proportion of the remaining potential for energy efficiency. These are by their very nature more labour intensive, skilled applications and therefore have a greater potential to create Green job in Wales.</p>
<p><b>49</b></p>	<p><b>GBSPM</b></p> <p>Having worked as the Project Manager on the Senedd Building for TWC and other HQ buildings prior to setting up a small consultancy that works in</p>

the environmental and sustainable end of the Built Environment I feel I have a good feeling of where we are at present. It would appear that due to various drivers the aspiration of the Welsh Government to comply with its Sustainable Constitution is being watered down and lost.

Energy Efficiency Costs. There is no easy way of improving the quality of the built environment and our legacy left for future generations. I believe that, in line with the Stern Report, the cost of energy efficiency, improvements and retrofit will be far less now than in the future. But, as was seen in the recent changes to the Building Regulations the Welsh Government do not appear to have the sufficient conviction to drive this through.

CODE & BREEAM requirements under TAN22 led to a great increase in demand and provision of Excellence within Wales. Please see the attached letter sent to All the Assembly Members in an attempt to not “throw the baby out with the bathwater”. At the 2013 Awards 3 of 8 UK and 3 of 17 worldwide award winning buildings were located in Wales. Yet due to the house building lobby we’ve removed the requirements for both CODE and BREEAM. They stated they were already energy efficient and CODE was a level of scrutiny too far.

There was a great deal of learning, good practice and experience that would have tied perfectly with this Call for Evidence, but having only picked up on the consultation too late could not collate these in time. Some of my personal favourites:

- Awareness of traditional Building stock – sometimes the best “energy efficiency” aspects are to repoint/ repair gutters and fit shutters and thick curtains. There is a growing risk of unintended consequence from doing too much.
- Building quality, fabric first buildings. High insulation, low air tightness & thermal bridging
- Mandatory standards that are actually an improvement now, rather than the ineffectual 8% improvement in the Building Regs. Why bother segregating from England Regs and the associated costs if there is no difference?
- Whole house switching – turn off all standby/ none critical equipment on leaving & at night (30-50% energy reductions)
- BREEAM & CODE provided a clear, independent and quantifiable measure of the effectiveness of our building stock. By removing these we have no measure on what we have. How can we move forward without empirical evidence. These need to be

	<p>mandatory.</p>
<p><b>51</b></p>	<p><b>Flintshire County Council</b></p> <p>In order to maximise potential energy savings, financial savings and local economic benefit, the Welsh Government should set meaningful challenging energy efficiency targets across all sectors. The Welsh Government’s 3% year on year carbon reduction target has been applied here in Flintshire to our public buildings, but targets for housing, which were previously formalised under HECA, are now only present in local authorities which have prioritised these projects for their wider social, economic and environmental benefits. However this means there will be inequalities in the level of support available across Wales.</p> <p>Smart investment can yield savings and income when the Feed In Tariff and Renewable Heat Incentive apply. Across Housing and Corporate Energy renewable energy projects over £150k in annual revenue is being generated, and the income can continue to be reinvested. Although those FIT and RHI programmes are not under Welsh Government’s remit, it is important to keep engaged with those programmes and ensure that the benefit is maximised in Wales – for example, could the domestic RHI (Or a similar more local incentive) be used more effectively in rural Welsh villages? Data on the uptake of FIT and RHI should be made available at postcode level for Welsh Government and Local authorities to analyse together.</p> <p>The in-house specialist energy services in Flintshire Council on both the domestic and commercial side more than pay for themselves in energy savings and grant income. Additionally, the partnerships we have with the third sector, social enterprise and specialist contractors allow us to deliver a service that has an impact greater than the sum of its parts. Flintshire’s energy team has reduced the council’s own energy consumption by nearly 20% since its inception 7 years ago, (with estimated cumulative savings in excess of £2M during this period). Since we pay approximately £5M for utilities (energy and water) a mere 4% increase in either consumption or costs covers the Units function. Without a fully functional unit there is a very real threat of increases in costs, up to and potentially beyond this level.</p> <p>However it can be difficult to demonstrate this clearly across a wide organisation as the savings are spread across different budgets, buildings and in communities.</p> <p>At the Elfed High School in Buckley, for example, we took a whole school approach and addressed the following areas:</p>

	<ul style="list-style-type: none"> <li>• Lighting</li> <li>• Windows</li> <li>• Remote access to controls for school enabling them to adjust from their PCs</li> <li>• Electronic TRVs</li> <li>• Separated support centre hot water from school hot water.</li> <li>• Photovoltaics</li> <li>• Repairs on flat roofs.</li> <li>• Kitchen ventilation.</li> </ul> <p>The Display Energy Certificate went from a score of D 76 in 2009 to a B with a score of 50 once all improvements were made, making savings of over £19,000 annually and nearly 300,000 kWh annual energy savings. In a time of tough financial decisions, this savings could help sustain a post or be reinvested to continue the savings. We have had great success using Salix funding as well as our own invest to save fund.</p> <p>In Flintshire over the past 3 years we have reported more clearly about the wider economic impacts of energy efficiency projects and we have addressed some of the issues of past years which made it difficult for new private enterprise to get involved with schemes. Domestic energy efficiency projects run by Flintshire sustain around 40 jobs a year across a range of disciplines.</p> <p>We have also made Community Benefits a key part in procurement, using a labour and materials split to allow a broader range of contractors to participate competitively. We are collaborating and innovating through procurement, working with colleagues across North Wales with the goal of providing a scalable model that partners can engage with at any point.</p>
52	<p><b>Egnida</b></p> <p>Egnida’s core business is providing “whole house”, “whole business” energy and environmental solutions to its customers that include homeowners, social and private landlords, local authorities and industrial and commercial customers of all sizes. We are MCS and Green Deal accredited and we use in-house resources and local delivery partners to create sustainable local employment wherever we operate. We are able to fund projects on a shared benefit basis in most cases where the customer does not have access to capital. As such, subject to confidentiality restrictions, we are well placed to comment on market dynamics etc. Our general approach is an enhanced version of the Energy Hierarchy presented and more in the style of an interactive circle of actions encompassing Understanding Assets and</p>

	<p>Potential Options; Procuring Energy at Best Value; Only paying for what has been used; Reducing high cost usage and generating your own energy (predominantly from renewable solutions). Using this approach has resulted in Anchor Companies in Wales enjoying multi-million pound savings with little use of their own capital. Similarly, we have developed solutions for local authorities whereby the net financial benefits would be more than 25% of their total budget deficits for the 2015/16 financial year. These solutions support sustainable local SME employment and keeps the £ benefits in Wales rather than the expenditure benefiting international energy companies. The total benefits to Wales are significant, realistic and larger than any other potential markets that we know of. We already know that the skills and knowledge are exportable to the rest of the UK and into international markets. However, there are some key barriers that need to be overcome to make this scalable in order to make a meaningful impact and that tends to be the strategic focus of our business.</p>
<p><b>53</b></p>	<p><b>NEA</b></p> <p>Meeting energy needs through increased domestic energy efficiency can reduce the United Kingdom's dependence on imported fossil fuels and help to increase the European Union's energy security. Through cost-effective investment in all forms of energy efficiency, the UK could be saving 196TWh in 2020, equivalent to 22 power stations.</p> <p>In the UK, over 135,000 people are currently employed in the domestic energy efficiency industry. However, recent changes to the Energy Company Obligation (ECO) have compromised this. An ambitious programme to improve the homes of fuel poor households would create 130,000 additional jobs, boosting GDP by 0.2 per cent and represent a more cost-effective investment of public money than almost any other comparable investment programme</p> <p>(Cambridge Econometrics &amp; Verco, 2012, Jobs, growth and warmer homes, Consumer Futures.)</p> <p>The Welsh Government estimate that energy efficiency measures installed between 2008-2011 reduced the projected number of households in fuel poverty in 2012 from 33% of all households to 30% of all households – a reduction of 36,000 households. We commend the Welsh Government on this achievement. Additionally the 2013-14 Nest annual report states that the scheme has helped over 56,000 householders since the scheme started and over 13,400 of these households received a package of free home energy improvements estimated to deliver average energy bill savings of over £475 per household per year.</p>

<p><b>54</b></p>	<p><b>Scottish Power</b></p> <p>We have made much progress in delivering energy efficiency measures to households across Britain under the Energy Companies Obligation (ECO); and as part of this, we have seen particularly good progress in Wales, having delivered around 15% of all ECO activity in Wales (including 16% of all measures installed under the Home Heating Cost Reduction Obligation (HHCRO) and 14% of those delivered under the Carbon Savings Community Obligation (CSCO) in Wales).</p> <p>In general terms, households in Wales have benefited from ECO proportionately more than in GB as a whole, with 40 in every thousand households receiving a measure in Wales compared to 35 in GB. ScottishPower has funded numerous ECO projects across Wales, examples of which include:</p> <ul style="list-style-type: none"> <li>• £1.25 million worth of ECO funding to one of our Welsh installers to install Solid Wall Insulation (SWI) to 334 Wimpey flats mostly owned by Caerphilly Council in South Wales;</li> <li>• Over £0.5 million in ECO funding to Newport City Homes to install 231 SWI measures across their tower blocks and terraced housing.</li> </ul> <p>Both of these schemes have helped in the regeneration of the local community, providing warm and dry homes, and reducing fuel bills for householders.</p> <p>Prior to the commencement of ECO, we spent over £12 million on 19 Community Energy Savings Programme (CESP) schemes in Wales and around £10 million delivering over 30,000 cavity wall and loft insulation measures through the Carbon Emission Reduction Target (CERT) obligation - 18% of which we delivered in Wales. Moreover, through the delivery of thousands of energy efficiency measures, we have supported a large number of jobs within our installer base in Wales.</p>
<p><b>55</b></p>	<p><b>WLGA</b></p> <p>Through the year the WLGA have been working with LAs to identify and collate information on renewable energy schemes and projects within their areas and have established a comprehensive all-Wales list. WLGA, working together with Local Partnerships, are in the process of developing this list into a prospectus of renewable energy opportunities to utilise in respect of</p>

attracting investor interest.

Local Authorities in Wales have worked with Carbon Trust and EST to identify and achieve energy efficiency through CESP and the installation of cavity wall insulation.

Local Authorities have made use of Salix finance to invest in measures which are energy efficient and will realise savings in the longer term (swimming pool covers and lights which turn off when no motion is detected in the room). Further details of these schemes identified in 7 and 8 can be obtained through CAN network (Steve Martin MARTINS@CAERPHILLY.GOV.UK)

Within the hierarchy of energy management – reducing the demand for energy is primary with energy efficiency measures before renewable sources of energy. The following points provide an illustration as to how Local Authorities are undertaking a broader spectrum of energy management

Swansea Council demonstrated its commitment to addressing climate change in its role as a Community Leader , service provider and estate manager when it signed up to the Climate Local Initiative in May 2014. The Council is at the forefront of public sector reporting on sustainable development in Wales. 2013/14 marks the fourth year of the council publishing the Sustainable Development Report which sits alongside the annual Statement of Accounts. 6 of the 38 indicators are on climate change and decarbonisation.

12.Swansea through their CREES (Community Renewable Energy and Enterprise Scheme) are investigating the opportunities for local people to benefit from energy produced through the development of community-scale renewable energy projects

A county-wide renewable energy assessment in Pembrokeshire has been undertaken by AECOM outlining opportunities for renewable generation. The authority has identified the potential of roof based and land based PV solar panels for embedded generation to secure energy supply, mitigate cost rises, reduced carbon dioxide emissions and create sustainable revenue streams within the authority.

Pembrokeshire have also established Cultural Services Energy Champions and Leisure Centre Energy Champions to progress energy efficiency, energy surveys, the exchange of best practice and invest-to-save projects in libraries, archive buildings and leisure centres. The leisure centre

	<p>scheme was highlighted by the Carbon Trust as a best practice case study</p>
<b>56</b>	<p><b>Carmarthenshire County Council</b></p> <p>The Arbed programme has had some notable successes at achieving these aims, in each of the various versions. Each has had supporting jobs as a main focus. The problem has been the lack of clarity over the funding availability which makes future planning difficult for everyone, including local authorities, contractors, suppliers and installers.</p>
<b>58</b>	<p><b>Pembrokeshire Coast National Park</b></p> <p>In response to this question we could give a Sustainable Development Fund (SDF) Case Study as an example:</p> <p><u><a href="#">Energy Efficiency Case Study – Thomas Joinery Ltd</a></u></p> <p>Thomas Joinery Ltd is based in the Pembrokeshire Coast National Park and manufacture high quality bespoke joinery including eco windows and doors. Their team of joiners also undertake conservation work and in partnership with the local college offer a modern apprenticeship scheme. All their manufacturing processes are carried out 'in house,' which includes a fully equipped paint shop in addition to undertaking all of their own glazing.</p> <p>Support from the Pembrokeshire Coast National Park Authority and the Welsh Government through the Sustainable Development Fund has helped Thomas Joinery Ltd to grow their business sustainably by increasing manufacturing capability to cope with the increase in orders for the Passive Windows range, reducing energy consumption and associated costs and providing ongoing employment and training opportunities.</p> <p>The overall project comprised:</p> <ul style="list-style-type: none"> <li>• Extending the workshop area, including the spray shop and providing timber and briquette stock storage capacity;</li> <li>• Modernising the spray shop facility to increase volume and efficiency;</li> <li>• Putting in place 'greener' energy solutions e.g. insulation and LED lighting with PV panels to follow later.</li> </ul> <p>Information received at the end of project report that would require verification/updating before any publication:</p>

	<ul style="list-style-type: none"> <li>• Before installation had even been completed electricity costs has reportedly reduced by approximately 40%;</li> <li>• 7 jobs created or preserved by the project;</li> <li>• 1.5 new FTEs employed.</li> </ul> <p>The Sustainable Development Fund contributed £31,005 towards a total project value of £62,158.11</p>
<b>60</b>	<p><b>Alan McCarthy, Hafod Renewables.</b></p> <p>Previously ran an apprenticeship scheme for electrical and plumbing associated with solar PV and Solar Thermal in Caernarfon. Energy efficiency management is almost non existent, firms are paying far too much for gas and electricity. And Solar Thermal in Caernarfon.</p>
<b>61</b>	<p><b>Stephen Vaughan, Housing Renewal Team, Torfaen County Borough Council.</b></p> <p>My team is currently engaged in upgrading the thermal value of roofs in Northville, Cwmbran. We have had a very positive response from our clients in relation to the heat retention experienced in their properties since the roof work has been done. Some have also commented that they do not need to have their thermostats turned up so high and as a consequence are making a saving on their Gas bills. We have engaged a local contractor to carry out the work which has involved giving employment to a large number of skilled tradesmen. The new roofs have also caused many to remark on the overall improved look of the estate since the work has been carried out.</p>
<b>62</b>	<p><b>Andy Thomas, Butler &amp; Young Wales.</b></p> <p>There is a major opportunity in Building Regulations and EPC legislation available to WG. The current changes to Part L are a step forward and this has to be progressed and developed.</p>
<b>63</b>	<p><b>Neil Evans, Carmarthenshire County Council.</b></p> <p>Carmarthenshire County Council has invested nearly £2 Million of SALIX funding in our corporate estate over the last few years. We've invested the</p>

	<p>money in enenergy efficient lighting, insulation, swimming pool covers etc.</p> <p>That investment continues to reduce our energy consumption and has helped keep local contractors going during a very difficult economic period - we know because they've told us!</p>
<b>64</b>	<p><b>Kate Smith, KFS Consultancy Ltd.</b></p> <p>Experience - an increased level of EPC instructions relating to householders seeking energy efficiency grant schemes (not green deal), ECO, Domestic RHI, PV tariffs.</p>
<b>65</b>	<p><b>Gary Spiers, South West Insulation &amp; Extractions LTD.</b></p> <p>Employing installers with in the insulation trade</p>
<b>66</b>	<p><b>Phil Powell, Gwent Energy CIC.</b></p> <p>we help many householders with energy saving They often have old appliances that take very large amounts of energy to run such as 25 year old fridges a new fridge can have a payback of 6 months or less This could be replicated across most households in total saving a significant amount of energy</p>
<b>67</b>	<p><b>Mark Greenfield, Greenfield Energy Solutions.</b></p> <p>The current Green Deal Scheme is a shambles. I studied personally as a DEA and GDA and the only benefit from this was to the training companies. Then there is the ridiculous red tape around it causing extra costs to the end customer by each tier of control taking their share. Corrupt parties finding ways around this concept are the ones with large sums of liquid capital not the small and micro businesses that try their best to employ people on a fair wage and not taking unacceptable profits.</p>
<b>68</b>	<p><b>Daryl Price, DK Property Services.</b></p> <p>No. There has been no increase in energy efficiency for new dwellings compared to the UK. Now the CfSH has been abolished, the house-builders</p>

	<p>are building badly performing boxes that will still cost a fortune to run. A key differential has been lost with the Part L changes. WAG could have built a set of standards that made Welsh housing 'better' than England, cheaper to run, and thus cheaper to own!</p>
<b>69</b>	<p><b>Brett Langdon, SPMS (Wales) Ltd.</b></p> <p>We are currently employing 16 people in External wall insulation. A large part of this is through Welsh government schemes such as Nest and green deal.</p>
<b>71</b>	<p><b>Jeffrey Smith, First Phase Electrical.</b></p> <p>i do not agree with wind turbines complete waste of tax payers money!!!!!!! it should be solar energy panel on everyone s property this would create massive jobs and everyone would benefit from it and save huge amounts of carbon foot prints there would be work locally for contractors if shared out and it would mean i would employ trainees and more work force as it takes a team of three per house</p>
<b>72</b>	<p><b>Dawson Evans, Torfaen County Borough Council.</b></p> <p>No</p>
<b>73</b>	<p><b>Sian Edwards, J D Energy Services.</b></p> <p>People are slowly becoming aware of being energy efficient and what technologies are available, but it is still very much alien to most.</p>
<b>74</b>	<p><b>Ian Titherington, City of Cardiff Council.</b></p> <p>I am the instigator &amp; project manager of Greener Grangetown, a sustainable drainage scheme which will save significant energy and enhance the local environment of an inner city area, by using gravity and vegetation to remove rainwater from the public foul sewer system. The better management of rainwater run-off within our urban areas can make a huge contribution not only in reducing the need for new sewers, but also in eliminating unnecessary pumping and sewage treatment. In doing so, using</p>

	<p>the water as an asset by enhancing the local environment and ecosystem, engages the local community and significantly improves their living experience.</p>
<b>75</b>	<p><b>Bex Gingell, Taff Housing Association,</b></p> <p>At Taff housing we received funding greener travel - we bought pool bikes for all of our sites, and set up regular free bike servicing for staffs personal bikes. We have surveyed staff before the schemes were set up and after they were set up and have a slight increase in the number of staff who cycle to work. We also have a 'green group' in the workplace and have done things like control the heater settings, put sensor lighting in hallways, etc....</p>
<b>76</b>	<p><b>Rob Newell, Joyner PA Cymru Ltd,</b></p> <p>In our experience the funding timings and allocation needs to be looked at urgently. There is too much stop start in the allocation of work funding which is not giving contractors a chance to plan the execution of the programmes, i.e. funding allocated during the winter and expected to complete by march (worst months) and nothing during the summer months when contractors could increase the production levels due to longer daylight hours and milder temperatures. The government place the onus on contractors to create sustainable jobs growth, but do not allow for this when funding get cut or delayed leaving contractors high and dry after committing to these programmes with the labour force.</p>
<b>77</b>	<p><b>Rachel Davies, City and County of Swansea,</b></p> <p>Not specifically.</p>
<b>78</b>	<p><b>Samir Hussien, site services.</b></p> <p>reduce energy bills  more recycled carried by the staff  replace lighting with energy efficiency ones.  water harvesting system installed  others (transport, etc)</p>

79	<p><b>David Powell, Vale of Glamorgan Council.</b></p> <p>I have data showing energy saving as a result of energy efficient technology and of behaviour change. I do not track employment but obviously someone was employed either to produce the hardware and/or install as applicable.</p>
80	<p><b>Shaheena Chowdhury, energy saving direct.</b></p> <p>There are a lot of delays and a lot of administration works. Also there is no where to find what particular fund is open for home-owners to help them reduce CO2</p>
81	<p><b>Peter Draper, Rounded Developments Enterprises Ltd.</b></p> <p>Energy efficiency measures as recommended and used by ECO / rdSAP is potentially highly damaging to the Welsh economy. STBA work has highlighted that use of conventional materials on solid walled buildings (34% of the Welsh stock) can damage the fabric of the building. The way that contracts are being delivered means that Housing Associations will be left with the bills for doing remedial work on homes. Systems are being designed so that when damp occurs it will at the risk of the HAs not the installers / specifiers etc. I think that Wales has an opportunity to really lead the way in using sustainable materials (a new industry for Wales) that actually minimises the risk to the homes and occupants, but this means ditching the woefully inadequate rdSAP methodology and using a system that takes into account moisture. I have seen many examples of where failure is only a matter of time.</p> <p>We really need to train people (users, installers etc) in how buildings work and the issues around moisture as well as energy efficiency. This course has been developed by CITB already, but it needs Gov to adopt it and ensure that the workforce is trained and knowledgeable.</p> <p>All the answers are there, but it needs Gov to take responsibility on how we spend money and how we ensure that we preserve a healthy building stock. This is now possible with the powers that Gov has, but it is clouded by powers of the construction industry. If Wales gets this right it would lead the way in the UK and many parts of Europe with a similar set of risks.</p>

82	<p><b>Mathew Davies, Grwp Cynefin,</b></p> <p>I started my position last October and since then i have learnt alot regarding energy efficiency and how useful it can be to people on saving money, we give to people tips on how to save money, where to find the best deals and also how to claim money back for example a lot of people don't know about the warm home discount scheme and we have successfully claimed over £20,000 for our clients.</p>
83	<p><b>Sylvia Peat, Grwp Cynefin,</b></p> <p>Yes the newly granted Vibrate and Viable places grants awarded to Holyhead, will hopefully generate income and sustainability to a much needed Town, with the prospect of a new Hydro Farm, the future is looking brighter.</p>
84	<p><b>J.Richard Davies, J.r.davies property services.</b></p> <p>I. Mostly work with old stone built properties in Wales and have encountered a lot of resistance to energy saving measures for this type of building</p>
85	<p><b>Julie Edwards, Pembrokeshire Housing Association.</b></p> <p>The tenants in the new build properties which are more energy efficient have reported a big difference in their fuel costs compared to their previous accomodation.</p>
86	<p><b>Graeme Harrold, 3-e Electrical Ltd.</b></p> <p>Limited to what has been seen on Twitter. Business are adopting energy saving measures by themselves and not because of WG strategy.</p>
87	<p><b>Elrond Burrell, Architype Ltd.</b></p> <p>We are currently working on a new passivhaus standard building for a school in Wales. It will be one of the most energy efficient and high quality, healthy school buildings in Wales. It follows the hierarchy triangle with demand reduction first and then efficiency.</p>

88	<p><b>Allan Smith, Energy Effective Ltd.</b></p> <p>Yes. We spent 2014 highlighting to various WG agencies the benefits of Nanotechnology to help deal with fuel poverty across Wales and the need for a dedicated team of installers. These would be new sustainable jobs for at least the next decade and beyond but received no support.</p>
89	<p><b>Malcolm Wilson, RCT Homes Ltd.</b></p> <p>RCT Homes has installed over 400 solar PV systems and a smaller number of solar thermal. The feedback we have had from tenants is that they have seen considerable reduction in their energy bills as a result of solar panels.</p> <p>We have also completed installing EWI on over 2,000 non traditional built homes which have resulted in significant reduction in the energy bills of those tenants.</p> <p>Can't comment directly on long term creation of jobs.</p>
90	<p><b>Nicola Vaughan, City Energy South Wales Ltd.</b></p> <p>As a Green Deal Provider we have managed installations in various measures under Green Deal &amp; ECO throughout Wales and the UK equating to over 200,000 tonnes of carbon emission savings and £1.5m of cost savings to customers meeting the ECO HHCRO criteria</p>
92	<p><b>Neil Lewis, Robert Owen Community Banking Fund,</b></p> <p>I worked on an idea of converting Llandovery into Wales's 1st LED town. I converted many of the lights in the SMEs to LEDs. Saving one chip shop £3000 p.a. with 5 year guarantees!</p> <p>The SMEs in rural Wales need to explore every advantage to compete with the large corporations.</p> <p>We also encouraged doors on refrigerators, PV panels etc</p>
93	<p><b>Jonathan Hyde, Bron Afon Community Housing Ltd.</b></p> <p>We as a company are PAS2030 accredited with BBA and undertake external wall insulation to our own housing stock. The team were set up just</p>

	<p>2 years ago and have maintained PAS2030 accreditation over that time. The team comprises 24 no operatives of which 13 are directly employed by BA and 9 are agency.</p> <p>This is supporting the local economy in that the majority are residents within Torfaen .Where ever possible we utilise local building merchants and sub contractors which saves carbon in transportation costs.</p> <p>We are also are MCS accredited and have installed 770 no arrays to our housing stock which as the potential to take tenants out of fuel poverty</p> <p>Some quotes from tenants where works have been undertaken :-</p> <p>Our home looks a lot nicer. We really appreciate what has been done here. "The team of boys were really patient and at 85 this meant an awful lot time. My house now looks much nicer and I am looking forward to saving some money on my energy bill. I knew exactly what was happening and when. Excellent service provided by Jason Lomas and Lindsay Dyer. I have to say that Kevin Howells has been brilliant; every thing I asked has been done. I really appreciate the extra mile the boys and supervisor have gone. They worked very hard and it paid off."</p> <p>"Everyone was very pleasant and approachable. This work has improved my home and improved the whole look of the street. I am proud to live in the area, thank you! I have solar panels on my roof that have helped with the electricity bills. I can't wait to save money on my gas too."</p>
<p><b>94</b></p>	<p><b>Clare Parsons, Brecon Beacons NPA.</b></p> <p>BBNPA have supported a community centre group organising a fuel buying club</p> <p>BBNPA have supported local energy clubs using thermal imaging cameras to highlight areas of heat loss in domestic properties</p>
<p><b>95</b></p>	<p><b>Stewart Matthews, Torfaen County Borough Council.</b></p> <p>I am involved in the supplying and fitting of thermal insulation within roof spaces and insulation of external wall insulation with my job. I have also had both fitted to my home, resulting in lower energy bills and greater energy efficiency within the home.</p> <p>Job wise any government help regarding the fitting to homes will support</p>

	and provide jobs, uplifting the general economy.
<b>97</b>	<p><b>Alison Fuller, Groundwork North Wales.</b></p> <p>experience in giving advice to people on energy saving initiatives at home and in business Green deal has created a lot of job opportunities</p>
<b>101</b>	<p><b>Mark Wilcox, Business Step Up.</b></p> <p>My businesses assist's SME's, National, International and Global businesses to grow rapidly with business growth with increases already achieved with businesses T/O from £30K to £200K another from £200K to 1.75 Million within 3 years &amp; another example with taking a business from £2 Million to £23 Million.</p>
<b>102</b>	<p><b>Robert Vokes, Joyner.</b></p> <p>Although we have been applying energy efficiency measures for over 25 years, through the WAG there has been more works going on in Wales than in England. This has allowed people to have reduced fuel bills with people reporting there are saving half the costs of fuel bills. It has also allowed us to employ and train local people. This needs to continue with steady and continued growth. The works also needs to be planned effectively through the year to ensure that we provide sustainable employment and not have a peaks and trough scenario.</p>
<b>103</b>	<p><b>Steve Martin, Caerphilly County Borough Council.</b></p> <p>I believe a more consistent approach is required. Whereas Arbed has benefitted "less affluent communities" a number of more affluent residents residing within those areas have benefitted from such schemes.</p> <p>There needs to be a balance which will allow residents on low income living in areas outside the qualifying lower super output areas to benefit from energy efficiency improvements to their home.</p> <p>If possible there is a need to establish a move away from the boom and bust situation of recent years, this does not help the energy infrastructure and has a negative impact on jobs and training.</p> <p>Schemes such as NEST could do with a re-think especially when it comes to heating, has a result of years of initiatives like HEES, EEC, Cert etc we now have properties adequately insulated but with inefficient heating</p>

	<p>systems and being omitted from programmes such as NEST thus leaving some residents in fuel poverty.</p> <p>A more cohesive strategy on renewable energy would be welcome, with a dynamic approach to education and training.</p>
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	<p><b>Question 2 responses: Vision.</b></p>
	<p><b>Do you agree with the vision? If not, please explain your reasons.</b></p>
<p><b>8</b></p>	<p><b>NSA Afan</b></p> <p><b>The first statement – People, communities, businesses and other organisations recognise the benefits of energy efficiency and take action</b></p> <p>NSA Afan agrees with the vision as laid out in the consultation document. We consider the vision to be ambitious but achievable if sufficient resources are targeted at changing the following:</p> <ul style="list-style-type: none"> <li>• the Planning Regulations to include a higher level of energy efficiency at the build stage,</li> <li>• support the introduction of large scale renewable projects like the Swansea Bay Tidal Lagoon and</li> <li>• Encourage inward investment of manufacturing facilities for renewable technologies.</li> </ul> <p>We would comment as follows:</p> <p>To assist <b>people</b> to recognise the benefits of energy efficiency requires an awareness rising campaign. This is lacking in Wales since the demise of the independent Energy Efficiency Advice Centres (EEAC). The Energy Saving Trust offers an advice service but it is not face to face as was provided by the EEACs. The provision of a free and independent advice service proved to be a valuable addition to the battle to combat fuel poverty with over 1 million households nationally receiving free and independent energy efficiency advice and access to free and subsidised insulation measures.</p> <p>To assist <b>other organisations</b> the Welsh Government could examine their relationship with community groups, voluntary organisations and the third sector. There in dwells a vast number of potential advocates for the promotion, dissemination of information and the future growth of the ‘Country of Excellence’ so desired. These ‘avenues for action’ reach into the community in their daily interaction with people, many living in poor quality housing stock and many in C1st area rural and urban – these ‘energy champions’ only need leadership from the Welsh Assembly and can in our opinion make a significant difference to the well being of Wales.</p> <p>We recommend:</p> <p>Third sector organisation like DTA Wales membership, C1st clusters and Age</p>

	<p>Cymru given access to free training for their staff to enable them to have suitably qualified staff in place to actively promote the benefits of energy efficiency and to provide a face to face advice service to the most vulnerable in society.</p> <p><b>The Second Statement – We have the supply chain that we need across Wales to deliver energy efficiency improvements to buildings, products and processes and those businesses go on to grow and export their expertise and know how</b></p> <p>NSA has no comment on this section</p> <p><b>The Third Statement – We have effective education and skills in place to deliver on the energy efficiency challenge, through the raising of awareness in schools to a qualified and skilled workforce and investment in higher level skills to support R&amp;D and innovation.</b></p> <p>NSA has no comment on this section</p> <p><b>The fourth Statement - We support innovation in new energy efficiency products to deliver solutions in Wales; and our businesses benefit from the opportunities presented by the global challenge.</b></p> <p>NSA has no comment on this section</p> <p><b>The Fifth Statement - We have clear funding mechanisms, a sense of direction and stable framework that is attractive to investors and consumers.</b></p> <p>NSA has no comment on this section</p>
<b>9</b>	<b>Merthyr Tydfil County Borough Council</b>
	Yes
<b>11</b>	<b>Cert Sure</b>
	We agree with the vision, however the challenge is to make it work!
<b>12</b>	<b>Pembrokeshire County Council</b>
	Yes. The vision addresses all aspects.
<b>13</b>	<b>ICE</b>
	Yes, however, If Wales is to become an exporter of energy efficiency technology (as an earlier part of the vision suggests) then delivery of solutions as stated in this part should not be limited to only Wales.

14	<p><b>ETI</b></p> <p>The Energy Technologies Institute (ETI) supports the energy efficiency vision for Wales to increase the take-up of energy efficiency measures, encourage innovation and grow the supply chain. Improving energy efficiency is central to helping Wales reduce its greenhouse gas emissions, whilst using heat more efficiently, reducing fuel poverty, and also providing commercial opportunities both in Wales and in other parts of the UK.</p> <p>The ETI agrees with the sentiment of the proposed 2025 Vision for energy efficiency in Wales. In particular we believe that:</p> <ul style="list-style-type: none"> <li>(a) innovation should be across technology as well as commercial delivery models;</li> <li>(b) policy has to be both stable and long-term;</li> <li>(c) there should be the capability for new energy efficiency approaches to be scaled up from lab through small-scale test to large-scale trial, through to commercial deployment;</li> <li>(d) the vision should be explicit that energy efficiency should be considered with other approaches including lower cost heat-supply and management.</li> </ul> <p>It will be important to measure the success of the Vision in stimulating the take-up of energy efficient interventions, encouraging innovation and the development of the necessary supply chain in Wales to make the most of the economic and technical opportunities presented. We believe that our collaboration with Bridgend CBC will encourage innovation in Wales and help stimulate economic growth in smart heating systems.</p>
15	<p><b>Wolseley</b></p> <p>We agree with the basic tenets of the vision.</p>
16	<p><b>Miller Research</b></p> <p>On the proviso that support for</p> <p>Innovation includes storage and grid efficiencies, we think the vision is a good one.</p>
17	<p><b>Ynni Glan</b></p> <p>Yes. However, I would like to emphasise the need to:</p> <ul style="list-style-type: none"> <li>i. improve air quality (which causes grave health problems and very high</li> </ul>

	<p>costs for society); and</p> <p>ii. integrate energy policies for buildings with energy policies for transport.</p>
<b>18</b>	<p><b>Torfaen County Borough Council</b></p> <p>Yes</p>
<b>21</b>	<p><b>Ceredigion County Council</b></p> <p>The vision appears to be unclear and lengthy. The vision should be more concise and provide a clearer overall statement of intent that encompasses the five strategic objectives (that you have called visions) in the document.</p> <p>More specifically it is believed that the first vision where ‘People, communities, businesses and other organisations recognise the benefits of energy efficiency and take action’; there needs to be more explicit reference to the importance of individuals (as opposed to people) recognising the benefits of energy efficiency, and this being followed by an example of what is meant by ‘take action’ to.....</p> <p>In the second vision where ‘We have the supply chain that we need across Wales to deliver energy efficiency improvements to buildings, products and processes, and those businesses go on to grow and export their expertise and know how.’ Again there is a need to more explicitly mention homes or domestic dwellings.</p>
<b>22</b>	<p><b>Ofgem</b></p> <p>We encourage and support the Welsh Government in its vision for 2025 outlined in the consultation. In particular we recognise the importance of promoting the benefits of investment in energy efficiency for people, communities and businesses in Wales. In developing this strategy we recommend that the Welsh government ensure that energy efficiency activity is targeted towards areas where it can have the greatest impact, not just in terms of carbon savings but also social outcomes.</p> <p>To achieve this it is important to build and keep updated the evidence base on fuel poverty and facilitate greater data sharing between key stakeholders. Conducting up to date analysis to understand the causes and extent of fuel poverty in Wales can help government better target interventions and innovations. In particular it is important to understand who and where the fuel poor in Wales are, and who is most severely affected by fuel poverty. The Department of Energy &amp; Climate Change (DECC) has carried out a considerable amount of analysis in this area for England. However, the needs of Welsh households may be different from those in England and without comparable data for Wales, there is risk that decision making in Wales will be</p>

based on English data that may not provide an accurate picture. For instance, in 2011 Consumer Insights reported that among consumers with electric heating, 26 per cent in England, 37 per cent in Scotland and 40 per cent in Wales are fuel poor<sup>2</sup>. Carrying out more of this type of research and releasing more of this information into the public domain to aid wider decision making is essential. It would also make it easier for energy companies to target their environmental and social obligations and smart meter activity in Wales.

Meanwhile, facilitating data sharing between government and those parties delivering energy efficiency and social support to energy customers can help to reduce costs and facilitate timely interventions. There may be benefit in reviewing what data is held by the Welsh government, including on the housing stock, incomes, and fuel type and, subject to privacy concerns, considering how it can be made more open where there are social or environmental benefits.

<sup>2</sup> Off-gas consumers Information on households without mains gas heating

<http://www.consumerfocus.org.uk/files/2011/10/Off-gas-consumers.pdf>

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### **Energy Savings Trust**

#### **People, communities, businesses and other organisations recognise the benefits of energy efficiency and take action.**

EST experience in the domestic sector suggests that people generally recognise the benefits of energy efficiency and are willing to take action with appropriate financial support from government or when there is a compelling reason – such as significant energy price increases. We also find that customers require trusted advice to overcome confusion on what the right or most appropriate installation is. EST recently ran a series of public opinion trackers known as the UK Pulse. Of the 2,000 respondents, approximately 24 per cent are planning on installing energy efficiency upgrades in the next year to deal with draught, condensation and mould problems.

EST believes that the general public understand the affordable, established measures such as loft insulation, cavity wall insulation, energy efficient glazing and high efficiency boilers, but not necessarily the wastage they will reduce in terms of financial and environmental impact. This is demonstrated in the fact that in the past few years millions of cavity wall insulation measures have been installed and there are few remaining totally unfilled lofts, although many remain with partial insulation rather than the full recommended depth of 270mm. Double glazing rates are above 60% and high efficiency boilers tend to be installed when old boilers come to the end of their natural life, due to market forces driving supply. White goods and the success of labelling has also driven the market to be dominated by A and AAA rated appliances,

increasing consumers ability to make energy savings when replacing appliances in the home.

Beyond this, there is a perception that people have 'done enough' when it comes to domestic energy efficiency. It is unclear whether the benefits of newer, advanced measures are recognised and whether action outside of grant led programmes will take place. Only 12 per cent of respondents to the UK Pulse survey who do not live in older, draughty homes are planning on installing energy efficiency measures in the next year. We can conclude that action is very much linked to directly felt impact of poorly insulated homes and the consequent impact on bills.

**We have the supply chain that we need across Wales to deliver energy efficiency improvements to buildings, products and processes, and those businesses go on to grow and export their expertise and know how.**

At present many of the energy efficiency measures available on the market are grant supported and do not have a strong independent marketplace. The Green Deal was supposed to provide the capital finance to reduce the exposure householders would have to the delivery of energy efficiency measures in their homes, but data suggests this scheme has not been as successful in achieving these aims as expected. The supply chains have responded to this lack of demand, reducing the investment they made predicated on the success of the programme.

Much of the work currently undertaken in Wales is delivered by large general-building contractors rather than Welsh based SME's. The small scale of the Welsh supply chain results in small capacity and work on small value contracts, even with collaboration between businesses to provide a more extensive range of services. It's clear through investment in recent and current years in Supply Chain Support that Welsh Government remains committed to reversing this trend.

**We have effective education and skills in place to deliver on the energy efficiency challenge, through from raising awareness in schools to a qualified and skilled workforce and investment in higher level skills to support R&D and innovation.**

Approaches will need to differ for schools and those working in the sector. EST Wales have successfully engaged with schools to promote both Nest and Cyd Cymru and they are a natural community group with which to engage further.

	<p>As part of our contract to deliver the Supply Chain Support service we will be undertaking a skills needs analysis, due later in 2015, but hopefully in time to inform the energy efficiency strategy.</p> <p><b>We support innovation in new energy efficiency products to deliver solutions in Wales; and our businesses benefit from the opportunities presented by the global challenge.</b></p> <p>There are examples of Welsh academia and businesses in Wales collaborating on innovative energy saving products. One such example is the Sustainable Building Envelope Demonstration (SBED)5 a £3m project led by the Welsh School of Architecture, in partnership with Tata Steel. The project has also been supported by £1.8m of match funding from ERDF. The project has been designed to model, test, prototype and monitor low carbon building systems featuring transpired solar collectors (TSC) in eight 'buildings in use' in Convergence Areas of Wales. The aim is to evaluate performance of the projects and to disseminate best practice to the wider market. Research findings gathered during the course of the project will enable the economic viability and cost effectiveness of the technologies to be assessed for the different building types.</p> <p>A transpired solar collector system can:</p> <ul style="list-style-type: none"> <li>• Deliver operating efficiency of up to 75%.</li> <li>• Deliver approximately 250kWh/m2 per year.</li> <li>• Meet up to 50% of space heating requirements.</li> <li>• Offers return on investment of three to seven years depending on building orientation, properties and user demand.</li> </ul> <p><b>We have clear funding mechanisms, a sense of direction and a stable framework that is attractive to investors and consumers.</b></p> <p>We agree that clarity around funding mechanisms and an approach to longer term funding would help increase the take up of energy efficiency measures and lead to more confidence in the supply chain about the impact policy will have on their activity in the energy efficiency sector. A concerted effort is require to influence UK led policy and funding streams rather than WG leading as a solution of last resort.</p> <p>The continuation of government funded schemes such as arbed and Nest are vital to keeping demand going and therefore the supply chain</p>
24	<p><b>Neath Port Talbot CBC</b></p> <p>There is a shared viewpoint from NPTCBC in regard to Welsh Government's</p>

	<p>proposed aspirational vision to become a “Country of Excellence” and perhaps there should be the ambition to achieve this vision before 2025. However this vision must be aligned to the various mechanisms that need to be put in place to achieve the aspiration and it will take a significant amount of mobilisation and resource to develop and implement.</p> <p>There is the need for Welsh Government (WG) to discuss and outline a potential energy/carbon model/structure that each Local Authority could implement to address both internal and external energy/carbon issues in a co-ordinated manner consisting of the following key delivery areas:</p> <ul style="list-style-type: none"> <li>• Operational buildings (Internal)</li> <li>• Domestic energy efficiency</li> <li>• Community energy</li> <li>• Local service board</li> <li>• External energy focus; evaluation of the potential of an Authority wide energy strategy which outlines, challenges and places an obligation on all major organisations that they must implement effective energy and water management practices by the adoption of energy/carbon management plans that are submitted to the Authority for review</li> </ul>
25	<p><b>Climate Change Commission</b></p> <p>We agree with the vision statements proposed – the strategy needs to clarify how these aspirations will be delivered. We would therefore support WWF Cymru’s call for an ambitious energy efficiency strategy for Wales, accompanied by a detailed route map and delivery plan, to deliver the visions outlined in the consultation paper.</p>
26	<p><b>Wrexham CBC</b></p> <p>We agree broadly with the vision however it needs to be more aspirational and should inspire leadership, drive ambition and create a sense of urgency. The wording needs to be stretching and dynamic-the ‘best’, ‘world leading’ etc. The vision does not mention fuel poverty per se. The public sector supply chain is strictly related to the procurement process which now puts more emphasis on the EU tender process. The requirement is to seek supply and/or service across the whole EU and not just across Wales only. It will be difficult for the public sector to support local supply chains in Wales when the formal procurement process demands an EU perspective. The vision does not make any reference to the Future Generation Bill and should use the principles of the Future Generation Bill, integrating our economic, social and environment objectives for the long term. There is a need to produce high value added sustainable jobs – skilled, entrepreneurial and innovative as well as construction and installation jobs which should be reflected in the vision.</p>

	<p>Wales's performance is fragmented with too many organisations spending too much time bidding for funding rather than building partnerships and links between organisations need to be developed. This should also be reflected in the vision.</p>
<p><b>27</b></p>	<p><b>Glass and Glazing Federation</b></p> <p>The GGF fully supports the vision of the Welsh Government for energy efficiency. Recognising energy efficiency as an imperative tool for achieving energy sustainability and reducing household bills is fundamental. A supply chain across Wales to deliver energy efficiency improvements to buildings, products and processes is similarly important. The GGF represents over 1,500 business locations throughout the UK and has members in Wales. As such, the GGF recognises the importance of supporting energy efficiency targets with a functioning and effect supply chain. The GGF's members are at the forefront of providing energy saving solutions to both households and businesses and therefore highlight the need to support innovation in new energy efficiency products to deliver solutions in Wales, as outlined in the vision.</p>
<p><b>28</b></p>	<p><b>Citizens Advice Bureau</b></p> <p>Citizens Advice Cymru supports the Welsh Government's overarching vision for the future of energy efficiency. We recognise that it is ambitious, which is right given the scale of the task, and that it will require support from energy companies, public and private sector organisations across Wales, and of course consumers themselves. Energy efficiency can reduce costs and stress to householders, prevent individuals suffering cold related illnesses which also impact on the NHS, and ultimately have macro-economic benefits to the country as a whole.</p> <p>The energy market has been the topic of intense political debate in Wales and beyond, largely driven by regular increases in energy prices against a backdrop of difficult financial times for individual consumers. This is turn has led to regular changes to policy, notably changes to the Energy Company Obligation (ECO) in late 2013, in an attempt to reduce 'green levies' on customers' bills.</p> <p>Suppliers have argued that changes to energy efficiency policies during implementation make it difficult for industry to build a sustainable business around installations. Energy UK, the body representing the major energy suppliers, has argued that:</p> <p>"The short duration of obligations and differences in scheme scope and design between them often leads to "stop-start" delivery, causing significant uncertainty and disruption. In order to meet long-term decarbonisation</p>

	<p>ambitions, we believe that DECC needs to work to develop a long-term policy framework for energy efficiency, providing policy certainty and a clear direction of travel to the market.”</p> <p>The extent to which any impact on delivery is an unavoidable consequence of policy redesign is a matter for debate between DECC and the energy industry. However, the key point is that the costs of these schemes are ultimately met by consumers through their bills. It is therefore essential that they deliver value for money, and that we take seriously the concerns of those tasked with delivering them – whether they be energy companies or local contractors.</p> <p>Whilst the Welsh Government’s Nest and Arbed schemes have been more stable, relative to ECO, this message has obvious read across to any new proposals for Wales. A clear strategy from the Welsh Government will be an important step towards delivering the stable footing energy suppliers, and energy efficiency installers have called for. It will also benefit from cross party support, if possible, to ensure it is sustainable in the long term.</p> <p>Minimum standards for energy efficiency have a clear role to play in driving action from individual consumers, organisations and businesses. Citizens Advice has called on the UK Government to introduce minimum standards of an EPC rating of C in all homes by 2025. Whilst we recognise that the Welsh Government does not have the legislative competence to introduce such a standard in Wales, it could nonetheless make delivering ambitious minimum standards across all tenures an objective of any new energy efficiency scheme.</p> <p>5 Energy UK response to the DECC consultation on The Future of the Energy Company Obligation (ECO)  <a href="http://www.energy-uk.org.uk/publication.html?task=file.download&amp;id=2985">http://www.energy-uk.org.uk/publication.html?task=file.download&amp;id=2985</a></p>
31	<p><b>Constructing Excellence in Wales</b></p> <p>Agreed. However, the impact of non-devolved energy matters should also be considered particularly where these constrain Wales’ ability to achieve this vision.</p>
32	<p><b>British Gas</b></p> <p>British Gas notes with interest the five pillars to deliver the Welsh Government’s vision for energy efficiency over the next decade. We are keen to work with Welsh Government to build on current activity in which we are involved in Wales to help deliver on each element of this vision.</p> <p>The table below summarises how we are well-placed work with Welsh Government on developing its vision with further detail provided in relevant sections of this response.</p>

<b><u>Vision</u></b>	<b><u>Delivery from British Gas</u></b>
<p>People, communities, businesses and other organisations recognise the benefits of energy efficiency and take action.</p>	<p><i>Through managing the Nest scheme and other projects including a Community Action Partnership with National Energy Action Cymru in Cardiff, British Gas is actively involved in helping raise the awareness of energy efficiency and developing best practice.</i></p>
<p>We have the supply chain that we need across Wales to deliver energy efficiency improvements to buildings, products and processes, and those businesses go on to grow and export their expertise and know how.</p>	<p><i>We have been working with over 30 small and medium enterprises across Wales to deliver the Nest programme. This network of SMEs has been developed to cover all the requirements of the scheme.</i></p>
<p>We have effective education and skills in place to deliver on the energy efficiency challenge, through from raising awareness in schools to a qualified and skilled workforce and investment in higher level skills to support R&amp;D and innovation.</p>	<p><i>British Gas is committed to investing in skills. The British Gas Green Skills Academy in Tredegar has been delivering training in renewable technology and energy efficiency since it opened in May 2010. We also recognise the importance of raising awareness of energy efficiency through education – and deliver this with our Generation Green programme for schools.</i></p>
<p>We support innovation in new energy efficiency products to deliver solutions in Wales; and our businesses benefit from the opportunities presented by the global challenge.</p>	<p><i>We deliver innovative solutions to energy efficiency throughout our programmes. By the end of October, we had installed almost 80,000 smart meters across Wales – 56,670 in homes and 22,925 in businesses.</i></p>
<p>We have clear funding mechanisms, a sense of direction and a stable framework that is attractive to investors and consumers.</p>	<p><i>Our experience in working with a number of funding mechanisms has given us a great deal of insight into what works well and what does not. Additionally, British Gas is proactive in finding innovative funding mechanisms to deliver energy</i></p>

	<i>efficiency.</i>
<b>33</b>	<b>Saint Gobain</b>  Yes.
<b>34</b>	<b>CLA Cymru</b>  CLA Cymru generally supports the vision for improving energy efficiency as set out in the consultation. Whilst there is a refreshing air of ambition to the proposals, some more detailed targets with supporting timescale would provide a clearer understanding of your vision. A progressive timetable would allow businesses and households to plan investment.
<b>35</b>	<b>PLANED</b>  Yes, seems to encompass all areas.
<b>38</b>	<b>Hywel Dda University Health Board</b>  Generally agree with the vision. With the 1 <sup>st</sup> vision is could be enhanced by committing 'support to enable action'. 3 <sup>rd</sup> and 5 <sup>th</sup> vision points could be made a clearer.
<b>39</b>	<b>NHS Wales</b>  Broadly agree with the vision. We would also highlight that from a public sector perspective that funding mechanisms could include reference to a commitment to support / prioritise investment in energy efficiency from "central" government funding routes.
<b>40</b>	<b>Rhondda Cynon Taf County Borough Council</b>  With regard to the specific visions we would comment as follows:-  <b>People, communities, businesses and other organisations recognise the benefits of energy efficiency and take action.</b>  Agree with this vision. The Housing Energy Officer is tackling this aspect of the vision currently. Also, people are getting more aware of the benefits and taking action mainly through the use of energy monitoring equipment both at home and at work. Furthermore, the increased recognition could be as a result of the requirement for domestic and commercial energy assessments and ratings for buildings being displayed and publicised.  <b>We have the supply chain that we need across Wales to deliver energy efficiency improvements to buildings, products and processes, and those businesses go on to grow and export their expertise and know how.</b>

We have the knowledge, expertise, skills and SMEs within the principality, however, the bad reputation of the industry as a whole has tarnished the success of this sector, and will continue to hinder this economic area being exploited to its full potential.

Cold calling and doorstep selling by high pressure sales people has resulted in vulnerable people losing hundreds of pounds, when they qualified for totally free energy measures.

**We have effective education through skills in place to deliver on the energy efficiency challenge, through from raising awareness in schools to a qualified and skilled workforce and investment in higher level skills to support R & D and innovation.**

There are mechanisms available to deliver the energy efficiency challenge through effective education, from schools to community groups (we have recently provisionally been offered a revenue bid to deliver this service over 5 South Wales Local Authorities in partnership with a community organisation). However, it is not felt that there is sufficient investment in R & D, and also little or no training available in the Further Education Renewable Energy field. However, this is a different story within the private sector companies operating in this area of work, as they have more finance available to invest in R & D and students realise that to progress in the energy field of work they need to seek employment in the private sector due to the significant more investment.

**We support innovation in new energy efficiency products to deliver solutions in Wales; and our businesses benefit from the opportunities presented by the global challenge.**

Agree with this vision. However, it is felt that the success and support of new innovation and taking advantage of opportunities that present themselves depends on the impetus of the different organisations. It also depends largely on the individuals responsible for energy within those organisations, and also their enthusiasm and drive for energy efficiency change.

**We have clear funding mechanisms, a sense of direction and a stable framework that is attractive to investors and consumers.**

We have no clear funding mechanisms within the sector at the present time (apart from consistent Welsh Government funding streams). Also, there appears to be no sense of direction as there are constantly fluctuating targets and prices for CO<sub>2</sub> savings, and therefore as a result the economy is unstable in this sector. This has been recently demonstrated in the dramatic drop in the value of ECO, especially where projects were in the process of being planned, they were subsequently scrapped, leaving lots of companies with no work.

	<p>In general, ECO, Green Deal, GDHIF, FIT, RHI and the many other schemes with acronyms are very difficult for people to understand, even when visiting the relevant websites to find out more information.</p> <p>Therefore, the overall vision is generally accepted and agreed but thought to be somewhat unrealistic at the present time.</p>				
41	<p><b>Community Housing Group</b></p> <p>Yes. It's important that we avoid any political barriers throughout the process of achieving this vision. A lack of clarity, a lack of long term plans and a lack of a clear roadmap from Government can be major barriers. It's vital that we continue with the whole house retrofit approach as recognized in ARBED, as in order for benefits to be wholly realised, an integrated, holistic and synergistic whole house approach is needed. The whole house approach, along with attempts to positively drive the behavioural aspects of energy usage by tenants is the favoured approach. Whole-systems thinking should be applied to delivery processes to optimize the building as a whole for resource and energy efficiency. Furthermore, a matrix of solutions by market segmentation, by tenure and subdivided by type of property and age is required. By putting in place both area-based and individual dwelling backstops, we can help ensure that the hardest to reach people and hardest to treat homes are included in retrofit programmes. Transparency, longevity and certainty in policy is required and there has in the past been a history of stop / start grants. CHC feels that RSLs can play a key role in coordinating and delivering the step change needed in refurbishment activity. Welsh Government needs to seek additional or separate powers in relation to energy. Whilst some areas are solely controlled by the UK Government, Wales will continue to be in the position of responding to changes rather than driving them. An example includes the latest round of the Green Deal Home Improvement Fund as an example. This fund as taken up in 1 day by a small number of organisations who had the processes in place and it is a missed opportunity to focus on community wide schemes in the areas most needed.</p>				
43	<p><b>Low Zero Carbon Hub</b></p> <p>We understand that your vision for 2025 has five key areas of focus and whilst we are supportive of these aspirations we feel that there is a significant amount of work to be undertaken in the next ten years to realise a more energy efficient Wales. We discuss each briefly below:</p> <table border="0"> <thead> <tr> <th><b>Welsh Government's Vision statement</b></th> <th><b>WLZCH Comment</b></th> </tr> </thead> <tbody> <tr> <td>People, communities, businesses and other</td> <td>We are supportive of this statement. The focus for all audiences will be to ensure that</td> </tr> </tbody> </table>	<b>Welsh Government's Vision statement</b>	<b>WLZCH Comment</b>	People, communities, businesses and other	We are supportive of this statement. The focus for all audiences will be to ensure that
<b>Welsh Government's Vision statement</b>	<b>WLZCH Comment</b>				
People, communities, businesses and other	We are supportive of this statement. The focus for all audiences will be to ensure that				

	<p>organisations recognise the benefits of energy efficiency and take action.</p> <p>We have the supply chain that we need across Wales to deliver energy efficiency improvements to buildings, products and processes, and those businesses go on to grow and export their expertise and know how.</p> <p>We have effective education and skills in place to deliver on the energy efficiency challenge, through from raising awareness in schools to a qualified and skilled workforce and investment in higher level skills to support R&amp;D and innovation.</p>	<p>they “take action”. With a growing body of evidence developing to show the value of undertaking energy efficiency communicating the message will hopefully motivate change.</p> <p>We are supportive of this statement and are aware of the consortium bidding which has been established through programmes such as arbed. It is therefore important that any Welsh consortiums that have developed through arbed 1 and 2 are aware of the timescales for future programmes. Further opportunities for the supply chain to grow out outlined in our response to question 1.</p> <p>We are supportive of this statement but feel that schools should be separated from the approach taken to engaging with the workforce as they will require different policies and will be delivered by different agencies. We suggest that this statement becomes two separate statements of your vision.</p> <p>The WLZCH would be supportive of your strategy implementing the main findings of the Estyn report “ESDGC - Progress in education for sustainable development and global citizenship, June 2014”<sup>5</sup>. For example, many pupils were aware of the need to save energy, but this was expressed in terms of money rather than resources and training needs identified within schools governing bodies.</p> <p>Schools and colleges facilitate community cohesion; through their buildings, as well as their curriculum teaching should demonstrate the best of energy efficiency delivery. This could be through supporting collective switching projects such as Cyd Cymru or through the refurbishment of their properties</p>
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alongside pro-active and involved Eco-School Eco-Committees.

A qualified and skilled workforce should be able to understand the implications of poor workmanship. For example, despite current installations being carried out by certified installers, many homes in Wales have had poor EWI /IWI or cavity wall installed in recent years requiring remediation works.

We support innovation in new energy efficiency products to deliver solutions in Wales; and our businesses benefit from the opportunities presented by the global challenge.

We are supportive of this statement and believe that there are a number of innovations within Welsh academia which could help to develop a broader energy efficiency supply chain. Examples include, Solar transpired collectors <sup>6</sup> and LCRI projects such as the hydrogen centre <sup>7</sup>.

We have clear funding mechanisms, a sense of direction and a stable framework that is attractive to investors and consumers.

We are supportive of this vision statement but feel that communicating funding mechanisms to the various audiences must be carried out with sufficient support provided. Evidence shows that Wales has experienced a low take up of existing finance mechanisms. For example, just two local authorities in Wales have had more than 12 per 1,000 properties undertake Green Deal Assessments <sup>8</sup>, well behind uptake in Scotland.

Furthermore, we understand that ECO measures installed per 1,000 households in Wales is 40 properties (much of this activity delivered in South Wales) and just over the GB average of 35 per 1,000 properties <sup>9</sup>. Your future strategy must provide clarity and ideally Welsh funding, rather than relying solely on UK funding approaches (e.g. Green Deal and ECO).

<sup>5</sup> <http://www.estyn.gov.uk/english/docViewer/315315/esdgc-progress-in-education-for-sustainable-development-and->

	<p>global-citizenship-june-2014/?navmap=30,163,</p> <p>6 <a href="http://sbed.cardiff.ac.uk/transpired-solar-collectors/">http://sbed.cardiff.ac.uk/transpired-solar-collectors/</a></p> <p>7 <a href="http://h2wales.org.uk/">http://h2wales.org.uk/</a></p> <p>8 <a href="https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/356954/Quarterly_Statistical_Release_GD_ECO_and_insulation_levels_in_Great_Britain_23_Sept_2014.pdf">https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/356954/Quarterly_Statistical_Release_GD_ECO_and_insulation_levels_in_Great_Britain_23_Sept_2014.pdf</a></p> <p>9 <a href="https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/356954/Quarterly_Statistical_Release_GD_ECO_and_insulation_levels_in_Great_Britain_23_Sept_2014.pdf">https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/356954/Quarterly_Statistical_Release_GD_ECO_and_insulation_levels_in_Great_Britain_23_Sept_2014.pdf</a></p>
<b>44</b>	<p><b>Age Cymru</b></p> <p>We broadly agree with the vision as set out. The only aspect we would draw attention to is the wording around the first component relating to households and communities. As currently drafted we believe this places too much emphasis on individual responsibility and, as such, does not adequately reflect the needs of those households who will need support (financial or otherwise) to improve their energy efficiency.</p> <p>We propose the addition of the words “, or are supported to take action” at the end of the statement.</p>
<b>45</b>	<p><b>Rockwool</b></p> <p>Yes ROCKWOOL agrees with and strongly supports the Welsh Government’s vision for energy efficiency in Wales.</p>
<b>47</b>	<p><b>National Trust</b></p> <p>National Trust Wales is very glad to have the opportunity to contribute to the development of a new energy efficiency strategy for Wales. We are glad to see the recognition of the need for an Energy Efficiency Strategy and support the vision outlined in the consultation document.</p>
<b>49</b>	<p><b>GBSPM</b></p> <p>I think that some of the above actually fit with the Vision and therefore should be brought back into the fold as such.</p> <p>I realise that BREEAM is not perfect and has its flaws, but I would say that as a tool it is a useful and beneficial aide to building quality.</p> <p>I would suggest to attain the Vision we need Mandatory levels set at a realistic level. With this benchmark level for the whole of Wales we will reap the following benefits:</p> <ul style="list-style-type: none"> <li>• Reduction of Fuel Poverty – better constructed homes require less energy to heat, cool and operate</li> <li>• Reduction of Flood plain / Green field building – the loss of credits under the schemes makes this less viable. A far more holistic view.</li> <li>• Requirements for Flood Risk Assessments, Climate change adaption and Suds</li> </ul>

	<p><i>Although the above two are not directly related to Energy Efficiency the repair/ rebuilding and mitigation required by continuing building in these areas will have a huge cost both socially and economically. If not careful we may have whole areas of low lying land in cities that is uninhabitable in the not too distant future. I we build these houses here we also need the infrastructure ( water, electricity, gas, transport) in these low lying areas. The image of the sandbagged Substation outside Tewksbury during the 2007 floods and the efforts undertaken to keep it dry.</i></p> <ul style="list-style-type: none"> <li>• Increase of skills &amp; Knowledge being the first to adapt to the higher levels needed would become a unique benefit for the Welsh Construction Industry &amp; supporting Colleges and Universities.</li> <li>• With requirements for better Insulation Local Insulation Companies benefit. This could be pushed forward to Window Manufacture, Thermalite type blocks, SIPS and other requirements of an industry not trying to hit the lowest possible level of planning.</li> </ul>
51	<p><b>Flintshire County Council</b></p> <p>When discussing this call for evidence, several participants wanted clarification on what will fall under the scope of the full consultation that will follow. The first subheading of the vision does not make it clear who is facilitating the necessary changes or how. If we want action we need clear goals in mind. Energy Efficiency, Fuel Poverty Reduction and Carbon reduction can involve similar technology but in practice can conflict with each other. We support the use of the energy hierarchy mentioned in the consultation document.</p> <p>There is a lot covered in the consultation document that potentially falls under the heading of energy efficiency, but there are a few elements that have not been mentioned which should be considered:</p> <ul style="list-style-type: none"> <li>• Corporate social responsibility pots of funding from renewable energy generation (wind farms) are currently not spent strategically. There are millions of pounds available for potential community benefit, but each of these schemes is administered separately and no guidance is given by Welsh Government. These funds could be used for locally administered fuel poverty crisis funding.</li> <li>• A longer term strategy is needed for off gas and rural areas as they continue to be disproportionately affected by fuel poverty and aren't being reached by energy efficiency schemes to the extent they need to be. There are now a number of companies offering flexible finance packages using the domestic RHI to fund the installation of heat pumps in social housing. Those same principles could be applied to a private</li> </ul>

	<p>sector scheme given the right scale, reducing or eliminating the initial outlay which is a barrier for many.</p> <ul style="list-style-type: none"> <li>• Can the Welsh Government also clarify whether transport infrastructure issues would fall under the remit of this consultation? What can be done to encourage people to use the most efficient way of transport possible available for each journey?</li> <li>• Climate change adaptation also needs to be factored into decisions on energy efficiency projects. This needs to be considered not only in areas at greatest risk of flooding, but in considering improvements to properties which will withstand greater weather extremes and provide comfort in a generally warmer climate.</li> </ul>
52	<p><b>Egnida</b></p> <p>The vision presented offers goals that we do not consider to be “SMART” Goals (Specific, Measurable, Achievable, Realistic and Timely). Because of this we could make a strong argument that all the goals have been met already. We could make an equally strong argument that none of them will ever be met. It’s all down to interpretation. As such there is a real danger that the genuine attempt to improve things will be perceived to be political rhetoric. We believe a degree of bravery is required from Welsh Government to make the vision and goals SMART in order to gain the credibility and engagement that the approach deserves. There are very real impacts for the potential success in this approach. For example, London in its equivalent strategy has specifically recognised and targeted a requirement to attract “Green Entrepreneurs” and their associated businesses to help deliver their vision. In comparison, the Welsh Government Minister responsible for the Economy has not yet acknowledged that Green Entrepreneurs actually exist. In a competitive market for talent this would seem to us to be a strange approach.</p>
53	<p><b>NEA</b></p> <p>A key focus of the vision should be on ensuring low income and vulnerable consumers share in the benefits of energy efficiency via increased investment in energy efficiency programmes and a commitment from the Welsh Government that energy efficiency is the main route to tackle fuel poverty. Clear leadership needs to be provided by the Welsh Government in order for the vision to be achievable.</p>
54	<p><b>Scottish Power</b></p> <p>We are supportive of the proposed vision outlined in the Consultation document.</p> <p>We agree that it is vital that people, communities, businesses and other</p>

	<p>organisations understand the benefits of energy efficiency if progress is to be sustained. It is therefore important that the Welsh Government looks to implement a clear communications strategy that encourages households, businesses and others to act. In our view, marketing and publicity has a clear role to play in educating people of the benefits of energy efficiency and encouraging take-up, but any campaign needs to be tailored to the scheme being delivered. For example, in Scotland, the Scottish Government has run a very successful campaign known as Home Energy Scotland (HES). The campaign sought to reduce public confusion by uniting all incentives and schemes available under one single ‘call-to-action’. Research for the campaign showed that over two thirds (69%) of adults in Scotland noticed the campaign and nearly three quarters of adults said they would take action (70%). This figure was higher amongst the fuel poor (75%) and retired people (78%).</p> <p>However, whilst extremely successful, a campaign of this nature requires a universal offering and call-to-action, and does not lend itself easily to a scheme that is focussed on providing assistance to a small proportion of the population on an area-by-area basis, for example. In our experience, individual area-based schemes typically depend on word-of-mouth and face to-face interaction at a local level.</p> <p>Moreover, the messaging around energy efficiency can be sometimes be confusing given that different objectives underpin the various support schemes for energy efficiency measures (i.e. fuel poverty, addressing climate change and reducing consumer bills). Careful thought needs to be given to this when designing communication strategies. Engagement and understanding is therefore a key part of the vision. However, this needs to be complemented by cost-effective incentive mechanisms operating within a stable policy framework so as to promote consumer uptake whilst facilitating the build-up of a robust and efficient supply chain in Wales to deliver the measures. In particular, we know from our own direct experience that long term policy certainty and coherence is vital to ensure the long term viability of businesses delivering energy efficiency measures. A shared vision across the political spectrum and between different parts of government, together with realistic and cost effective policies, are the components necessary for providing a secure basis for policy stability.</p> <p>In this context, we would encourage the Welsh Government to continue to work closely with the UK Government’s Department for Energy and Climate Change (DECC) as well as local authorities to put in place this stable long-term policy framework.</p>
55	<b>WLGA</b>

	<p>The Well-being of Future Generations (Wales) Bill is looking towards future generations and their well-being. Much work has been undertaken through the Sustainable Development Framework with local authorities looking 25-35 years forward (a generation). In this respect therefore we must voice our concern that the vision of the Energy Efficiency Strategy is only 10 years.</p> <p>It has been stated within the introduction to this consultation document that “Delivering improved energy efficiency is also important for the Welsh Government legislative programme, particularly the Future Generation’s Bill.”, but that seems to be the only acknowledgement of this important piece of legislation.</p> <p>The Well-being of Future Generations (Wales) Bill identifies goals towards a Sustainable Wales, which all public bodies must identify how they are contributing to those overarching goals through their strategic decisions and objectives. Within the vision and elsewhere in the text of the document there is reference to improving business growth ( towards a prosperous Wales) ; recognition of the benefits of energy efficiency and innovation (towards a resilient Wales) ; acknowledging the impact which fuel poverty and cold homes can have on health and education standards and attainment (towards a healthier Wales and more equal Wales); the improvement in the fabric of buildings and the creation of jobs and businesses (towards a Wales of cohesive communities) There must be a clear connection and reference to these goals.</p> <p>Within the vision it needs to state that whatever actions are taken are sustainable. Sustainable Development must be embedded as central organising principle within the vision and strategic decision making</p>
56	<p><b>Carmarthenshire County Council</b></p> <p>Broadly get</p>
57	<p><b>Friends of the Earth</b></p> <p>The proposed visions are largely passive and too wordy. Suggested re-wording might include, for example:</p> <p><i>“People in Wales continuously improve energy efficiency because they know it provides major benefits”.</i></p> <p><i>“Strong leadership, clear direction and attractive funding bring investment to Wales”</i></p>
58	<p><b>Pembrokeshire Coast National Park</b></p> <p>It is difficult to argue with any of the proposed vision statements except to say that 5 statements are not a particularly succinct vision – one long sentence or</p>

	<p>short paragraph encapsulating the overall vision would be more concise and memorable.</p> <p>It may be sensible to include something to say that they would learn from and adopt or modify technology and lessons learned elsewhere as appropriate. A recent report carried out for the DECC states that the UK could have benefitted from biomass energy efficiency experience in countries such as Austria etc. A desk based review of performance and installation practice for biomass boilers has been undertaken for the Department of Energy and Climate Change and can be viewed using the link below:</p> <p><a href="https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/376805/Review_of_biomass_performance_standards.pdf">https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/376805/Review_of_biomass_performance_standards.pdf</a></p> <p>The review starts with a 5 page summary which states that biomass heating installations in the UK are not performing as efficiently as they should. Case study data and Renewable Heat Incentive data indicate between a 10-20% under performance which affects the economics of schemes and increases emissions. The study conclusions however are based on limited data sets.</p>
69	<p><b>Michael O'Brian, Michael O'Brian.</b></p> <p>The vision is great but the implementation is usually fragmented and piecemeal due to a lack of technical knowledge at government and local authority level and inconsistent financial support from regional and national government e.g GDHIF fiasco.</p> <p>Implementing some energy efficiency measures e.g. EWI which is needed across most of South Wales is expensive and is only likely to happen on a large scale with financial support.</p>
61	<p><b>Stephen Vaughan, Housing Renewal Team, Torfaen County Borough Council.</b></p> <p>I do agree with the vision-it has improved people's lives in terms of making properties warmer, more comfortable places to live, cutting fuel bills and lowering fuel emissions into the atmosphere. In addition employment has been created which can only be a positive for the locality.</p>
62	<p><b>Andy Thomas, Butler &amp; Young Wales.</b></p> <p>I agree with the Vision.</p>
63	<p><b>Neil Evans, Carmarthenshire County Council.</b></p> <p>Absolutely. We must move away from an economy based on growth for the sake of growth to one that actually delivers products and services that are necessary, will continue to be necessary and do not harm our environment both now and into the future.</p>

<b>64</b>	<b>Kate Smith, KFS Consultancy Ltd.</b>  Yes
<b>65</b>	<b>Gary Spiers, South West Insulation &amp; Extractions LTD.</b>  Yes
<b>66</b>	<b>Phil Powell, Gwent Energy CIC.</b>  its not clear exactly what the vision is and how it will be actioned
<b>67</b>	<b>Mark Greenfield, Greenfield Energy Solutions.</b>  I wholeheartedly agree with the vision but think it needs a total rethink in it implementation. Deal with the measures of the Green Deal in the order of effectiveness and costs needed by each region and community.
<b>68</b>	<b>Daryl Price, DK Property Services.</b>  What is the vision? I have not seen or heard of the 'vision'?
<b>69</b>	<b>Brett Langdon, SPMS (Wales) Ltd.</b>  Yes
<b>71</b>	<b>Jeffrey Smith, First Phase Electrical.</b>  some what but but not all
<b>72</b>	<b>Dawson Evans, Torfaen County Borough Council.</b>  I agree with the vision
<b>73</b>	<b>Sian Edwards, J D Energy Services.</b>  Yes.
<b>74</b>	<b>Ian Titherington, City of Cardiff Council.</b>  ? I haven's seen it.
<b>75</b>	<b>Bex Gingell, Taff Housing Association.</b>  Yes
<b>76</b>	<b>Rob Newell, Joyner PA Cymru Ltd.</b>  I agree with the vision of green efficient measures to raise households out of fuel poverty. Unfortunately there is too much red tape and political games being played at high level to benefit the people who it was aimed at helping.
<b>77</b>	<b>Rachel Davies, City and County of Swansea.</b>  I agree with the vision, however what is listed are more like objectives. Perhaps a more concise overall vision of a sentence could be used, and the

	vision as listed could be objectives that sit under it?
<b>78</b>	<b>Samir Hussien, site services.</b>  Yes
<b>79</b>	<b>David Powell, Vale of Glamorgan Council.</b>  This is the only legitimate area of growth
<b>81</b>	<b>Peter Draper, Rounded Developments Enterprises Ltd.</b>  Vision is fine, but it is based on the wrong / poor data.  We need to have systems that are based on reality, not computer modelling. Existing houses are not one-size-fits-all. 34% are solid walled, the vast majority of which have been poorly maintained / had inappropriate materials used on them. They have more pressing issues than energy efficiency - damp being the main one. We need to recognise this and develop systems that solve this.  We need to change what we train builders in. They need fundamental knowledge of building dynamics not just the skills to install / fit / construct.  We need to have specialist training for builders so that they are trained in energy efficiency, especially for solid walled buildings  We need to have an official builders qualification - min Level 2 for anyone employed on site. We also need to have each company with management / owners having a min of Level 3 qualification.  We also need clear set of quality guidelines for a range of construction activities inc. window fitting (in Europe all windows MUST be fitted to a RAL standard of being air tight, weather tight and insulating).  We must also have a national scheme of promoting the Welsh energy efficiency methodology once developed so that we are showing that we are taking into account Welsh weather conditions etc.  We should also tackle the issue of succession so that in Wales we have a digital database of improvements that stores the details of any improvements to homes / buildings. So much data is lost and there are key pieces of information that needs to be stored and passed onto new owner / occupiers. Ideally there should be 'Home Information Packs' for all rented and O/O sectors so that we can maintain information / guarantees etc through time. All work should be done by registered builders so that any future come backs can be followed up. Only this can drive quality improvements.

<b>82</b>	<b>Mathew Davies, Grwp Cynefin.</b>  Agreed
<b>83</b>	<b>Sylvia Peat, Grwp Cynefin.</b>  Yes very much so.
<b>84</b>	<b>J.Richard Davies, J.r.davies property services.</b>  I do agree with the vision
<b>86</b>	<b>Graeme Harrold, 3-e Electrical Ltd.</b>  No, I think the UK policy as a whole is seriously flawed. RHI and FIT have been miss managed and wasted £M. The Green Deal is a license for the supply chain to print money at the customers expense and housing standards only focus on thermal efficiency and not energy management. Its not just Wales, the whole UK policy is not coherent and lacks overall direction. In addition the VAT system does not help on energy efficient measures with much confusion on where 5% is allowable.  There needs to be a single energy policy that covers business, domestic and national concerns.
<b>87</b>	<b>Elrond Burrell, Architype Ltd.</b>  Yes I do in general. However the term "energy efficiency" is a little vague and perhaps could do with something more specific (and punchy) being referenced and something that communicates the ambition of the intention to become a "Country of Excellence".
<b>88</b>	<b>Allan Smith, Energy Effective Ltd.</b>  No. We attended the Green Economy for Wales meeting in Cardiff on Dec 3rd and felt as the smallest company there that only industry recognised names were being listened to.
<b>89</b>	<b>Malcolm Wilson, RCT Homes Ltd.</b>  Yes
<b>90</b>	<b>Nicola Vaughan, City Energy South Wales Ltd.</b>  Yes, improving energy efficiency throughout Wales benefits all factors involved
<b>91</b>	<b>Elwyn Williams, E.W.Consultancy.</b>  Yes
<b>92</b>	<b>Neil Lewis, Robert Owen Community Banking Fund.</b>  Saved energy is the original renewable. Frees up income that can circulate

	locally. whereas money spent on electricity leaves Wales.
<b>93</b>	<b>Jonathan Hyde, Bron Afon Community Housing Ltd.</b>  Yes- I am a chartered surveyor but have up skilled as a Domestic Energy Advisor ( DEA) and also a Green Deal Advisor ( GDA)
<b>94</b>	<b>Clare Parsons, Brecon Beacons NPA.</b>  Yes
<b>95</b>	<b>Stewart Matthews, Torfaen County Borough Council.</b>  Yes i agree with the vision
<b>97</b>	<b>Alison Fuller, Groundwork North wales.</b>  Yes
<b>99</b>	<b>Ben Dever, adever engi cyf.</b>  what vision?
<b>100</b>	<b>Rachael Rowlands-Jones, GLyndwr University.</b>  I agree with the vision.  We do have effective education and skills, but there is a need for specialised training in renewables in terms of integration of renewables into society with a focus on grid integration, decentralised energy, smart grids and storage. Training on system considerations and end of life are also becoming key requirements as the number of renewable installations increases.
<b>102</b>	<b>Robert Vokes, Joyner.</b>  Yes i agree with the vision but it needs to be planned effectively through the year to ensure there are sustainable jobs and not feast and famine. Associated works need to be looked at on structure to ensure the life expectancy of some of the buildings and not just look at energy efficient measures.
<b>103</b>	<b>Steve Martin, Caerphilly County Borough Council.</b>  I would agree with the vision but it needs to be backed up with a cohesive strategy and appropriate funds.

	<b>Question 3 responses: Barriers to householders and communities.</b>
	<b>What do you think are the barriers to people recognising the benefits of energy efficiency and taking action? Do you have any suggestions for improving and extending household take up of energy efficiency? What are the current strengths and successes and how can they be developed further?</b>
<b>8</b>	<p><b>NSA Afan</b></p> <p>NSA Afan considers the lack of information, distrust in door step salesmen and no clear guidance from an independent source is the main barrier to take up from the ordinary householder. Many vulnerable people dread opening the door to come face to face with cold callers offering to install energy efficiency and renewable technologies at grossly inflated prices. As reported in the press and our own experience highlights the poor levels of support for the vulnerable and the proliferation of bad practice that is rife at the doorstep.</p> <p>The Welsh Government has the opportunity to make statement that there is a 'trusted; source of information using its network of third sector practitioners namely Development Trusts, Communities First clusters and Age Cymru. CAB already offers support as do local authorities; however the reduction in staffing from these sources especially cut backs of Local Authority energy managers has greatly compromised that avenue of support.</p>
<b>9</b>	<p><b>Merthyr Tydfil County Borough Council</b></p> <p>The market needs to have better regulation – there are numerous firms cold calling within the sector. Some legitimately some illegally – telling lies and providing incomplete or inappropriate info in order to increase sales. Trading standards struggle to cope with cold calling.</p> <p>Focus on financial savings for the household. The vast majority of households have real apathy for energy efficiency – but when you explain things in terms of £ saved per month or year – they become interested.</p> <p>More investment should be channelled through local Councils who are reputable and trusted locally.</p> <p>National advertising by Welsh Gov – could help to distinguish formal strategic schemes. There is also a complete lack of branding – for example on the new funding to attract ECO funding – this is not very catchy....</p>
<b>11</b>	<b>Cert Sure</b>

	<p>We feel the following are barriers that need to be removed –</p> <ul style="list-style-type: none"> <li>• Apathy – it doesn't affect me, why should I worry about tomorrow!</li> <li>• Lack of understanding/education of efficient use of energy by most of the population</li> <li>• Lack of evidence to show energy efficiency works (more money in my pocket for the person who pays the energy bill)</li> <li>• Mistrust from other schemes and policies from Government – past and current schemes have had a bad press – for example  <a href="http://blogs.telegraph.co.uk/finance/ianmcowie/100016121/when-free-solar-panels-can-prove-an-expensive-mistake/">http://blogs.telegraph.co.uk/finance/ianmcowie/100016121/when-free-solar-panels-can-prove-an-expensive-mistake/</a></li> </ul> <p>Do you have any suggestions for improving and extending household take up of energy efficiency?</p> <p>We have the following suggestions –</p> <ul style="list-style-type: none"> <li>• Education of children and adults</li> <li>• Mandatory improvement works on buildings if additions/alterations are being undertaken</li> <li>• A property can only be sold if it achieves a minimum energy efficiency rating of Band C or above</li> <li>• A property can only be rented if it achieves a minimum energy efficiency rating of Band C or above</li> </ul> <p>What are the current strengths and successes and how can they be developed further?</p> <p>If the carrot (financial incentive) isn't working then the stick (fines and mandatory improvement actions) is needed.</p>
12	<p><b>Pembrokeshire County Council</b></p> <p>Energy efficiency tends to be a priority for those on the lowest incomes. Those with sufficient financial resources sometimes do not focus on energy efficiency and can be profligate with energy use. If financial savings cannot be used as an incentive then campaigns to appeal to all people about the environmental damage being caused via climate change could be used instead.</p> <p>The method that large energy suppliers use to bill people needs to be radically changed. Currently most suppliers will charge a higher rate for the first set quantity of kWh's used. The rate then drops for energy used beyond this first set quantity. This is almost a reward for using more energy. This method of billing needs to be reversed. The initial set quantity of energy should be billed at a lower rate with a higher penalty rate kicking in for excess use over the set</p>

	<p>quantity. Or just have a fixed rate for all units. This would allow those who make energy efficiency savings to see real financial rewards.</p> <p>The fact that the Green Deal 'loan' stays with the property is a major reason for lack of uptake. Even though this is many cases a good thing (i.e. the loan repayments are less than the energy being saved) people do not understand. They see a loan against the property and are put off. This needs changing or people need to be educated that this isn't such a bad thing.</p>
<p><b>13</b></p>	<p><b>ICE</b></p> <p>The barriers to householders are considered to be:</p> <p>(a) lack of belief that taking energy saving measures will actually result in cost savings.</p> <p>(b) Laziness</p> <p>(c) Initial up-front costs that might be incurred to generate savings later.</p> <p>A suggestion would be the creation of a quite detailed model (probably a carefully constructed spreadsheet) on which all relevant details regarding any property could be input. These would include type (detached / semi), floor area, doors and windows, heating type, existing energy saving measures (double glazing, insulation) etc. This model could then calculate the anticipated energy usage which could be compared with actual usage. Minor adjustments could then be made to make the model represent actual usage. Then anticipated savings for a range of specific energy saving measures could be identified using the model and it would be such that it would compare capital cost of such measures against future anticipated savings.</p> <p>If something like this was provided for every household it would be an 'education' for people and would lead to changed attitudes. Concurrent with the results from this model people could be advised of what grant funding etc. would be available to assist with capital costs for some / all of the identified specific measures. This tool (model) would therefore:</p> <ul style="list-style-type: none"> <li>• Predict on-going savings that specific measures would accrue.</li> <li>• Predict the up-front cost of these specific measures.</li> <li>• Identify any financial assistance towards implementing the proposed energy saving measures.</li> </ul> <p>However it is recognised the biggest challenge might still be getting people to actually use it.</p>

## 14 ETI

DECC and others have identified a number of barriers to the uptake of energy efficient interventions. The key barriers to households include:

- Uncertainty as to which intervention is best;
- Risk associated with installing new measures (i.e. technical risk; financial risk; maintenance risk);
- Pay-back is very poor for many of the measures needed for deeper thermal fabric retrofit;
- Complexity of current schemes (ECO, Green Deal);
- Hassle/disruption caused;
- Principal-agent problems.

The ETI is currently carrying out a review (to be completed in early 2015) of these barriers and potential solutions. Early indications show that potential solutions include:

- The Fuel Poor are unlikely to pay for measures and so these measures may need to be at no cost – an alternative is to subsidise the energy used as this may be cheaper than paying for costly interventions<sup>9</sup>;
- Local Authorities and energy companies should work with installers to identify homes where lower cost interventions would have the greatest impact;
- Thermal fabric improvements should be encouraged as part of home renovations – these could be incentivised through rebates on Stamp Duty for home-movers and/or through rebates on Council Tax where specified energy efficient interventions have been made;
- Complexity and interest rates associated with the Green Deal loans should be reduced;
- Identification of trusted advisors with design tools that can advise which interventions are best for specific households;
- Ensure that the private-rented sector has access to “free interventions” if tenants are fuel-poor and low interest loans if not - mandated EPC levels may need to be introduced in the future.

We have been working closely with Local Authorities in Wales. Local Authorities are the strategic catalysts for much of the essential planning, engagement and funding elements needed to deliver the substantial local

<sup>9</sup> Preliminary results from the ETI Retrofit Project suggest that to improve the EPC rating of a house from E to C would cost £14,000-£30,000 (depending on the type of dwelling) – these measures include various types of insulation including solid wall plus improvements to double glazing and heating systems.

	<p>transformation in Wales' infrastructure to secure a sustainable, affordable, low carbon energy future for its communities. We would advise clear references to this and the need for local energy planning within the Energy Efficiency Strategy for Wales.</p> <p>We believe that consumer engagement is key to achieving the significant changes in behaviour needed to improve and extend household take-up of energy efficiency measures. The best way to do this is to demonstrate to consumers the benefits from new technologies and commercial approaches. As part of its Smart Systems and Heat Programme, the ETI is establishing the platform for a large-scale demonstration, involving thousands of properties, including installation of Home Energy Management Systems (HEMS). This should facilitate the demonstration of the benefits to consumers. As part of this, a smaller scale demonstration of around 300 homes in 2015/16 will test the consumer attitude to HEMS with improved control and functionality.</p> <p>In line with the action priorities of the <i>EnergyWales: Low Carbon Transition Delivery Plan</i>, it will be necessary to undertake a long-term community engagement programme to provide homeowners, tenants and landlords with a greater understanding of the technical options and why change is needed. It may be appropriate to educate consumers in new heating technologies such as Air-Source and Ground Source Heat Pumps, district heating, and Home Energy Management Systems (HEMS). It is also important to ensure that potential users of new technology are not put off by concerns that new heating technologies are difficult to use; DECC research found that c. 80% of consumers will not change their heating system until it breaks down and then 84% would choose a like-for like replacement. Demonstrations like those listed above will aid the engagement with householders and communities.</p>
15	<p><b>Wolseley</b></p> <p>It is important to understand that any programme must be inclusive and should provide opportunities to all householders in both public and private sector dwellings. In order to deliver this broad approach we have developed a hierarchy of measures to deliver positive outcomes ranging from very small investments up to ambitious more costly programmes. In November 2012 we launched our 'Sustainability on a Budget' initiative to help members of the public gain insight and information about practical, low-cost measures that will make a real difference not only to the cost of energy in their homes, but also to their carbon output.<sup>10</sup></p> <p>The consultation document provides an excellent summation of the benefits delivered by Energy Efficiency in Wales. However, we believe there is another</p>

<sup>10</sup> <http://www.wolseleysbc.co.uk/news-and-events/news/2012/nov/soab/>

really important benefit which is priceless, namely, *Householder Engagement*. Many organisations have tried to stimulate engagement, often at great cost and have singularly failed to do so. We believe by providing some lower cost, easy to deliver measures which can demonstrate decent savings then householder are incrementally more likely to consider larger commitments.

Awareness and education is the key. We need to be able to:

- a. Convince householders that the investment in energy efficiency measures is financially beneficial every year from installation onwards.
- b. That there is an easy call-to-action which is relatively low hassle, reliable and local.
- c. That the measures promoted are attractive to consumers and that we don't try to force them into unappealing issues.

Incentives are useful in pump-priming markets (renewables) but in the long run the measures must stand up financially and be attractive to all. We should not confuse the issues of market forming and providing long term incentives which become institutionalised over time. We strongly support the need for commercially viable solutions which are attractive to householders and it is imperative that the 'boom and bust' cycles of the industry are brought to an end. We do believe that regulation can play a key role in driving change.

We need to make every effort to revalue the currency of energy efficiency and, wherever possible, to make it aspirational. We need to be able to convince people that energy efficiency will not compromise comfort but enhance it. Smart controls and PV are good examples of measures which have crossed the line from being hygiene issues to aspirational.

The key aspect is to provide trusted sources of information on a local basis. The 135,000 installers fitting 30,668 boilers a week, plus servicing and repair calls, are the obvious candidates. They are technically proficient, robustly accredited and locally based with a good understanding of local conditions and communities. Many of the measures will involve the heating system and we need to move the conversation on from ignoring boilers until they break down to realising the finite life of devices and preparing for their replacement.

Central to this debate is a need for an open and honest conversation about energy prices and the likely future costs of energy. We need to clear away obfuscation and confusion. We must avoid trying to convince people that it is a

	<p>good thing to do and move towards the principle that it is a sensible thing to do.</p> <p>Often the catalyst for action can be a behavioural aspect and the government report 'Behaviour change &amp; Energy Use'<sup>11</sup> showed how behavioural feedback, including comparisons of how much energy you are using compared with a similar person, can help consumers to save energy.</p> <p>The enemy of success in current government schemes is complexity, this is particularly so in respect to the Green Deal. High entry costs coupled with complicated processes and expensive warranty requirements have led to the disappointing uptake to date. Whereas, schemes which are easy to understand and operate, such as the Feed In Tariff and the Renewable Heat Incentive, have demonstrated that there is consumer demand and a readiness to act. Both the aforementioned schemes have resulted in accelerated adoption of measures across mixed tenure properties in both urban and rural settings.</p> <p>The National Energy Foundation classifies barriers to uptake in their 'Breaking Barriers' report<sup>12</sup> into 8 distinct groups, Economics, Education, Political, Consumer, Supply Chain, Practical, Performance and Pilots.</p>
16	<p><b>Miller Research</b></p> <p>The obvious barrier is that of immediate linkages to household finance, which could be alleviated to some extent by smart metering.</p>
17	<p><b>Ynni Glan</b></p> <p>The following barriers are relevant to each sector, fuel cells and hydrogen technologies offer answers:</p> <ul style="list-style-type: none"> <li>• increasing energy prices – the burden could be moved to capital costs.</li> <li>• connecting to the grid – practical barriers and community opinion.</li> <li>• storing energy – to realise full potential of renewable energy.</li> </ul>
18	<p><b>Torfaen County Borough Council</b></p> <p>In recent years there has been a plethora of funding made available to households, especially for loft, cavity or external wall insulation. This funding has come from different sources and delivered by a range of organisations across sectors with often no clear or co-ordinated route to accessing the funding. This has led to a lot of confusion amongst the public, especially as many of the schemes have been free and this has raised concerns about whether they are genuine offers of assistance.</p> <p>Lack of technical knowledge can also be a barrier, with residents often having</p>

<sup>11</sup> <https://www.gov.uk/government/uploads/system/uploads/>

<sup>12</sup> <http://www.nef.org.uk/themes>

	<p>limited knowledge about the measures being delivered and previous incident where insulation measures have gone wrong or where the installers have not been entirely reputable, can often deter people from taking advantage of available funding.</p> <p>Regulating surveyors and contractors has not always been very rigorous and the standard of work has varied significantly, which has again resulted in negative publicity for energy efficiency.</p> <p>Through the development of local, regional and national Energy Efficiency /Affordable Warmth Strategies that provide a clear vision, focussed action and co-ordinated resources and investment, there is greater potential to deliver energy efficiency improvements and household take up. Improving energy efficiency and reducing carbon emissions is a cross cutting theme, with many organisations, initiatives and communities having a valuable contribution to make. This needs to be harnessed to maximise improvements and raise awareness.</p> <p>Greater levels of positive publicity and information is required to dispel these concerns and help people understand where the funding is coming from and make an informed decision as to whether to take advantage of it.</p> <p>Some of the strengths and successes have been ECO and Arbed funding which has been made available to Local Authorities and delivered by them. The council 'brand' is still well trusted and schemes that are delivered in partnership with the council are very popular.</p>
<p><b>19</b></p>	<p><b>Cardiff University</b></p> <p>In 2011, we conducted a major synthesis of the literature on public attitudes and behaviour in relation to energy efficiency and low-carbon energy for the Research Councils UK Energy Programme.<sup>13</sup> The most relevant findings are summarised here:</p> <p><u>Energy efficiency versus conservation:</u></p> <p>There are both conceptual and attitudinal differences between <i>purchase-related</i> (energy efficiency) <i>behaviours</i> (including energy-efficient light bulbs and appliances) and <i>habits</i>, which include energy curtailment (i.e. energy conservation) behaviours such as reducing heat in unused rooms, switching off appliances after use, etc. That is, people perceive energy-efficiency measures and energy conservation as separate categories of 'behaviour'. Furthermore, although the public consider energy saving to be important, attitudes towards</p>

energy-efficiency are generally more positive than towards energy conservation. Different interventions are also needed for energy efficiency versus energy conservation (see below).

#### Drivers of energy use:

- Energy use is driven by economic (especially income), structural (e.g., home ownership), and social factors, and by unconscious habit. While environmental values (e.g. concern about the environment) tend to have little influence on overall energy use, social values such as convenience, comfort, freedom, and status are far more salient.
- Financial considerations are a key motivator for domestic energy-saving behaviours, including energy-efficiency purchases; although social influence (e.g., energy champions) and personal values (e.g., comfort) also play a role.

#### Barriers to energy saving:

- Most people claim they buy energy-efficient appliances, although this seems to be more common for 'white goods' (e.g., fridges, washing machines) than for 'brown goods' (e.g., TVs). Barriers to buying energy-efficient appliances primarily relate to *trade-offs with utility* of the product and, in some cases, increased *costs*.
- Attitudes to insulation and double glazing are also very positive; loft insulation and double-glazing have been installed by most people, while wall insulation and other energy efficient installations are less common due to *lack of motivation, awareness or affordability*. Improving energy efficiency of homes is seen as less important than other home improvements.
- Energy is 'invisible'; households often have little awareness of their energy use. The 'hidden' cultural drivers and meanings of energy use make energy behaviours difficult to change.
- While many feel an obligation to save energy, few are making significant lifestyle changes; turning off unused lights and appliances are commonplace, but washing and heating behaviours are more resistant to change (due to primacy of comfort and cleanliness)
- Most energy use is also habitual, so interventions to break habits are required.
- Often people do not see links between behaviours – e.g., they may save energy through turning off appliances but not think about their heating. As a result, interventions may lead to 'rebound effects', whereby money saved on efficiency measures are used to consume more energy. Conversely, though, our work (see below) suggests interventions can lead to positive spillover –

i.e., if people do see the links between behaviours, they can make additional behavioural changes after an initial intervention.

Recent research<sup>14</sup> shows that the public is still interested in energy saving, although they lack detailed understanding of the relative energy consumption of different appliances.

In 2013, under the Support for Sustainable Living Scheme, we conducted a postal survey of 736 residents in Monmouthshire to examine motivations and barriers to the *uptake of loft insulation*, and whether the uptake of loft insulation impacts on energy saving or other environmental actions<sup>15</sup>.

#### Prevalence and reasons for loft insulation:

- We found that most respondents (84%) already had their loft insulated; although of those only 44% said they had the recommended level of insulation (i.e. 270mm) and 25% did not know their level of insulation. *Older* occupants and those living in *semi-detached* and *detached* properties were more likely to have installed loft insulation, while those living in *rented* accommodation were less likely to have loft insulation than owner-occupiers. Respondents living in *properties built before 1945* were the least likely to have installed loft insulation.
- The most common reasons for loft insulation were to save energy (49%) and/or money (21%), and to increase comfort in winter (25%). Few respondents were motivated by environmental reasons (5%); and none by increased property values.

#### Barriers to loft installation

- Perceived disadvantages and barriers to the installation of loft installation included: difficulties clearing/emptying the loft (31%), reducing available loft storage (29%), disruption in the home during installation (16%), and fuel savings not worth the cost (14%).
- A majority of the respondents (58%) had been contacted previously about receiving free loft insulation. Of those, only 40% had accepted the offer. The respondents who did not accept the offer cited the following reasons: they already had insulation; they did not qualify; their loft was full; they distrusted the salespeople; and aggressive marketing. When asked what would encourage them to install insulation, respondents primarily suggested

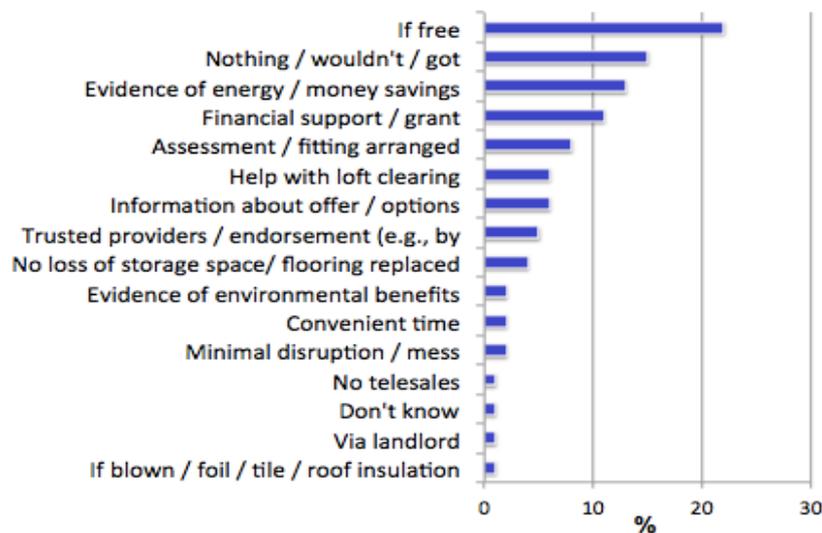
14

See: [http://www.nef.org.uk/themes/site\\_themes/agile\\_records/images/uploads/National\\_Energy\\_Foundation\\_Public\\_polling\\_Headline\\_Findings\\_8\\_September\\_2014\\_AMENDED.pdf](http://www.nef.org.uk/themes/site_themes/agile_records/images/uploads/National_Energy_Foundation_Public_polling_Headline_Findings_8_September_2014_AMENDED.pdf)

<sup>15</sup> Final project report is available here: <http://psych.cf.ac.uk/understandingrisk/reports/>

financial incentives, although addressing the ‘hassle’ factor was also mentioned (see Figure 1).

Figure 1. What would encourage respondents to install loft insulation?



Behavioural spillover and rebound effects:

- We found that many households have taken or installed multiple energy efficiency measures: for example, 90% have low-energy light bulbs; 50% have A-rated energy appliances; although only 10% have an energy monitor (see Table 1). Most (>80%) have thermostats, timers, and valves to control heating system. Most turn off heating/lights when not in use and only boil the kettle with as much water as in needed (>80%). Fewer put on more clothes rather than turning the heating up (51%) or avoid energy at peak times (23%). Many also described themselves as being energy conscious.

Table 1. Uptake and frequency of energy efficiency behaviours

	%	
<i>Energy</i>		<i>Heating</i>
Energy monitor	11	Thermostat for heating system
Low-energy light bulbs	90	Timer to control heating system
A-rated appliances	50	Radiator valves to control temperature
<i>Windows and Doors</i>		<i>Recycling</i>
Double glazing all windows/doors	72	Storage for recyclable waste
Double glazing some	17	

windows/doors		Always	Often	Occasionally	Never	N/A
Draught proofing on windows/doors	23					
<i>Heating in the home</i>						
How often do you turn off heating when not in use?		50%	31%	12%	3%	2%
How often do you put on more clothes rather than turning the heating up?		10%	41%	39%	7%	1%
<i>Electricity use in the home</i>						
How often do you turn off lights when not in use?		60%	31%	5%	1%	0%
How often do you only boil the kettle with as much water as you need?		41%	41%	12%	4%	0%
How often do you avoid using energy at peak times (e.g. evenings)?		6%	17%	22%	44%	6%
<i>Water use and Waste in the home</i>						
How often do you turn off the tap when brushing your teeth?		50%	22%	14%	11%	1%
How often do you recycle paper?		87%	8%	2%	2%	0%
How often do you buy products with less packaging?		10%	41%	34%	8%	3%
<ul style="list-style-type: none"> <li>• We examined whether those who had installed insulation were more or less likely to undertake other energy efficiency actions. As shown in Table 2, we found having loft insulation was strongly related to some other EE actions: <ul style="list-style-type: none"> <li>– Households with loft insulation more likely to have double glazing and draught-proofed windows and doors</li> <li>– Also to save energy through behaviour change (e.g. turning off lights; boiling kettle with as much water as needed)</li> </ul> </li> <li>• Loft insulation was also linked to other types of environmental behaviours (e.g. recycling and water use) – although this relationship did not remain when we controlled for environmental attitudes, age and tenure.</li> <li>• Thus, we found no evidence of rebound effects. On the contrary, loft insulation may actually ‘spillover’ to other environmental behaviours (even in other domains). Note that we did not measure actual energy use (e.g., taking meter readings)– only asked for self-reported energy use.</li> </ul>						

*Table 2. Relationship between adoption of loft insulation and other energy/environmental behaviours*

	<b>Loft insulation</b>	
	<b>Yes</b>	<b>No</b>
	<b>(n=618)</b>	<b>(n=104)</b>
<i>Energy-saving measures</i>		
Energy monitor	11%	6%
Low-energy light bulbs	91%	86%
A-rated appliances	51%	45%
<i>Double glazing all windows</i>		
Double glazing all windows	78%	43%
Double glazing some windows	16%	23%
Draught proofing on windows/doors	25%	12%
<i>Thermostat for heating system</i>		
Thermostat for heating system	84%	63%
Timer to control heating system	89%	67%
Radiator valves to control temperature	81%	74%
<b>Mean number of measures (0-9)</b>	<b>5.26</b>	<b>4.20</b>
<i>Heating in the home (% always/often)</i>		
How often do you turn off heating when not in use?	82%	77%
How often do you put on more clothes rather than turning the heating up?	50%	50%
<i>Electricity use in the home (%always/often)</i>		
How often do you turn off lights when not in use?	93%	83%
How often do you only boil the kettle with as much water as you need?	83%	72%
How often do you avoid using energy at peak times (e.g. evenings)?	22%	27%
<i>Water use and Waste in the home (% always/often)</i>		
How often do you turn off the tap when brushing your teeth?	74%	61%
How often do you recycle paper?	96%	83%
How often do you buy products with less packaging?	52%	47%
<b>Mean number of environmental behaviours (0-7)</b>	<b>5.30</b>	<b>4.72</b>

**21 Ceredigion County Council**

There are a number of reasons why there has been limited take up of the benefits presented by energy efficiency in a rural county such as Ceredigion. These include:

- i. Cost of installing ECO and other energy efficiency measures on rural properties. The shortfall in energy company and NEST funding available relative to the total cost of the works and with no alternative public sector sourced top up funding, has meant that in a low income area such as Ceredigion there has been limited take up of energy efficiency capital schemes.
- ii. Suitability of ECO energy efficiency measures on solid wall, stone, exposed and/or rural properties. Funding available from energy companies is for specific products/suppliers that may not be suitable for all property types, and are likely to be the cheapest option for energy suppliers.
- iii. Lack of local accredited and/or energy company framework approved installers for energy efficiency measures, which has led to householders failing to have recommended measures installed following Green Deal assessments. Our large rural geographical area and relatively small amount of dispersed housing stock is not as appealing to contractors or similar in cost to more densely populated areas.
- iv. Limited options for ECO funded energy efficiency measures in off-gas areas e.g. boiler replacement limited to gas boilers only.
- v. Complexity of the Green Deal/ECO etc process that makes it difficult for householders to access the funding, that is in turn exacerbated by the points listed previously. Following Green Deal assessments, there is a lack of clear direction for householders as to what people should target in homes and in which order. The EPC goes some way towards defining actions however only 30 % of properties have them in Ceredigion and some of the information contained within can be misleading in value of works in terms of invasive works such as floor insulation. Energy companies are holding the key to unlocking ECO funding and offer varying levels of funding dependant on works and tend to move towards lowest cost options with selected partners which in some cases will not always offer a long term sustainable solution. Consistency in delivery is another feature and householder confidence in certain types of works can be affected by this.
- vi. Lack of awareness of the benefits of energy efficiency measures and behaviours that contribute towards reduced energy consumption.
- vii. Since the withdrawal of funding from the Energy Saving Trust there is no single point of contact for householders to contact for energy saving advice. It is understood that Resource Efficient Wales will provide this

	<p>service, but unfortunately this has not materialised as yet.</p> <p>In response to what needs to be done to remove barriers for householders taking up energy measures there are a number of actions that are required to occur at national, regional and local level:</p> <ul style="list-style-type: none"> <li>a) At national level Resource Efficient Wales should be the single point of contact on energy efficiency matters for advice and guidance, that should thereafter link with local authority networks as suggested in point b) below.</li> <li>b) Funding needs to be channelled through local authorities and local housing associations (as trusted partners) to provide energy advisors at a community level, that are able to both advice and guide householders through the process of accessing energy efficiency funding for housing improvements as well as provide advice on behaviour changes required to maximise energy consumption savings both at individual and group/community level.</li> <li>c) Means of accessing the funding especially ECO needs to be simplified</li> <li>d) Positive publicity of the importance of energy efficiency measures, including an increased understanding of 'new' technology such as external wall insulation, solar/biomass etc.</li> </ul>
<p><b>22</b></p>	<p><b>Ofgem</b></p> <p>We welcome that the 2025 vision includes people, communities and businesses recognising the benefits of energy efficiency and taking action. We would welcome the vision adopting an inclusive approach that addresses the additional barriers to taking action that consumers in vulnerable situations may face. For instance, these consumers may need assistance in understanding what actions to take and where to get good advice. They may also lack the necessary skills or finance to make the best decisions about energy efficiency technology or have impairments or disabilities that limit their ability to use certain technologies such as smart energy displays.</p> <p>It is also important to consider the various roles that different parties will play in facilitating the consumer action need to deliver energy efficiency measures. Driving energy efficiency includes not only access to measures but also changing behaviour and reducing energy use, as well as shifting it to different times and places. Delivering behaviour change is difficult. Government must work to encourage change through incentives and obligations; enable it through financing and information provision; engage with consumers through community and media; and exemplify best practice by providing clear and consistent policy, leading by example and promoting those demonstrating best practice. Ultimately, clear, credible and comparable communications will help to build trust in the action.</p>

## 23 Energy Savings Trust

EST has been working in Wales for over 15 years; we know the issues householders and communities face when trying to undertake energy efficiency and refurbishment works. Some of these barriers are beyond the scope of the Welsh Government's energy efficiency strategy, but we provide them as they acknowledge the wider context in which energy efficiency refurbishment needs to sit.

At the end of 2013/14 as part of our EST advice centre evaluation we spoke to a selection of customers who contacted us, they provided the following top three reasons for not having taken action to improve the energy efficiency of their home:

- Financial barriers.
- The need for more information on what they can do.
- They feel they have already done all they can.

### Financial barriers

- The fundamental barrier most frequently highlighted to EST remains the cost of measures. EST contacted approximately 1,000 people with an offer of 60% funding towards solid wall insulation, leaving residents with a £3,000-5,000 contribution required. No residents were willing to pay this amount, leaving only 100% funded measures moving to completion. The recent success of the Green Deal Home Improvement Fund (GDHIF) indicates some households are able to pay, but the total potential market and financial barriers facing the majority of consumers remain considerable.
- Funding mechanisms for undertaking refurbishment works is extremely complicated and in some instances uncertain. For example the swift closing of the GDHIF in 2014 caused some anxiety in the supply chain about how the fund was being managed and expectation management.
- If sufficient financial incentives remain in place some of the perceived financial barriers are overcome and consumer interest will remain high. Sixty per cent of consumers would be interested in installing microgeneration if they received income and savings of between £750 and £1,500 a year.
- There remains nervousness amongst owner occupiers (due to negative press) that they may have difficulty selling their property with a green deal finance or renewable technology installed and more engagement is required with valuers and estate agents.

- Upgrading properties, such as through the Nest and arbed programmes in Wales, is complex. The Nest scheme fully funds upgrades from F&G rated towards a C rating. In 2013/14 average per-property costs across Wales' 22 local authorities ranged from between £1,500-£5,000 per property.
- The property itself is frequently identified as a barrier to installing measures. This is a complex issue with many strands, including physical aspects such as conservation and heritage. Wales has a high percentage of pre-1919 housing stock (especially in comparison to England) and residents face a number of additional barriers when looking to install measures such as solid wall insulation compared to owners of newer homes looking to take action on their properties.
- Once the simple measures have been completed, the return on investment for expensive measures (e.g. solid wall insulation) can be long. This can make home owners reluctant to invest and the perceived payback may extend beyond their occupancy of the property. Quite often non-financial barriers (such as increased thermal comfort) are not accurately taken into account. Increases in disposable monthly income, from reduced energy bills, are often not aggregated to an annual benefit.
- Average time between moving home is seven years which makes it difficult to justify the financial outlay on measures with a longer payback

#### Social barriers

- Having the know-how or knowing who to ask
- Householders may perceive and not desire the disruption caused with energy efficiency works. For example they may be unable to, or unwilling to empty their loft for insulation to be fitted. This barrier was faced many times during the delivery of ECO funded measures by the EST Local Authority and Housing team between 2012-2014.
- Wales is becoming increasingly diverse and communication from utility companies remains predominantly in English, with some Welsh provision. Nest is an example of a multi-lingual programme, but wider engagement is required with communities who have English as a second language.
- Approximately 14% of residents in Wales now live in the private rented sector. The split incentive between landlords and residents remains a significant barrier to the take up of energy efficiency measures. The barriers here are not necessarily financial. There were difficulties in persuading both tenants and landlords to take up fully funded energy efficiency measures during the PRS retrofit programme run by EST in

2012-13. Also domestic focused government funded schemes should not be used to improve the efficiency of commercially run property portfolios where there is a clear business case for the landlord to invest.

- Other social barriers including nervousness of having strangers in your homes, vulnerability and social exclusion. There is also a growing distrust of the energy industry after a significant number of miss-selling cases shown in the media surrounding Green Deal, energy company switching and rogue installers. This may put households off legitimate companies looking to offer energy efficiency measures to households.
- There are approximately 20,000 houses of multiple occupancy (HMOs) in Wales, representing 1.5% of the total housing stock. Often energy bills are the responsibility of the landlord with tenants paying a fixed monthly cost, all-inclusive of bills. This may often lead to wasteful use of energy. In these circumstances it is extremely unlikely tenants will make requests for improvement of the energy efficiency as they will see no net financial benefit. However, this arrangement provides an opportunity to encourage landlords to improve the energy efficiency of the property as they will directly benefit from the subsequent bill savings. For energy efficiency measures to be requested, the proposal suggests it would be required for the whole property, encompassing co-ordination of tenants to collectively make a request. This is extremely unlikely to happen within a HMO setting in practice due to the following -
  - Tenants often do not know each other and individual rooms experience high turnover.
  - Tenants renting rooms in HMO's are some of the poorest in society and do not have the time energy or money to engage.
  - Often tenants are not responsible for bills, and respond to poor energy efficiency by increasing heating.
- EST are increasingly finding that householders are looking for a one stop shop for their resource efficient support, expecting someone who engages with them on energy efficiency to also be able to provide financial, waste and other advice. Householders need the barriers to in-action removed. EST have experienced that people are turned away from schemes because they cannot prove which benefits they are on. Almost all benefit related schemes need to see proof of benefits and many surveyors must evidence this. The ESAS mechanism works by sending the customer's name and address details to DWP, who verify customers' eligibility by matching the customer record to the ECO Affordable Warmth eligibility criteria. DWP does not give details of which benefits the customer receives, it only confirms whether there is a match or not. The data is transferred to DWP in batches twice weekly and can take up to five days to verify the data, so whilst the process overcomes the barrier nicely, it can also cause processing delays by not being

available daily to customers and Energy Supplier (impact on workflow), however from a customer service perspective we feel that Nest should be aligned to the ESAS process. We understand from our monthly meetings with energy suppliers that confirming customers eligibility at the time of survey presents many challenges:

- Customers are often uncomfortable with sharing personal information on benefits and not always willing to show the surveyor.
  - Complexity of benefit paperwork means that it is difficult to identify whether a customer is eligible, often photographs are taken of this documentation.
  - Evidence of tenancy and proof of ownership is not always available.
  - Secure storage and sharing of sensitive information.
- Those customers who cannot provide evidence of their benefit status and proof of ownership / tenancy will not be able to receive assistance through the scheme.

#### Environmental barriers

- More than a third of the Welsh housing stock was built before 1919. This provides significant challenges in terms of appropriate refurbishment actions. Solid wall homes can also suffer from damp and moisture issues which can be exacerbated if insulation is installed without due diligence and care for the situation and the fabric of the property.
- Approximately 30% of the Welsh housing stock is off-gas. There has been a recent reduction in the cost of coal for home heating, whilst remaining the highest carbon fuel available for domestic use. This low cost can reduce the attractiveness of energy efficiency measures by extending the payback. This is paradoxical to the environmental / emissions benefit of retrofitting coal heated properties.
- Park homes are typically used by their owners (usually older than the average home owner/renter) all year around as their permanent home on a residential caravan site. According to Consumer Focus Wales, Park Life consolation document, there are around 3,500 mobile homes located on 92 sites across Wales, housing an estimated 5,000 residents. According to the same NEA report, up until 2005, insulation standards weren't included in the British Standard for Park Homes. 95 per cent of

homes currently occupied were built pre 2005, and that, on average, park home owners pay 20 per cent of their income on fuel to keep warm. Figures from the Welsh Housing Report 2008, show that 44 per cent of properties off the gas network house fuel poor occupants. This figure is likely to be much greater in park homes.

### Timing

- Our Trigger Point research<sup>6</sup> highlighted that customers are more willing to undertake energy efficiency installations when they are carrying out other remodelling or refurbishment works in their homes. This key time frame can often link to the purchase of a new property, an ideal time to make a further investment to reduce ongoing costs, which may be looked on favourably by the mortgage lender as the measures will add value to the house and reduce ongoing expenses.

6 <http://www.energy.salford.ac.uk/cms/resources/uploads/File/Colmer%20-%20EST%20-%20Triggers%20for%20Salford%20%5b26th%20Jan%202011%5d.pdf>

7 <http://www.energysavingtrust.org.uk/blog/tag/energy-saving/>

8 <http://www.energysavingtrust.org.uk/scotland/improving-my-home/green-homes>

### Our suggestions for improving and extending household take up of energy efficiency

- We need to start clear communication with householders in Wales so that they understand more can be done to their home to save energy and money and overcome the barrier that "they feel they have done everything". Perhaps a national issuing of EPC's to householders, as being proposed in the Netherlands<sup>7</sup> could be part of this communication?
- Far more focus needed on retrofit of pre-1919 properties. Wales cannot hit energy efficiency or climate targets without a strong, detailed strategy for addressing these properties. Current guidance is not suitable and investment is needed to show the impacts of retrofit on the fabric and character of properties.
- We would strongly recommend that the momentum of Nest and arbed is maintained.
- Further promotion of the REW provision needed – a national campaign

while also debunking the myths around the technology and the need to act now on energy efficiency in homes across Wales?

- Raising Nest eligibility to an E band
- Review the thresholds of costs per property used in Nest to expand the number of households able to benefit from measures.
- Review of technologies being used and proper monitoring
- Establishing an Open Green Homes Network in Wales demonstrating technologies and providing direct feedback from householders who have taken action<sup>8</sup> -Our colleagues in Scotland run a network of over 850 households including traditional hard-to-treat family homes, to beautifully designed, sustainable eco-builds. This provides customers with a real home example to explore and visit, whatever technology or energy efficiency improvement a customer is interested in. The scheme has now expanded to include SME businesses to share their requirements and best practice from the installers. A similar scheme has been successfully running in Bristol<sup>9</sup> since 2010.
- The negative health effects of living in a poorly insulated, inefficient home are well documented. Cold weather can significantly exacerbate a wide variety of existing health conditions, including respiratory illnesses and impact child learning. We believe that there is scope for a greater connection between health budgets and energy efficiency with a view to completing a full cost benefit of energy efficiency retrofit vs NHS treatment costs. A recent trial by social housing provider Gentoo in partnership with North East Clinical Commissioning Groups (CCG) showed positive results. The average spend on the 'boiler on prescription' pilot was £5,000. Each single emergency admission to hospital costs £2,500. It is expected to also generate a reduction in visits to GPs, walk-in centres and A&E along with a reduction in prescription cost.
- Improving regional collaborations between Local Authorities to achieve scale on retrofit schemes.
- Improve funding for Local Authorities to brand national energy efficiency schemes (e.g. ECO and Green Deal) to improve image of these schemes in the eyes of the public. Local Authority branding on energy efficiency mail-outs achieves a 10% higher response rate than private sector branding alone.
- Improvement in the collection, recording and analysis of housing stock data across Wales. Please see more details how this is improved data management is being undertaken in Scotland within our response to question five.

<sup>9</sup> <http://www.bristolgreendoors.org/>

<sup>10</sup> <http://www.nestwales.org.uk/sites/default/files/filedepot/incoming/Nest%20Annual%20Report%202013->

We note these current strengths and successes and suggest how can they be developed further by...

- Whilst Nest delivery is ahead of target delivering energy efficiency measures to those receiving benefits and in F or G properties. However, we are unlikely to meet the target to remove fuel poverty in Wales by 2018 as Nest doesn't cater for all households currently experiencing fuel poverty, only those on a means tested benefit.
- The successful partnership development management approach used by Nest – this successful multi-agency engagement is ensuring the programme reaches a huge diversity of households in need of assistance. The Nest annual report clearly shows that after word of mouth (which secures 50% of referrals) the partnership development manager activity and partner mailing provides 38% of referrals<sup>10</sup>. We believe this is the best mechanism, up-skilling professionals and then providing local contacts within the community along with a one-stop service with benefits check is an effective delivery model.
- Linking Nest to warm home discount across all suppliers – Nest could be developed further to ensure those eligible are claiming what they are entitled to from their energy supplier. Equally the referral of customers from utility companies to Nest could be strengthened.
- Customer support service - For customers who express difficulty or hesitation over proceeding with the Green Deal process due to its complexity, a Customer Support Service (CSS) has been developed by DECC. The service offers a range of support throughout the process and is guided by the individual's needs. Typical support includes helping customers to find an assessor, locating a provider in their area that offers the measures they require, and helping customers to understand their quotes. The CSS team receive customer details via the main inbound ESAS team on 0300 123 1234. Customers using the CSS receive follow-up support generally from the same advisor, via a series of outbound calls over a period of weeks to support them through their Green Deal journey. This service could be promoted more widely within Wales and the service made bilingual.

**24 Neath Port Talbot CBC**

There are still a lot of misconceptions regarding the benefits and perceived problems of energy efficiency measures by householders. A number of householders are still very dubious on certain types of technology and building

systems, there are a lot of negative stories within the media regarding this type of work which discourages householders from the uptake of measures.

To provide an example of a typical barrier, NPTCBC recently delivered a CESP/ECO scheme of 900 properties across the Authority and are continuing to install external wall insulation (EWI) within renewal areas. A mixed response from house owners has been received to proposed measures, some felt they were worthwhile with others expressing a negative attitude. One observation identified by the Authority in relation to post installation was that people did not change their life styles or habits, e.g. heating systems were still set to the same settings as those prior to insulation being installed, some complaining it was too warm but not taking the appropriate action to resolve issues.

This came down to an education/awareness issue with efforts made to educate householders to adjust heating system settings and lower their TRV's, turn down room thermostat's, however this requirement was unachievable in a number of circumstances due to limitations of existing/old heating systems not having full control packages. Therefore it is imperative that a synchronised whole house approach for the installation of energy efficient measures takes place where possible, also the co-ordination of programme/schemes and available funding is essential to assist in resolving this issue.

There is the requirement for the provision of further advice and education in regard to energy efficiency in the following areas:

- Detailed advice on lifestyle practices and energy efficiency
- Advice on grant assistance
- Energy efficient installation measures that can be installed within various types of households
- Post installation practices to achieve optimum performance and benefits from energy measures
- Identifying installer bad practice
- Publish guidance on where not to install energy and renewable measures

Although this guidance has been covered previously by many organisations, Welsh Government need to provide an extensive awareness programme utilising all forms of media to try to remove all negative perceptions of energy efficiency measures perhaps providing case studies aligned to the aforementioned topic areas. Basically people still need to be educated in relation to removing old fashioned misconstrued viewpoints on energy efficient measures/practices. Also need to highlight the dangers of particular measures

	<p>e.g. installing loft installation without adequate ventilation and cavity wall insulation with façades in poor condition allowing the ingress of water etc.</p> <p>Another impeding factor regarding the effectiveness of energy measures concerns the point that some families find it difficult to see the actual cost saving due to the variance of energy tariff prices making it difficult on occasions to accurately prove the cost effectiveness of specific measures. Majority of most people can't relate to the (kWh) energy unit of usage figures but can relate to monetary terms.</p> <p>On the issue of domestic energy funding, there are various sources of funding available but they normally do not cover the whole cost of the energy measure, for example if ECO is match funded with Arbed or max ECO or a similar funding source then this arrangement makes measures/schemes viable. Although it must be stated that ECO funding takes a long time to come through in addition ECO compliance is very complicated and a long process which can deter householders from proceeding forward with energy proposals. If the funding process was made easier to apply for and was allocated in a more prompt timescale this would significantly improve the take-up rates of schemes.</p> <p>It would be beneficial if Welsh Government could provide a structured model that Local Authorities can use to maximise potential sources of grant funding ensuring a co-ordinated and effective approach.</p> <p>To conclude energy saving advice/guidance and funding needs to be reviewed with a more comprehensive focus and structured approach.</p>
25	<p><b>Climate Change Commission</b></p> <p>Members of the Commission (which include EST, Carbon Trust, CEW, WLGA, Cardiff University) have a huge amount of expertise on energy efficiency within households, communities, businesses and the public sector and their responses to this consultation will include specific supporting information on the various barriers to action.</p> <p>We would like to support Cardiff University's response in relation to the importance of behaviour change and the significant research work they have done on public attitudes and behaviour in relation to energy efficiency. Findings from initiatives such as Supporting Sustainable Living<sup>16</sup> (SSL) to fund specific behaviour change projects needs to be recognised and taken into account, as does the role of communities in supporting community-wide behaviour changes.</p> <p>Support mechanisms such as the new REW are critical – REW should be a</p>

<sup>16</sup> <http://www.cynnalcymru.com/project/supporting-sustainable-living-scheme>

	<p>clear focal point for delivery so that we get clarity and consistency of message. Given that REW was established before the consultation process was initiated, how will this process be reflected in their delivery plans over the coming months? Also on that basis, REW also needs to be completely accessible and needs a governance structure that engages stakeholders at all levels – we would welcome clarity around how this will be achieved.</p> <p>Initial feedback on REW is that it has provided an effective initial response to householders but has yet to achieve in terms of facilitating direct delivery. There needs to be far greater connectivity between the various delivery and support structures that are in place e.g. with Renew Wales, Cynefin etc.</p> <p>The Commission is currently working with COIN to deliver workshops on communicating climate change, to look at language and messaging, and we are happy to share any relevant findings with yourselves.</p> <p>The link with smart technology is also critical and in particular Smart meters – there have been issues and delays to date but this must be the key opportunity and a focus for linking with behaviour change at household level. EST is proposing to develop a “Smart living Hub” which will be able to feed in.</p> <p>In terms of the public sector there have been some major achievements here, as highlighted in the Commission’s Annual Report 2014<sup>17</sup>, through support from Carbon Trust and other. However progress is threatened because of issues such as budget cuts, local government reorganisation, lack of capacity/expertise and the fact that issues such as climate change and energy efficiency are often low on the list of priorities. The introduction of the Wellbeing of Future Generations Bill offers an opportunity for Public Service Bodies to work together to promote resource efficiency across public buildings in Wales.</p> <p><sup>1</sup> <a href="http://www.cynnalcymru.com/project/supporting-sustainable-living-scheme">http://www.cynnalcymru.com/project/supporting-sustainable-living-scheme</a></p> <p><sup>1</sup> <a href="http://www.cynnalcymru.com/news/climate-change-commission-wales-launches-its-2014-annual-report">http://www.cynnalcymru.com/news/climate-change-commission-wales-launches-its-2014-annual-report</a></p>
<b>26</b>	<p><b>Wrexham CBC</b></p> <p>There is a lack of knowledge and understanding of the energy efficiency concept. Clear guidance is required within single point of contact service centre such as one stop shop for more information and advice. Energy efficiency needs a long term support programme, similar to household recycling to change behaviour. The initial money and outlay required to install energy efficiency measures is also a barrier. More schemes like Green Deal Home Improvement Fund are required when people could take advantage of the upfront payments. The GDHIF has been a huge success along with the boiler</p>

	<p>scraping scheme. The number of incentives/grants can leave people confused, particularly between FIT/RHI/Green Deal etc. A lack of advertisement of such a schemes means people miss out on the opportunities. The terminology used can also be a barrier and simple monetary value of savings could potentially influence people decisions more than energy savings.</p>
<p><b>27</b></p>	<p><b>Glass and Glazing Federation</b></p> <p>The GGF are also keen to recognise the significant potential for cost effective investment in energy efficiency and the need to address the barriers to energy efficiency. The GGF fully supports the principles of consumer protection and quality assurance, with all work being carried out proficiently by skilled contractors and installers free of bias. Householders must also be given the choice over what eligible energy efficiency measures are installed, and who is to install them. The GGF believes that this will boost confidence and trust within the energy efficiency market and help make such cost saving initiative more popular with consumers.</p>
<p><b>28</b></p>	<p><b>Citizens Advice Bureau</b></p> <p>Consumer Focus' <i>What's In It For Me?(2012)</i> report emphasised the need to use the benefits of energy efficiency to outweigh the barriers for consumers. It set out the following benefits and barriers commonly identified by consumers:</p> <p><u>Benefits</u></p> <p>Saving money</p> <p>A warmer, more comfortable home</p> <p>The avoidance of waste</p> <p>Living a greener life</p> <p><u>Barriers</u></p> <p>Lack of awareness and interest</p> <p>Upfront cost</p> <p>Inconvenience and disruption</p> <p>Complacency</p>

## Lack of trust

There are a number of approaches to breaking down these barriers.

### Communication

The report also explored how communication which consumers affected their engagement with energy efficiency schemes. A key finding was that attempting to promote schemes largely based on saving money on bills was problematic, given the long term and somewhat intangible nature of such savings. It found instead that highlighting other benefits such as warmer homes and avoiding waste were more persuasive to people as these benefits were more immediate.

Individually tailored messages, delivered locally, were also found to be more persuasive, for example where consumers had the opportunity to visit a home similar to their own which had been retrofitted. This helped make the potential improvements more tangible, as people could experience the benefits – like the home being warmer – first hand, and could also ask questions and address any potential concerns immediately.

There was also evidence in the report that combining the messages of ‘cost, carbon and comfort’ watered down the impact of marketing. There is a need to identify and focus on the messages that will be most effective for each consumer group; whether that be for households with different incomes or financial capability, people with particular needs or disabilities, or with different levels of understanding of the technology involved.

### Regulation

Whilst the Welsh Government has no direct oversight in regulating energy supply or energy efficiency, it does have scope to promote and support UK government and Ofgem regulations through its own codes of practice. An example would be around quality standards in social housing and the private rented sector. Energy efficiency installations are themselves subject to quality assurance standards, some of which are set by Ofgem. Citizens Advice is undertaking research into how these standards differ between schemes and whether there is best practice which could be adopted more consistently.

Regulations around minimum energy efficiency performance certificate (EPC) standards in the private rented sector (PRS) were included in the UK Energy Act (2011). Whilst we recognise the Welsh Government does not have the

	<p>legislative competence to go further than the requirements of these regulations, we believe the introduction of licencing and registration for landlords under the Housing Act (Wales) 2014 presents an opportunity to promote energy efficiency in the PRS.</p> <p>Consumer Focus Wales' <i>Their House, Your Home (2012)</i> found that some tenants' efforts to improve energy efficiency had been blocked by landlords, leaving them struggling with bills, wasting energy, or living in a cold, damp home.</p> <p>Welsh Ministers may set requirements for training landlords must undergo, as part of this we believe landlords should be supported to understand their statutory obligations on minimum EPC ratings. We also believe they should be encouraged to recognise the benefits of energy efficiency for both themselves and their tenants.</p>
29	<p><b>Sustainable Energy Association</b></p> <p>In terms of Government intervention, policy instability and mixed messaging across the UK has caused consumer and industry distrust in energy efficiency schemes where those schemes deliver an incentive- it has been the case that multiple schemes introduced under successive Governments have all targeted the same consumer groups, and been subject to short term legislative change. Any authority looking to introduce an energy efficiency strategy should ensure that it is a long term (cross-administration) and stable one, preferably with cross-party support.</p> <p>In terms of encouraging able-to-pay consumers to install energy efficiency measures without subsidy, it is clear that the case for the cost-effectiveness of these measures needs to be more clearly made. Most simple measures are so cost-effective as to be resource cost-neutral but consumers do not see their value. In the able to pay owner-occupier market, there is also a disconnect between house value and energy efficiency; if housing vendors were able to get more money for their properties being energy efficient (as they would for a new kitchen or similar improvement) then it might trigger uptake by aspirational consumers.</p> <p>In the private rental sector, the relationship between landlord-tenant means there is a dis-connect between the cost of installing measures (which falls to the landlord) and the energy savings realised on the energy bill (which fall to the tenant). Again, as with the able to pay sector, getting the costs and benefits of any intervention to match up will be key to driving change in this sector. We note that the introduction of the Private Rental Standards in the UK should support intervention and drive behaviour change in this sector- and note that when measures are cost-effective, regulation rather than subsidy is a good</p>

	option.
32	<p><b>British Gas</b></p> <p>Experience shows that the challenges in persuading households to take action to improve energy efficiency will vary according to the type of tenure or ownership.</p> <p><u>Privately owned properties</u></p> <p>We support any attempt to remove barriers to creating a significant market for energy efficiency improvements among those customers who are able to pay. However, insulation measures have been heavily subsidised for over a decade, and many householders expect to receive installs for free. The success of this market depends on the creation of significant customer demand, which has not been stimulated to date.</p> <p>To create this demand, energy efficiency policy needs to take customers as its starting point and be built on a deep understanding of their needs and behaviours. Our experience suggests that long-term demand for energy efficiency needs to be driven by incentives, regulation, or both. Without this, customers will simply not make their homes more energy efficient.</p> <p>The Green Deal demand that we have seen has been driven by incentives. Customers are attracted by the ‘Deal’ in Green Deal, and will act if it is sufficiently compelling. For most, a deal means cash-back or money off. It does not mean a loan, however innovative.</p> <p>For example, the UK Government’s November 2014 report on ECO and Green Deal delivery<sup>1</sup> shows that only 293 cavity wall insulations measures were installed through Green Deal Finance up to the end of October 2014, demonstrating the lack of a paid for market.</p> <p><small><sup>1</sup> Department of Energy and Climate Change (2014) Domestic Green Deal and Energy Company Obligation in Great Britain, Monthly report, November</small></p> <p>Lessons may be drawn from two areas where a significant paid-for market has developed:</p> <ul style="list-style-type: none"> <li>• Firstly, the installation of boilers – a product that consumers can easily relate to, and an area where there is clear, existing customer demand as hot water and heating are fundamental to any home. Furthermore, regulations require that replacement boilers meet minimum efficiency standards.</li> <li>• Secondly, the installation of solar panels – here there is a direct</li> </ul>

monetary incentive to homeowners to carry out the work as it offers them a real financial return.

We do not believe that simply streamlining the Green Deal framework – by providing free energy efficiency assessments, introducing interest free loans or adding to the list of qualifying measures – will lead to significant demand for paid-for energy efficiency measures. We also do not believe that increased publicity alone will drive the uptake of measures in the paid-for market. For example, while nearly half of private landlords have heard of the Green Deal, only 4% claim to have accessed it to improve their properties<sup>2</sup>.

2 YouGov (March 2013)– 48% of landlords had heard of the Green Deal (Base: 1,004 England, Wales and Northern Ireland private landlords)

Instead, we need a different mechanism to engage the able to pay, which would involve a mixture of regulation and financial incentives. The creation of sustainable, long-term demand for energy efficiency measures can best be driven by a combination of both ‘carrots’ and ‘sticks’. This could include taxpayer-funded offers, fiscally neutral incentives such as variable stamp duty and council tax, or regulation; for example, by building on current legislation setting minimum energy efficiency standards in the private rented sector.

While the majority of the 320,000 Green Deal assessments delivered in total to date have been followed by the installation of an energy efficiency measure, there is little evidence that the assessments themselves create demand. Assessments are typically driven by the need to secure funding for installations that are already planned; this has been the case for the Energy Company Obligation, Green Deal incentive schemes and the Renewable Heat Incentive.

Of the 100,000 assessments we have carried out, only 6,000 have been for customers not already engaged in buying a measure, and few of those have resulted in an installation. While tailored energy efficiency advice can play a role in building demand, Green Deal assessments lack product information, a clear ‘call to action’ or advice on behaviour change. They are lengthy, expensive, and can be intrusive. Advice should be personalised, interactive, action-oriented and free.

We believe that an engaging online service could meet the needs of most customers - which would be cheaper, simpler and quicker - and that consideration should be given to how this might be developed as a substitute for the current Green Deal assessment.

Social housing

Working with housing associations and local authorities across Wales, we have delivered more than 21,000 measures in Wales from January 2013 to the end of November 2014 across the Carbon Emissions Reduction Obligation (CERO), Carbon Saving Community Obligation (CSCO) and Home Heating Cost Reduction Obligation (HHCRO), as below:

<b>Measures</b>	<b>% of GB measures</b>	<b>% of GB carbon saving/ £ saving</b>	
<b>CERO</b>	7,631	4.07%	5.19%
<b>CSCO</b>	2,442	2.37%	1.95%
<b>HHCRO</b>	11,819*	9.75%	8.42%
<b>Total ECO</b>	21,892	5.32%	N/A

\*includes 7,484 boiler replacements

We believe that the changes introduced by the UK Government from December 2013 strengthen the ECO scheme, make the programme work better for consumers, and provide much needed stability for the energy efficiency industry:

- Consumers are already benefiting from lower energy bills. The changes make ECO more cost effective and allowed us to reduce bills from January 1, 2014.
- ECO will be accessible to more customers: 2.6 million more households will be eligible under CSCO; 5 million more households will be eligible under CERO.
- The commitment to install at least 100,000 solid wall insulation measures across the market will provide a more certain, sustainable future for the solid wall insulation industry.

The large scale roll-out of relatively simple-to-install measures – such as loft insulation and condensing gas boilers – is something that energy suppliers like British Gas are well equipped to carry out cost effectively. Furthermore, energy suppliers often have a well-established infrastructure and supply chain for carrying out the large scale roll-out of this sort of energy efficiency measure.

Funding programmes through direct taxation would reduce pressure on bills and spread the costs to those better able to afford it.

British Gas is currently in talks with potential partners for future ECO schemes, including as part of the £70m additional funding from Welsh Government under

its Maximising ECO strategy. We believe that these schemes will provide the greatest boost to the economy if we can build sufficient economies of scale on individual schemes to allow us to maximise skills based training and employment opportunities in the local economy as well as cost efficiencies in the supply chain that come with sufficient volume of energy efficiency measures being installed.

However this is being held back by restrictions on the individual local authority scheme size to 250 properties or less per each Maximising ECO application. This means that the scheme will only be of very limited duration with no long term surety of work - therefore limiting the impact the scheme could have on the local economy in terms of money spent on the supply chain in the local area and skills based training and the provision of local employment opportunities. We would support raising the limit for Maximising ECO applications to 1,000 properties as soon as is possible - and for any future schemes that may follow.

#### Privately rented housing

British Gas has entered into a five-year partnership with the homelessness and housing charity Shelter, including Shelter Cymru in Wales, through which we have the ambition to improve one million homes in the private rented sector.

The “Fit To Rent?” report produced jointly with Shelter Cymru was the biggest survey yet of the private rented sector in Wales and highlighted challenges in raising standards in the sector. Welsh Government’s own data has also shown poor conditions in this sector. While most private sector landlords are very responsible, there is a minority who are not.

Responding to Welsh Government legislation on housing, British Gas has suggested that a reduction in the number of tenants in cold and damp accommodation could be achieved by promoting measures to increase energy efficiency and reduce fuel poverty such as:

- Encouraging landlords to commission improvements and take advantage of funding that is currently available through the Energy Company Obligation to do so
- Ensuring that greater numbers of landlords adhere to their statutory duty to provide an Energy Performance Certificate to their tenants by requiring that copies are made available to tenants and accrediting bodies responsible for compliance.
- Provide education programmes for tenants and landlords to ensure both

	<p>understand their rights and responsibilities on energy efficiency and safety standards.</p> <p>We see the forthcoming Code of Conduct for landlords in Wales as an opportunity to promote energy efficiency.</p>
33	<p><b>Saint Gobain</b></p> <p>A project by the Energy Efficiency Partnership for Buildings and Saint-Gobain identified the many barriers and proposed solutions to carrying out whole house energy efficiency retrofit. Within the report there is substantial information on consumer barriers and proposed solutions. The consumer barriers are summarised on page 9 and solutions on pages 14 to 19. Should you wish to meet with us to find out more about the project we are more than happy to do so.</p> <p>Please see the summary report:  <a href="http://www.nef.org.uk/themes/site_themes/agile_records/images/uploads/BreakingBarriers_SummaryReport.pdf">http://www.nef.org.uk/themes/site_themes/agile_records/images/uploads/BreakingBarriers_SummaryReport.pdf</a></p> <p>and details of the literature review/workshops:  <a href="http://www.nef.org.uk/themes/site_themes/agile_records/images/uploads/BreakingBarriers_LitReview.pdf">http://www.nef.org.uk/themes/site_themes/agile_records/images/uploads/BreakingBarriers_LitReview.pdf</a></p> <p>We believe that additional long-term drivers and incentives are required to drive uptake of energy efficiency measures, for example lower council tax or stamp duty for more energy efficient properties. This approach has been proven to work in the automotive industry with car tax related to emissions which has been driving the change to vehicles with lower emissions. Saint-Gobain has worked with the UK Green Building Council to show how both of these incentives could be designed to be revenue neutral and not burden those in fuel poverty. The report can be found at the following link:  <a href="http://www.ukgbc.org/resources/publication/uk-gbc-task-group-report-retrofit-incentives">http://www.ukgbc.org/resources/publication/uk-gbc-task-group-report-retrofit-incentives</a> . This type of incentive would help by creating consumer value for more energy efficient buildings and due to the long term nature offer more certainty to industry allowing them to more confidently invest in improved products and solutions for the energy efficiency retrofit market, which has suffered from uncertainty due to stop-start policies and schemes in this market.</p> <p>To improve uptake by consumers the conversation should cease to be about pay-back only and also consider the additional benefits to homeowner comfort, health and wellbeing. A whole house fabric first approach to retrofit is the only way to give real comfort and improvement in health for the occupants. Therefore moving away from a single measure to a whole house approach is a must. Comfort for occupants is not only linked to how energy efficient a house is, but also to the air quality, acoustic performance, space, lighting, security,</p>

	<p>etc. and consideration should be given to renovating properties to maximise all these aspects to enhance the daily lives for those living and working within the building. Please see the Saint-Gobain Multi-Comfort website for details of how this can be achieved: <a href="https://www.saint-gobain.com/en/solutions/energy-efficiency-solutions/multi-comfort-construction">https://www.saint-gobain.com/en/solutions/energy-efficiency-solutions/multi-comfort-construction</a></p> <p>Saint-Gobain UK would like the government to support the establishment of an existing buildings hub along the lines of the successful Zero Carbon Hub for new homes. This would help to pool expertise of those already working in the area and overcome the barriers identified within the report and day to day problems associated with whole house retrofits, while providing invaluable input to Government policy.</p>
<p><b>34</b></p>	<p><b>CLA Cymru</b></p> <p>CLA Cymru would suggest that the barriers for households and communities recognising the benefits of energy efficiency can largely be attributed to convenience, apathy, lack of knowledge or understanding and limited resources.</p> <p>The assumption of easy access to unlimited energy resource is fundamental in today's society. Changing the attitude of the individual to combat this barrier will be the single largest issue for improving energy efficiency in Wales. Education will be the most effective tool combined with access to more affordable innovative energy efficiency solutions.</p> <p>A large proportion of the housing stock in Wales is of an advanced age, particularly in rural areas. Many of the energy efficiency solutions currently available, particularly through Government-aided schemes, are not compatible with such dwellings. The long running loft insulation grants, which can deliver significant energy efficiency for little cost, could not be taken up by many rural areas where houses do not have the requisite loft space.</p> <p>Nowhere is this more evident than with the SAP measurement methodologies, designed over twenty years ago, based on cavity walled properties and widely accepted as substantially inaccurate. This means that buildings are incorrectly assessed and results in physical alterations much less effective than anticipated. The measurement methodology and policies based on it are losing credibility which is concerning where mandatory regulation is concerned. This is already having a significant effect on the private rented sector, especially in rural areas where housing stock is usually older and often unable to meet these arbitrary standards. If regulation is to be mandatory, it must have substantial, widely credited evidence supporting its utilisation.</p> <p>The disparate attitude of certain statutory bodies and the twenty-five separate planning authorities to renewable energy schemes is also a significant barrier. Whilst you acknowledge in the consultation that Welsh Government has limited</p>

	<p>devolved powers to address larger renewable energy development, the small scale householder projects would benefit from more cohesion. Similarly, the approach of statutory bodies such as Natural Resources Wales is cause for concern. Their recent consultation on the charging scheme for 2015-16, suggested an increase of 1100% to the water abstraction licence fee; gave no regard for the volume of abstraction and would be extremely detrimental to the small scale hydro market.</p> <p>CLA Cymru would also like to highlight the worrying trend in excessive red tape surrounding small scale renewable energy. There are examples of planning authorities suggesting that households utilising biomass heat systems be required to prepare contingency plans for potential problems both on and off site. Such bizarre requirements will only serve to encourage people to continue using hassle-free fossil fuel options.</p> <p>The eradication of fuel poverty is a statutory obligation and rightly identified by Welsh Government as one of the multiple benefits energy efficiency could address. CLA Cymru is concerned with the current understanding of rural vs. urban poverty. The measure of rural poverty lacks consistency and cannot be adequately interpreted using the same indicators as urban poverty. There is an over-reliance on traditionally used indicators which masks the problem – for instance, education budgets are allocated according to percentage of free school meals, yet it is well-known within rural schools that this is not an adequate measure as many families who could legitimately qualify consistently fail to instigate the claim.</p> <p>Improved energy efficiency will require attitude change supplemented by more innovative, affordable solutions.</p>
35	<p><b>PLANED</b></p> <p>At present it ‘appears’ that much of the focus of initiatives is on fuel poor households, and we understand the reasons why as outlined in the consultation document. However this does not address energy efficiency in 70% of households, and we would suggest that the message needs to be conveyed to the ‘fuel rich’ too – it is these households that are using (and often wasting) much greater amounts of energy.</p> <p>In our experience, only a committed few will take up offers of education e.g. ‘Carbon Conversations’ as energy consumption is not seen as a priority for change in people’s lives – a ‘necessary evil’, as is car use in rural areas. Focus needs to be on demonstration of small step changes and greatest impact is through word of mouth – opportunities to share experience in informal ways, and demonstration.</p>

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- Already taken smaller steps for action e.g. not leaving things on standby, roof space insulation, but the jump to other measures e.g. solid wall insulation can be too disruptive or costly.
- Action on control e.g. use of smart meters or apps – only for those who are comfortable with technology and upgrade regularly
- Increasing use of technology, natural creep in energy use can mask or counteract efficiency improvements
- Old building stock – solid walls
- Even with schemes like the green deal, which can be difficult / time consuming / complex, investing in insulation or technology can be prohibitively expensive at present
- A good scheme was discounted loft insulation (finished approx 2 years ago, replaced by green deal and insulation via energy companies). Would allow the public to buy as normal and supplier claim back funding. Why could this not be done generally for other efficiency items e.g. insulated plasterboard, double/triple glazing, smart meters, more loft insulation, pipe work insulation etc. Key is making it as simple and easy as possible for the householder to take action. This could be a solution for household on an average wage in a D EPC building – not able to access support and not enough disposable income to commit to big energy projects – how do you tackle this group who are willing to take action but cant?
- Positive action seen by councils on social housing – external insulation etc for whole terrace streets – could this be coordinated / undertaken by the council but for residential streets – would need buy in from whole street and a form of financial repayment scheme for those who could not invest upfront? Economies of scale would make this cheaper per household? Could link to Nyth scheme for those with benefits / low EPC rated buildings? New more efficient housing is the minority and action on old building stock would need to be a focus. Appreciate the barriers in place to this.
- Focus on households with storage heaters? Expensive and poor control – could not benefit from efficiency improvements.

	<ul style="list-style-type: none"> <li>• Raise awareness visually for public – infra red images of towns / streets to show heat loss?</li> </ul>
40	<p><b>Rhondda Cynon Taf County Borough Council</b></p> <p><u>Barriers</u> - Bad name of industry (inherent mistrust of energy companies); complexity and nature of sector means public and industry don't fully understand benefits or how to take action. Local authorities must play a lead role in driving forward energy efficiency strategies and schemes locally, linking it with other projects etc., therefore another barrier to progress would be diminishing Council financial and staffing resources which will limit how much of this important work can be done.</p> <p><u>Suggestions</u> - more Housing Energy Officer posts to educate and inform the public (especially the most vulnerable in society). Renewables in care homes etc where control of utilities is centralised allowing greater savings to be made.</p> <p><u>Strengths and Successes</u> - Consistent WG funding has allowed LAs to plan and progress in poorer areas and continue the success of previous funding streams. To further develop strengths and successes then energy initiatives should be led either by Local Authorities or by Welsh Government to negate the inherent mistrust of the energy industry.</p>
41	<p><b>Community Housing Group</b></p> <p>There are significant barriers to householders and communities and if these barriers to consumer take-up can be overcome, a sizeable increase in demand and delivery may be realised. CHC feels that there needs to be more incentives, more funding, more awareness and information raising, more trust and less complexity. Here are some the barriers that CHC feels exist:</p> <p><u>Economic barriers</u></p> <p>The current economic situation in the UK with high unemployment, less disposable income, higher energy prices and less consumer spending on renovation is a barrier in itself. Energy bills are becoming a bigger percentage of household expenditure. Funding can be difficult to access and access to low cost finance remains a barrier. The complexity and time taken in arranging grants and funding is also an issue. In considering access to capital, a key issue for RSLs is the level of gearing and the expected consequences of further borrowing. Whole house refurbishments are usually very expensive and payback periods are long.</p> <p>Meanwhile, finding upfront capital is difficult. Technology may not be cost effective and energy efficiency investments can be high risk. RSLs have to spend significant amounts of money on the costs of gathering, assessing and</p>

applying information, the costs of negotiating with potential suppliers and partners, the costs of tenant engagement, the costs of assuming risk, the costs of reaching decisions, the costs of employing specialist people, the costs of reaching and enforcing agreements among parties, the cost of specification and tendering for capital works to manufacturers and contractors, the cost of disruptions and inconvenience, additional staff costs for maintenance and the costs of energy information systems (including: gathering of energy consumption data; analysing data, etc). Cost effectiveness has to be built into plans and assuming that a project is cost effective, RSLs have the ability to help some low income individuals who would otherwise find it very difficult to gain access to capital for efficiency investment.

Unless economies of scale can be achieved the cost of delivering programmes may be too high and additional government subsidy will be needed. There is a lack of community schemes and installation levels have not been high enough to meet targets. Please see CHC's response further below in regards to the question on financing to get more insight into economic barriers.

#### Targeting of vulnerable groups

The ability to target vulnerable groups of people and hard to reach people is a barrier. The lower super-output areas on which ARBED is based do not necessarily correlate with the fuel poverty map for Wales. So, there will be areas, particularly rural areas, and marginal areas, that will not have qualified previously for grants because they are not in that lower % of lower super-output areas. Yet, fuel poverty does exist there and can be there in quite high levels. Longer-term planning around future energy needs must take more account of the fuel poverty map and potentially less account possibly of the lower super-output areas. Whilst the lower super-output areas help you to deal with the density of deprivation, deprivation is actually far more widespread so there should be flexibility to take account of this and the fuel poverty map for Wales to target hard to reach people.

Furthermore, the type of energy efficiency scheme that would support RSLs in the future is one that targets off gas areas. Whilst most funding is allocated in areas that sit in LSOA areas (where mains gas might be available), feedback from members has stated that not enough funding is allocated for towns and villages that are off the gas main. These properties are reliant on the most expensive forms on heating fuels (electricity, oil and lpg in general) and more investment is needed. In looking to connect as many properties as possible to the gas main, more support must be given for offsetting connection costs via fuel poverty vouchers. Priority must be given where possible to solid wall properties in off gas areas. In parts of Wales, the typical 'estate' can include

small-scale, energy inefficient properties, with a wide range of non-traditional build types. The nature of relatively small developments in challenging environments does not fall into the large scheme/significant carbon reduction package both the UK Government the Energy Companies favour and unless there is concerted action to address properties such as those described above, fuel poverty will continue to grow. We therefore need to identify where gaps exist and where we aren't targeting. CHC would therefore welcome a new strategy extending support to households who currently don't meet eligibility criteria for Nest/ARBED and who are struggling to get ECO funding. It's important to ask 'How can you best achieve the outcomes that you are seeking, and is the scheme currently designed to maximise that?'

Focusing on the fuel poverty map for Wales includes the need to focus on hard to reach people and the people we haven't reached, as well as people who have been reached and need support but can't access it because they don't live in an LSOA area. There are a range of affected groups that need to be targeted and one particularly affected group is low income, older owner occupiers dispersed in urban, suburban and rural areas across all of Wales. Finding these people requires more up front effort and targeting them for energy efficiency measures might not be as attractive to energy companies who have legal targets on the quantity of carbon emissions they need to reduce. As well as targeting geographic energy efficiency schemes at scale, RSLs and Care & repair Agencies, with the right support, would be able to form partnerships together, as well as partnerships with a wide range of other organisations so that these types of affected groups can have their properties included in energy efficiency schemes. These groups aren't necessarily favoured by the carbon emissions targets approach under schemes like ECO and therefore, an approach which is favourable to them needs to be discussed and considered.

#### Prepayment meters

Many social housing tenants in Wales are using prepayment meters to pay for their gas and electricity bills. Many tenants have no option but to be put on prepayment meters, whilst others prefer them as it enables them to budget better. One HA based in the south Wales valleys estimates that approximately 70% of its tenants use prepayment meters. The benefit of having a prepayment meter is that it allows the tenant to budget the amount of electricity and gas that they use. However, prepayment meters are on the whole more expensive than a standard meter. For every £10 a tenant puts into a prepayment meter, approximately, £1 gets used before the tenants uses it. The most vulnerable and fuel poor tenants are likely to be on prepayment meters. The CHC Group and RSL members are concerned in the rise of prepayment meters in tenant

homes and are keen to work with the Welsh and UK Governments, OFGEM and energy suppliers to make prepayment meters cheaper for tenants and develop alternative forms of gas and electric payment for fuel poor tenants and homeowners. Due of the disproportionate high levels of prepayment meters, some RSLs are pursuing a programme of encouraging tenants to apply for credit meters.

Even after their debt has been repaid, some consumers prefer to use PPMs as it helps them to budget and keep better control over their finances. They are wedded to their pre-payment meters; they do not want to get rid of them. They use them as a budgeting tool. CHC believes that as well as trying to persuade people to get rid of pre payment meters, a bigger emphasise has to be put on persuading the energy companies to be much more equitable in the tariffs that they impose on people in those situations. Ofgem is currently investigating the premiums people on prepayment meters pay as part of their Energy Supply Markets Probe, including addressing the problem of customers switching to more expensive PPM providers. There is a need for the Welsh and UK Governments, energy suppliers and OFGEM to make prepayment meters cheaper for tenants as well as develop alternative gas and electric payments for fuel poor tenants. According to research undertaken by Citizens advice, statistics in their prepayment meters campaign literature state that on average prepayment meter users pay £80 more per year<sup>1</sup>. Customers need companies to provide them with a system that does not penalise them because that is how they want to manage their budgets.

Feedback from members has stated that some have seen an increase this year in tenants being unable to heat their homes due to the fairly warm/mild summer and autumn which has resulted in tenants not needing to put money on to token meters. This has had the result of arrears being built up through daily standing charges and then tenants are unable to heat their homes during the colder months due to the money that they are putting on being swallowed up by the meter. The real issue is that many tenants don't think/understand this process and so it is making the most vulnerable more vulnerable. There is a need for more community based assistance and more local and tailored support and delivery of energy efficiency schemes.

#### Behaviour change barriers

If advice on behaviours is poor it can act as a barrier to performance. CHC would like to see more funding made available to support job roles such as energy wardens, (see appendix 1 for more information) in which RSLs can offer a way back to work for individuals who have been unemployed for a long time to visit homes in their area giving free advice about how to save money by

reducing energy bills. Programmes such as energy warden programmes show how you can help people at a very basic level in terms of reducing their energy consumption as they do not understand the controls that they are using.

Householders can be unaware of simple energy saving measures as well as microgeneration technologies and how to use advanced controls for example. CHC would like to see significant amounts of revenue funding made available to pursue an active programme of energy awareness and guidance amongst tenants, including looking to appoint energy champions internally and externally to carry out training, advice, energy surgeries, etc. This includes training and advising RSL staff as well as tenants to raise awareness of energy saving initiatives. There is work that the RSL sector is doing around behavioural change that is very effective as a big focus has to be about how you use the system, and tenants need to be aware of that, otherwise it sometimes defeats the purpose of having the technology in the home. RSLs put a lot of work into following up these schemes by going into people's homes and showing them how to most effectively use the new measures that have been put in place. As noted above, CHC would like to see Welsh Government make some degree of revenue funding available to bodies such as housing associations that are well placed in their local communities to go to help these tenants to use what they have more effectively, perhaps, than they do at the moment.

Behaviour change principles can be applied to help customers understand and control their energy use as well as get customers interested in energy efficiency if they are not already engaged. If we want communities to be energy efficient we have to get people to take action. Behaviour change is more likely when the benefits of action outweigh the barriers to action. Our approach and marketing needs to make change attractive, easy and normal by reducing the barriers, and increasing the benefits, that matter to people. Furthermore, what matters is different for different people as people are motivated by different things. People face different barriers and they are different for different actions. We must challenge our assumptions as to why people do what they do as if we do not know what matters to the different audiences, we can not design an effective campaign that creates favourable exchange.

A solution is to focus on different target groups or segments. The focused, segmented approach allows us to recognise that one size does not fit all and we can develop tailored messages, products and services that are more personal and relevant than ones designed for the general public, by targeting our efforts on prioritized groups for example. It is wasteful to appeal to everyone with the same message, or service and we have to focus on the problems people have and the benefits they are seeking, how and when they buy, their budget, who/what influences them, where they get their information

from, what else they buy, their attitudes to your issue, demographics, lifestyle choices, their awareness, etc. Different actions have different barriers e.g. issues around the appearance of the property following external solid wall insulation, issues around reduced living space after internal solid wall works, lofts being full of junk, concerns that cavity wall will cause damp, etc. Barriers can be both practical and psychological (misperceptions). They can also be about the way things are promoted (e.g. door to door canvassing). There are lots of things we could do to create a favourable exchange and make energy efficiency more attractive. But what we do is dependent on knowing our audience and what matters to them.

People can value a benefit that arrives sooner over one that arrives later and we need to focus on the benefits that matter most to our audience segment. For example, it might be better to talk about what else people can do with the money rather than how much is saved. It might also be more suitable to some people to develop messages regarding what they are losing/wasting rather than what they will be saving(wasting money can be a more powerful, especially if people don't always realise they are wasting money and don't like waste). Conveying benefits such as increased comfort may be more immediate and more noticeable

There is a need to making it personal, local and urgent and having information tailored to the property (thermal imaging, etc). Other barriers can include inconvenience to the householder. Can the process be made easier and carried out alongside other home renovations/repairs and can a service be provided e.g. loft clearance to allow easy access, short waiting times, etc. Mistrust and misperception are also barriers. The power of social proof must not be underestimated, whether it's about encouraging people who have been through the experience to spread the word, making it competitive between neighbours, using more show homes, using trusted organisations such as RSLs, etc. Responsibility for behaviour change can't just sit with the end user. They have a role to play, but so do organisations throughout the process. Training contractors, for example, could have contractor job specifications which include the flexibility to do extra, simple, energy efficient works if identified when carrying out repairs. More needs to be done to integrate energy efficiency improvements with other household works and this includes investment in the up-skilling of small contractors. Research has shown that home owners are more likely to consider energy efficiency improvements to their homes when triggered by other home improvements, such as a leaking roof, installing a new kitchen, changing a window or fixing a broken boiler. There is an opportunity for Eco academies/DLO's to develop in house skills on a range of eco friendly construction, repair and maintenance skills. There's also the potential and scope for the development of social enterprises around the

energy agenda in terms of installation, repairs and training opportunities. Making it easier and normal for householders to act might involve organisations reviewing their own processes. Its important to ask 'What is stopping householders from acting?'

The installation of SMART metering and the piloting of new technology does offer opportunities. However, there are key questions and concerns around smart meters in particularly and far greater thought is needed around the way in which the programme will be rolled out. A report by the National right to fuel campaign outlines some of the challenges that we face in the installation of smart meters<sup>2</sup>. Notably, that greater clarity is necessary if vulnerable consumers are to understand the role of the smart meter in their home and the benefits of the roll out for them. To pick out a few key points from the report, the report states that smart meter rollout can deliver real and equal benefits to all households if it is done in a way that makes people confident that it is being done for them. The report rightly points out that the rollout of smart meters and delivery of a 'smart energy world' will be paid for by all consumers. This inevitably places the most vulnerable at risk of becoming even more affected by energy costs. The real challenge over the coming years will be to deliver 'smart' cost savings to consumers, particularly those in fuel poverty. Consideration must be given to "an extra help" scheme for fuel poor and vulnerable customers and to prioritising the fuel poor in the Smart Meter rollout. This is going to be a very costly programme and the anticipated behaviour change associated with smart meters will, in the medium term, only make a small difference to energy bills. A much bigger difference could be achieved through insulation and other household energy efficiency measures. It cannot be assumed that energy use will fall as a result of smart meters. One of the key areas for further discussion within the energy sector is whether the rollout of the smart meter will make it more difficult for customers to switch. Only when customers trust both the installation company and the technology will smart meter delivery be efficient and at least cost to the end consumer. Contractors will, therefore, require special training so that they are able to deliver different types of advice during the installation to vulnerable consumers. It's important to try and ensure that improved energy efficiency does not have multiple unintended consequences that have the potential to erode much of the anticipated energy savings. Energy efficiency improvements can sometimes increase aggregate energy consumption and carbon emissions and research on these 'rebound effects', has shown they could be highly significant<sup>3</sup>.

Care & Repair recognise that vulnerable customers require not only advice, but the support required for them to understand this advice and make changes. Whilst we appreciate the work of Nest, receiving advice on energy efficiency and behaviour changes over a telephone helpline, is often not sufficient for

vulnerable people. Care & Repair agencies support older people, in their own homes to repair, maintain and improve energy efficiency. As trusted advisors Caseworkers and Technical Officers can help older people to navigate an ever more complicated energy market and support people to use the technology within their own homes more efficiently. A Welsh Government strategy needs to recognise the importance of supporting vulnerable people to change behaviours, make property improvements and understand energy efficiency, particularly in relation to impacting upon fuel poverty. A recent report by Age Cymru, Life on a Low Income found that the rising cost of energy bills were the biggest concern for older people and that many of them were cutting back on spending in order to manage. It was also reported that 70% of pensioner households in poverty and 80% of households in severe poverty were not currently in receipt of any major state benefits (Pension Credit, Housing Benefit, Attendance Allowance or Disability Living Allowance). This highlights the importance of reaching those people and providing the financial support that they are likely entitled to but are not receiving.

Care & Repair agencies utilise the Nest Portal system, in order to refer clients directly to the scheme, whilst visiting clients in their own homes. The Nest partnership with Care & Repair ensures that the scheme is accessible to vulnerable older people, living in their own homes. Care & Repair Cymru carried out a survey to evaluate the Nest scheme, in terms of their relationship with Care & Repair and how the scheme worked to support older people to alleviate fuel poverty. The findings included both benefits and concerns.

#### Concerns:

Eligibility criteria it was felt that the eligibility criteria were too stringent and many people were vulnerable, but did not meet the criteria for support through Nest.

#### Measures funded

- –Of particular concern was that the scheme did not cover replacement windows or replace old, inefficient boilers. One comment read; ‘If the windows are old and inefficient and the roof leaks then a new central heating system will not fully meet the needs of the client.’

#### Application process

- -complicated and difficult for vulnerable people (particularly those without support).

Benefits:

Respondents felt the benefits included;

Provision of heating, improving living conditions

A more fuel efficient home

Reduced fuel bills

Improved wellbeing

Works were fully funded for clients who would struggle to fund such works.

One Caseworker summarised the benefits as; ‘Clients who are disabled, elderly or with health problems and on low incomes are able to live more warmly, within their own homes and remain living in their own homes.

Consumer barriers

Consumer demand for energy efficient homes and whole house retrofit is an issue. There is a need for far greater levels of public engagement and appetite for low carbon technologies. Lack of information, consumer awareness, interest, and understanding are all still barriers, as well as awareness of the measures, solutions and technologies available. Consumers are also unaware of the benefits and opportunities available to them. There is a lack of a coordinated marketing approach and independent and consistent advice. Easy access to clear and relevant information on energy issues and the support available is a critical element of tackling fuel poverty in Wales. This advice needs to reflect consumer needs and circumstances. There is currently a range of organisations that provide advice to consumers on energy issues. To avoid confusion the system needs to be simplified and better co-ordination is needed between these services. Other barriers can include quality assurance control, assurance of performance, a lack of information on the existing structures, potential hazardous components, location of utilities, access problems and disturbance (e.g. solid wall insulation, under floor insulation and noise and air pollution restrictions, etc) to and from the infrastructure, space constraints, measures reducing the living space such as internal wall insulation, appearance where there is a need to keep the street scene intact, such as with Victorian Terraces, barriers around technical complexity include hard to treat properties, complexities around measures (e.g. Internal Wall Insulation in kitchens, stairs, doorways, etc), knowledge of building physics, etc. If factors such as trust are absent from information on energy efficiency, inefficient choices may be made.

WG might find a report entitled “breaking barriers-An industry review of the barriers to Whole House Energy Efficiency Retrofit and the creation of an industry action plan” useful. A link to the summary report from March 2014 can be seen in the footnote below<sup>4</sup>.

The behaviours identified above present some of the key barriers not only to the achievement of sustainability but also to the delivery of high quality public services. We need to deliver services in ways which are thought through, joined up and offer what people need, with organisations working together with a focus on serving citizens, including the most marginalised and disadvantaged. The co-production and co-design agenda is important. In regeneration practice, there is long-term evidence of the value of community engagement and participation. Seeing this as co-production provides emphasis on the benefits which can be achieved by involving beneficiaries in the design, delivery and evaluation of programme and policies which affect them.

1 [http://www.citizensadvice.org.uk/index/campaigns/current\\_campaigns/fairprepay.htm](http://www.citizensadvice.org.uk/index/campaigns/current_campaigns/fairprepay.htm)

2 <http://www.right2fueluk.com/downloads/NRFCSmartmeterreport.pdf>

3 <http://www.sussex.ac.uk/spru/impact/rebound>

4 [http://www.nef.org.uk/themes/site\\_themes/agile\\_records/images/uploads/BreakingBarriers\\_SummaryReport.pdf](http://www.nef.org.uk/themes/site_themes/agile_records/images/uploads/BreakingBarriers_SummaryReport.pdf)

### 43 **Low Zero Carbon Hub**

There are a number of potential barriers to the adoption of new technology in the construction sector. These include, but are not limited to:

- Budgetary priorities
- Comfort level – effect of disruption whilst works are undertaken
- Cost
- Current processes or procedures
- Difficulty/availability/time for training
- Lack of leadership/support for innovation
- Performance
- Proof of value
- Reliability – will it continue to provide value?
- Resistance to learning new technology
- Social implications – changes in collaboration communication styles
- Time to make changes and adjust
- Understanding of and ability to implement
- User acceptance
- Work stress/overload

Barriers to the adoption of new technology are strong in the field of building energy efficiency, and especially so in the domestic sector.

Research among UK households who had not taken up basic insulation measures (e.g. loft and cavity wall insulation) identified three types of barriers to action: information and awareness, motivation (inconvenience, not a priority) and affordability (EST, At home with energy: A selection of insights into

domestic energy use in Scotland, 2010<sup>10</sup>). Similar findings emerged from a study of energy efficiency, barriers and methods of over-coming them, with the additional importance of tenure being highlighted in research completed by Consumer Focus in 2012<sup>11</sup>.

Detailed qualitative research with households living in older, solid-walled properties investigated the wide variety of reasons for not undertaking renovation (not just eco-renovation) and highlighted a range of interrelated and sometimes rather intangible barriers to making home improvements. These included household values and preferences (similar to the 'motivation' barrier identified by EST), cost, poorly skilled, unreliable or costly professionals, lack of time and perceived difficulty (Mallaband, Haines, & Mitchell, Barriers to domestic retrofit – learning from past home improvement experiences, 2012<sup>12</sup>). Such findings are not limited to the UK, for example, a study completed in Germany found that policy is out of step with both the buildings and the majority of owners to which the policy was targets. The policy's claimed 'economic viability' of retrofits fails to account for the real nature of the buildings and overstates the savings. The negative effect of misplaced claims of economic viability is considerable (Galvin, R. Why German homeowners are reluctant to retrofit, 2014<sup>13</sup>).

The barriers to people recognising the benefits of energy efficiency and taking action are therefore numerous and some outside the influence of Government. For example, householders may invest in energy efficiency measures, but do not realise the savings they expected because of utility bill increases. Whilst they have realised a saving their monthly expenditure remains the same and so the impression of savings being made is lost.

Where almost 20% of households in Wales are off the mains gas grid this means that they are tied to expensive, carbon heavy fuels, e.g. coal and oil. The Hub would be supportive of more oil purchasing clubs and the commitment to an annual switch, such as Cyd Cymru<sup>14</sup> being established. In its first year, Cyd Cymru helped over 1,500 households in Wales to switch to a cheaper energy tariff, saving on average £185 per household. As cheaper energy tariffs could encourage more consumption it is important that the programme can measure comfort take and increased consumption. However, collective switches are an attractive mechanism with which to reach and engage with a diverse range of householders, not just those that are currently experiencing fuel poverty. A national annual switch could be a way of starting to regularly engage with Welsh households on energy, energy efficiency, carbon savings and the wider benefits outlined within your vision for Wales in 2025. We feel that securing cheaper fuel for householders should be supported by a wider programme that ensures energy efficiency measures are installed and access

to funding highlighted (especially to those householders able to pay and invest in energy efficiency measures and renewable technologies to further reduce their own energy bills and properties carbon emissions). The switch also offers all participants the opportunity to switch to utility companies using renewable sources of energy.

There remain some barriers within the existing programmes of delivery, these are below:

- WLZCH believes that the arbed programme is under resourced and limited in what it is delivering. Furthermore messaging around arbed is confusing, it is sometimes referred to as WG's energy efficiency programme others as a programme with a much wider remit.
- The Nest programme is also limited in scope and budget and progress slower than desired to meet carbon savings. The WLZCH would be supportive of widening eligibility criteria and EPC bands to enable more householders to benefit from the scheme.
- The Welsh Housing Quality Standard (WHQS) has not focused on energy efficiency sufficiently; a target SAP of 65 will not provide sufficient carbon savings. Any future WHQS should include more stringent energy and water efficiency as part of the criteria to avoid repetitive works at the same addresses every ten years or more frequently.

The Hub would be supportive of the Welsh Government supporting a training programme to estate agents and surveyors on climate change, the Welsh Government's aspirations and the opportunity that energy efficiency works provide to home owners in Wales. Anecdotal experience shows that they are unable to sell the benefits of renewable technologies and energy efficiency measures installed in a home to new purchases. A surveyor's recommendations and advice drives the retrofit sector as they are providing advice to the domestic customer. We therefore need to ensure that they are suitably qualified and able to provide appropriate and current advice to householders, and appropriate to their property. A greater understanding of the role Energy Performance Certificates could play in this process would also assist in improving householders understanding and seeing the opportunity of investment and take up of energy efficiency works.

Whatever programmes the Welsh Government develops through its Energy Efficiency Strategy, we would encourage strong marketing. A number of UK initiatives, for example the Green Deal and the Green Deal Home Improvement Fund have both received bad press and this too has a de-motivating effect on take up.

Householders require help in understanding the roles that different parties play in securing funding or the best investment of their capital in energy efficiency measures. For example, the Green Deal Home Improvement Fund, requires the householder to take numerous steps and the fund was a refunding mechanism rather than loan. The vouchers were also made payable to householders rather than installers direct, which made the supply chain cautious of the scheme too.

Establishing the householders' trust is therefore essential to the successful delivery of energy efficiency projects. An initiative such as the successful Monmouthshire's Eco Open Doors<sup>15</sup> helps raise the profile of energy efficiency (and the more consumer engaging renewable technologies). The open home weekends enable interested householders to talk direct to those who have works carried out to their homes to hear and see their experience, the disruption, end results and impact. The WLZCH are aware that other similar days are co-ordinated across Wales, and indeed CADW's own open doors<sup>16</sup> initiative each September, could be the ideal opportunity to make eco open doors a national campaign and more co-ordinated activity. Such a network has been established in Scotland and now sees over 850 homes open across the country<sup>17</sup>.

The WLZCH is supportive of the Welsh Governments Housing Bill 2014 and would encourage links to be made between the regulation of private rented housing and energy efficiency. For example, there will be a significant opportunity to engage with both tenants and landlords, once DECC's Private Rented Sector Energy Efficiency Regulations (Domestic) are launched (consultation currently being reviewed<sup>18</sup>). It is important that the energy efficiency strategy covers for the diversity of all of Wales' housing stock, including the private rental sector and park homes. The Consumer Future's Park Life: Residential mobile home living in Wales<sup>19</sup>, report published in 2012 outlines a number of barriers owners and residents of park home properties are experiencing both in the day to day running of their homes utility consumption and bills, as well as blocks on undertaking energy efficiency works.

<sup>10</sup> <http://www.energysavingtrust.org.uk/reports/home-energy>

<sup>11</sup> <http://www.consumerfocus.org.uk/publications/whats-in-it-for-me-using-the-benefits-of-energy-efficiency-to-overcome-the-barriers>

<sup>12</sup> <https://dspace.lboro.ac.uk/dspace-jspui/handle/2134/9635>

<sup>13</sup> <http://www.tandfonline.com/doi/abs/10.1080/09613218.2014.882738>

<sup>14</sup> <http://www.cydcymru-energy.com/content.asp>

<sup>15</sup> <http://www.monecoopendoors.org.uk/>

<sup>16</sup> <http://cadw.wales.gov.uk/opendoors/what-is-open-doors/?lang=en>

<sup>17</sup> <http://www.energysavingtrust.org.uk/scotland/improving-my-home/green-homes-network>

<sup>18</sup> <https://www.gov.uk/government/consultations/private-rented-sector-energy-efficiency-regulations-domestic>

#### **44 Age Cymru**

We believe that the Welsh Government deserves credit for the continued support it has given to energy efficiency programmes in recent years. Nest and Arbed stand in contrast to the lack of direct government support for fuel poor households in England. However, despite good intentions, progress to improve the energy efficiency of housing and to tackle fuel poverty remains slow overall.

The relatively small size of the Nest annual budget means that the overall reach of the scheme is small. The Energy Saving Trust has estimated that taking 95% of fuel poor households out of fuel poverty by improving the energy efficiency of their homes (and not tackling income or energy prices) would cost £2.4bn at 2008 prices.<sup>18</sup>

The reality is that, despite the existence of these schemes, the impact of energy prices means that fuel poverty is very likely to still be rising in Wales.

We believe that the Welsh Government should continue the support it has given through the Nest and Arbed programmes and give consideration to expanding the support to households who do not fall within the eligibility criteria of the current Nest scheme.

Age Cymru is a member of the Energy Bill Revolution campaign for the UK Government to invest the new receipts it will receive from carbon taxes (estimated to be worth £63bn between 2011 and 2027) in a major infrastructure programme to improve the energy efficiency of homes. We believe that this call should be supported by the Welsh Government as new investment by the UK Government would likely result in new funds being available to the Welsh Government for it to expand the scope and scale of its own energy efficiency improvements. We are realistic that without this extra investment, the amount of money available to the Welsh Government is unlikely to be sufficient for the size of the task to improve Welsh housing stock.

In relation to barriers, there are several factors which can prevent older households from making energy efficiency improvements:

- Lack of information about the support available. Despite considerable efforts and publicity around schemes there remains a lack of understanding about who is eligible for support and from what sources.
- The complex network and interaction of schemes available. The patchwork of different schemes and providers can act as a barrier for people unsure of where they should go. The fact that all these schemes

<sup>18</sup> Costs and benefits of tackling fuel poverty by improving energy efficiency in Wales in 2008, Energy Saving Trust, 2013

are based upon different models is also a cause of confusion, with energy companies, the UK Government and Welsh Government all offering different schemes with divergent eligibility criteria or payment mechanisms. Unfortunately, this aspect is not helped by scammers or high-pressure sales firms using energy efficiency, and the complexity of the market place, as a method when cold calling customers.

- Upheaval during improvement works. In particular, major improvements may come at a cost in terms of disruption or temporary displacement that can act as a major deterrent to older households. This has traditionally been the case in relation to loft insulation if support is not available to help people move a lifetime of possessions to enable the work to be undertaken. Therefore improvement schemes should also offer support with this and other similar aspects where possible.

A remaining issue is that none of the energy efficiency programmes currently in existence is designed to react quickly in the event of a household experiencing a heating breakdown or emergency which means they cannot heat their home. Some energy suppliers have the facility to provide emergency electric heaters, and support can sometimes also be provided by third sector organisations, but this is variable dependent upon demand and geography.

We believe that the Welsh Government should develop a national Cold Weather Plan to deliver crisis support and funding for emergency heating during severe weather. This would form part of an approach to tackle excess winter deaths and cold related illness, which would hopefully have a knock-on effect of reducing pressure upon the NHS. As part of this we believe consideration should be given to establishing a separate emergency crisis fund, or building such provision into the future re-tendering of the Nest scheme, to help people in situations where a breakdown of heating risks damaging their health.

<sup>1</sup> Costs and benefits of tackling fuel poverty by improving energy efficiency in Wales in 2008, Energy Saving Trust, 2013

#### **45 Rockwool**

A range of incentives, measures and publicity will be needed to raise awareness about potential savings from energy efficiency improvements.

A Welsh Government driven, widespread, high level, sustained, consumer awareness campaign will be necessary to communicate the benefits of energy efficiency and the support available to households.

A range of fiscal incentives should be considered to encourage householders to consider energy efficiency upgrades to their properties. Many ideas have been

	<p>proposed over recent years such as changes to Council Tax and Stamp Duty to support energy efficiency however the Welsh Government can only take action in areas which have been devolved.</p> <p>We would encourage the Welsh Government to consider actions such as providing financial incentives to homeowners and strengthening areas within building regulations which encourage more extensive energy efficiency works to be undertaken when homeowners carry out building works to extend their properties.</p>
46	<p><b>SSE</b></p> <p><u>Barriers – delivery</u></p> <p>In Wales, the Arbed scheme has sometimes inadvertently hindered supplier delivery of the ECO due to an overlap of potential properties and partners. One of the primary reasons for this is the key role played by local authorities, whose procurement teams have been identified as both barriers and enablers to the delivery of ECO, with the procurement process often favouring Arbed schemes over resident or supplier-led ECO projects. While SSE is keen to see greater local authority involvement, any schemes should compliment not conflict with one another.</p> <p>The speed with which the Welsh Government has administered the ‘ECO top-up’ funds announced in October 2013 may have also prompted both public and private sector stakeholders to allocate funding elsewhere in the UK.</p> <p><u>Barriers – engagement</u></p> <p>Recent research<sup>3</sup> undertaken by YouGov on behalf of SSE has shown that customers are generally engaged with energy efficiency. However, only half of those surveyed believe they can save money by reducing their consumption without negatively impacting their quality of life. While two out of three do believe reducing their energy usage will save them money, only one in five have taken any significant action to do so. The most commonly cited barriers to taking further EE actions are concerns about cost, visual appearance and the overall ‘hassle factor.’ Increasing customer engagement with energy efficiency will therefore rely on both education, to make people aware of the potential to reduce consumption without sacrificing quality of life, and on initiatives to help people manage the up-front costs – perhaps through revamped ‘pay-as-you-save’ schemes, if finance can be made available at very low or zero cost.</p> <p><small>3 YouGov / SSE. (2014). Putting The Customer First: How We Can Drive Real Consumer Engagement With Energy.  tinyurl.com/sseyougov</small></p>
51	<p><b>Flintshire County Council</b></p>

Forthcoming regulations will require minimum EPC band before a property can be let, and little by little we have seen this is making an impact on the way landlords improve properties. However there are some landlords who find ways around the regulations and in some cases the requirements are not upheld by building regulations. The support given to building regulations practitioners must be improved. In general, there should be more education on and improvement of Energy Performance Certificates for existing properties, and these could possibly be used to require homeowners to improve their property's energy efficiency rating by a set number before selling it on. Additionally, an increase in financial assistance in the form of zero interest loans for energy efficiency and renewable energy improvements, and green mortgages which have money built in to cover any additional cost of adding renewable energy or improving thermal performance would encourage more people to make this a priority.

We could learn from the way the Scottish Government has levered in ECO funding by offering match funding at predictable levels through the HEAPS programme. Housing data needs to be collected, updated and managed consistently across Wales in order to maximise potential investment opportunities, ie ECO.

The Welsh Government must stand behind meaningful fuel poverty targets in addition to energy efficiency targets to avoid making the problem of fuel poverty even greater. In addition to Nest and Arbed we have seen a benefit to a local crisis fund and caseworker support for vulnerable and fuel poor residents. This is delivered directly and through the North Wales Energy Advice Centre, Care & Repair and other organisations linked to the Flintshire Affordable Warmth partnership.

People in off-gas and other rural areas have been almost completely left out of the impact of Green Deal and ECO, mainly because of the fact that the carbon savings achieved by switching to gas cannot be funded through ECO. In Flintshire we have worked with Wales & West Utilities and participated in national discussions on a more coordinated strategy and we would welcome further guidance on this.

Local delivery and partnership engagement requires the Welsh Government's national schemes to be flexible— for example in Flintshire Care & Repair were able to work with Nest to support a client who was being kept in hospital until their home was in a fit state. In isolation, Nest might have otherwise refused to help as the vulnerable person was not currently living in the property to be assessed, however the link between the two organisations allowed this to happen. Over the past few months, the GS Charity Grant fund has been used in Flintshire for small repairs relating to heating where there is a risk to health and

	<p>safety.</p> <p>Opportunities to benefit from energy efficiency improvements to properties should be tenure blind and based upon need. Properties such as houses of multiple occupation have been excluded from most schemes, or in the case of ECO generally seen as too difficult for funders to take an interest in. Use UNO or EPC info to show average energy costs for private sector.</p> <p>Behaviour change, promotion and mainstreaming of energy efficiency and renewable energy is crucial to any scheme. We know it takes on average 21 days to create a habit, showing that people can change their ways when given the right motivation and reinforcement at the correct times. Affordable Warmth and Electric Avenue in Flintshire, Energy Wardens in Anglesey and Gwynedd and Cozy Homes in Pembrokeshire are past and current examples of localised energy advice, training frontline staff and community champions. We have good links with frontline staff in the health sector and have trained referrers into the Health through Warmth and Affordable Warmth programmes, however currently the projects have not received direct financial support from the health sector. The opportunities for this should be explored, and we would welcome further information on the various examples of energy efficiency projects where the health/social services sector has contributed funding. More evidence is needed, ideally specific to Wales, showing statistics on how fuel poverty reduction projects reduce NHS costs.</p> <p>Zero carbon new build should still be the target. This can be achieved if there using a clear timetable, standards that reflect local need and development issues, and using energy efficiency and renewable energy targets through LDPs AND the Code for Sustainable Homes, etc as a framework. Code for Sustainable Homes on its own can become a box ticking and green energy bolt-on exercise, which is part of the reason that sustainable homes are seen as expensive.</p> <p>The step change must happen quickly, and some may be resistant to change, but it is important that the regulations are clear, and that if builders cannot reach targets for whatever reason, they should either not build, or be required to pay into a fund which would go towards local improvements in energy efficiency for existing properties. One of the key arguments against setting higher targets ahead of England is that developers will go elsewhere to build, but looking at counties in England that have brought in versions of the Merton Rule and placed requirements for existing buildings, this has not been the case. Building professionals and architects adapt to meet the requirements, and they can be assisted in doing this in the most cost-effective way possible.</p>
52	Egnida

	<p>The barriers to householders and communities vary significantly dependent on the various demographics. For example poorer households suffer from lack of access to “investment” capital and knowledge whereas some higher net worth demographics reject energy efficiency and renewable solutions on their properties as they perceive them to be solutions for the poorer social housing tenants and therefore carry low status. Analysis of these demographics and solution types is complex but we do not believe a one size all approach will in any way be successful. Our success to date has been very much targeting campaigns specifically to the demographics. Overall the major barrier in this sector is that customers’ perceptions are very different to reality and a significant amount of education and engagement is required to be successful. Welsh Government could have a very valuable role in the education and credibility process but would need to manage its messaging very carefully to avoid unintended negative consequences.</p>
<p><b>53</b></p>	<p><b>NEA</b></p> <p>During 2010-13 NEA delivered a 3 year programme designed to help fuel poor households in rural, off gas communities in Wales to reduce their energy consumption through a community led approach. A policy report outlined findings and recommendations highlighted how households in rural off grid areas are keen to reduce their energy bills but there is a need for support and advice to take householders through the range of measures which can be undertaken. There was keen interest in renewable technologies and collective switching and bulk buying schemes but high upfront costs and lack of knowledge about renewable technologies and how to set up buying schemes limit the potential for fuel poor households to engage with these technologies</p>
<p><b>54</b></p>	<p><b>Scottish Power</b></p> <p>There are various barriers to the take-up of energy efficiency. In the domestic sector, for example, these barriers include high upfront costs of measures. However, a lack of understanding of the benefits of energy efficiency and the disruption involved in installing some types of measure are also significant barriers, even when measures are being offered for free.</p> <p>We consider that appropriately set incentives combined with effective regulation and high quality information campaigns can all play a part in addressing these barriers. However, affordability constraints on the scale of public funding available for energy efficiency improvements make it important that those households that can afford to contribute towards energy efficiency improvements are strongly encouraged to do so, so as maximise the funding available for lower income households.</p> <p>It is also important that the value of energy efficiency is increasingly recognised in the property rental and sale markets through the clear provision of</p>

	<p>information on energy costs for a particular property. The current system of Energy Performance Certificates should make the data available in sale or rental transactions, but more work is needed to encourage people to read the information and act on it. We would also urge the Welsh Government to work with DECC to explore the range of levers to encourage the uptake of measures at the points of property purchase or development.</p>
<p><b>55</b></p>	<p><b>WLGA</b></p> <p>The benefits of energy efficiency are not immediately seen by householders within the current billing/payment arrangements quarterly bills and direct debit arrangements make it difficult to equate benefits to actions.</p> <p>SMART meters and apps could assist householders in taking immediate energy efficient actions. The UK project to replace all meters for gas and electricity is to be welcomed as a contribution to energy efficiency.</p> <p>Upfront investment costs may hinder invest-to-save projects, and the WLGA recognises the importance of initiatives like ARBED, CERT, CESP, ECO and NEST in addressing these issues.</p> <p>The labour market can have an impact on the stability of the population, frequent house moves (for jobs) reduces the incentive to invest if the payback will not be realised by the homeowner or if the owner (e.g. landlord) is not responsible for paying the bills.</p> <p>Negative publicity – there needs to be a consistent message from all levels of Welsh Government and Local Government in respect of energy efficiency.</p> <p>Discussions at UK Government level concerning how can we generate more energy to meet the demand rather than how to reduce our consumption to meet current levels of generation</p> <p>Negative publicity - Unscrupulous traders exploiting vulnerable individuals generates distrust of genuine initiatives, perhaps local government could be seen as a ‘trusted’ partner to instil and restore confidence in energy efficiency measures.</p> <p>The financial implications of the Green Deal in the present climate of rising energy prices means no payback and may make the property difficult to sell with the added financial burden of the Green Deal loan.</p> <p>The immediacy and changing nature of technology can have a positive but also a negative impact – all new technology requires energy.</p>

	<p>Energy switching campaigns reduce the cost to the consumer on their current consumption but may actually facilitate consumers being able to afford to increase their demand for energy.(Example in Cornwall Together of a consumer switching to lower energy cost now being able to afford to run a hot tub)</p> <p>There have been a variety of organisations providing advice and guidance in respect of energy efficiency measures which may have made it difficult for householders to know where and to whom to turn. The WLGA welcomes the Welsh Government initiative of Resource Efficiency Wales providing a one-stop-shop for such advice.</p> <p>The energy efficiency initiative should also be part of the wider behaviour change that encompasses renewable energy opportunities, low carbon transport and even waste/recycling etc.</p>
<p><b>56</b></p>	<p><b>Carmarthenshire County Council</b></p> <p>There is a lot of confusion to householders – much of this comes from the nature of the energy efficiency industry, cold calling, misselling etc.</p> <p>In addition, poor quality workmanship and associated bad press has made many householders hesitant to sign up to energy efficiency work.</p> <p>In our current Arbed scheme, many of the residents have had recent cold calling from other companies offering work, never to be seen again. This has made them hesitant to sign up for measures. Others have already paid for “green deal” surveys, and are again hesitant to sign up for something else.</p>
<p><b>58</b></p>	<p><b>Pembrokeshire Coast National Park</b></p> <p>The length of time it can take to implement energy efficiency technologies can be prohibitive for communities. Particularly due to the length of time it can take communities to obtain all the necessary permissions/permits. During this protracted process policy can change and also the momentum of a community can falter leading to difficulties in maintaining enthusiasm and consequently any commitment of money through share offers or other community finance raising mechanisms.</p> <p>Householders often face hurdles because retrofitting technologies are often fraught with problems of both a technical or intrusive nature.</p> <p>Pay-back periods are often considered too long for householders who may see themselves moving for whatever reason.</p> <p>Lack of knowledge or more specifically experience of</p>

	<p>installers/builders/maintenance engineers resulting in a lack of confidence on most appropriate technologies and best installation methods.</p> <p>Inertia – easier to stick with the known.</p> <p>Lack of general awareness of the possibilities and access to free/low cost impartial knowledgeable advice.</p>
<b>59</b>	<p><b>Michael O'Brian, Michael O'Brian</b></p> <p>Biggest barrier is lack of knowledge on the part of householders and probably inertia towards implementing measures based on having to spend money but not actually seeing results. Most people do not look closely enough at their energy costs and as bills tend to go up every year potential and actual savings are not seen.</p>
<b>60</b>	<p><b>Alan McCarthy, Hafod Renewables</b></p> <p>Incentives are not publicised and tabloid journalism interprets them incorrectly An awareness campaign is required.</p> <p>An approved list of consultants and installation companies should be policed and not available by payment of a fee.</p>
<b>61</b>	<p><b>Stephen Vaughan, Housing Renewal Team, Torfaen County Borough Council</b></p> <p>When people hear that some of these measures are 'free' they tend to be sceptical, assuming that ' nothing is free' and there must be some 'catch'. Older people especially are very wary in this regard.</p> <p>I think television could feature more as a marketing tool to promote energy saving schemes- Nest and The Energy Saving Trust could be promoted more. Trading Standards could be involved more in tackling rogue traders who promote schemes erroneously and hence give genuine providers a hard task in convincing people to take up energy efficiency schemes.</p>
<b>62</b>	<p><b>Andy Thomas, Butler &amp; Young Wales.</b></p> <p>There are 2 barriers - practical and financial - both can be resolved with effective, efficient and economic products and schemes. Incentives are also a vital route for developing growth and efficient solutions (such as the FIT scheme). More of the same !</p>
<b>63</b>	<p><b>Neil Evans, Carmarthenshire County Council</b></p> <p>Many people still have an image in their heads that energy efficiency = dim energy saving bulbs that take an age to warm up!</p> <p>Additionaly TV seems averse to energy efficiency. How many times have you</p>

	<p>seen a programme where a room will have all the lights / lamps switched on even if teh sun is shining or a police show where all the computer screens are left on at the end of the shift?</p> <p>We (Carmarthenshire County Council) utilise SALIX interest free loans to fund our energy efficiency works. These loans are basically repaid with the energy savings realised by the investment and because they're loans not grants we appreciate the need to realise savings i.e. we wont go adding energy hungry tech in a building where we've just installed T5 / LED lighting.</p> <p>I'd like to see a public version of SALIX Finance so that all can access 0% finance for energy efficiency works and even renewables.</p> <p>If the Welsh Government had control of VAT - lowering or removal of VAT for green technologies.</p>
<b>64</b>	<p><b>Kate Smith, KFS Consultancy Ltd</b></p> <p>Householders have to do quite a lot of research themselves to find out what schemes are available and then most suitable to their home. "Free" insulation offers etc get taken up without much thought to whether they are appropriate to their property. I forsee maintenance issues in years ahead - damp, condensation but poor choice of "energy improvements". Older buildings are especially susceptible to inappropriate choices.</p> <p>More detailed analysis of a building required to assess the most appropriate "EPC Recommendations". Either a job for government, or opportunity for property surveyors to give advice.</p>
<b>65</b>	<p><b>Gary Spiers, South West Insulation &amp; Extractions LTD</b></p> <p>Rolling out a road show to local schools, educating the children</p>
<b>66</b>	<p><b>Phil Powell, Gwent Energy CIC</b></p> <p>not having a person those views they can trust is a barrier for many the cost of new appliances would be a barrier</p>
<b>67</b>	<p><b>Mark Greenfield, Greenfield Energy Solutions</b></p> <p>Take it out of the free market and have the government stamp of running and valuing its costs to the end user, dealing with fuel poverty first. Approach small community businesses that people in wales trust and ask for a specific set of paperwork to be completed proving that the work has been completed to the relevant PAS2030 standard achieved by in large most small businesses and not the largest ones in my experience.</p>
<b>68</b>	<p><b>Daryl Price, DK Property Services</b></p>

	Education, LABC, lack of information, lack of interest from house builders. Lack of dissemination of info or opinions from WAG.
<b>69</b>	<b>Brett Langdon, SPMS (Wales) Ltd</b>  Cost and lack of funding in the market place.
<b>70</b>	<b>Carrie Parisella, Greendealshop.com Ltd</b>  Lack of information and public awareness.
<b>71</b>	<b>Jeffrey Smith, First Phase Electrical</b>  i promote energy savings but its down to money when buying new fittings or lamps
<b>72</b>	<b>Dawson Evans, Torfaen County Borough Council</b>  Cost of schemes and inconvenience to householders are the main barriers
<b>73</b>	<b>Sian Edwards, J D Energy Services</b>  Up front finances are a great barrier, the financial incentives (ie FIT and RHI) are great, but there is a lack of upfront funding options in the domestic sector
<b>74</b>	<b>Ian Titherington, City of Cardiff Council</b>  A greater consultation and conversation needs to take place, showing to local residents that once they are given the facts, their opinions count in terms of solutions.
<b>75</b>	<b>Bex Gingell, Taff Housing Association</b>  we have held awareness sessions at our offices in Taff housing for our tenants and the local community - tenants seem to be interested in energy efficiency but seem to think it is not worth while (not cost saving); is a lot of effort; is too technical; costs money on the outset!
<b>76</b>	<b>Rob Newell, Joyner PA Cymru</b>  the complications that must be overcome before you can be considered usually means the house owner will give up before they get to the outcome.
<b>77</b>	<b>Rachel Davies, City and County of Swansea</b>  Lack of knowledge and access to energy efficient products.
<b>78</b>	<b>Samir Hussien, site services</b>  more education and workshops to public and business to recycle. help with small recycling business setting up. change habits to less waste.
<b>79</b>	<b>David Powell, Vale of Glamorgan Council</b>

	<p>Lack of understanding, poor utility provider information (direct debits and confusing billing). Few people understand what a kWh is, what it costs, or what impact it may have. Green deal has not worked (so far) a big rethink is required.</p> <p>Matched funding is always a barrier.</p>
<b>80</b>	<p><b>Shaheena Chowdhury, energy saving direct</b></p> <p>Not enough information is out there for business to take to potential customers</p>
<b>81</b>	<p><b>Peter Draper, Rounded Developments Enterprises Ltd</b></p> <p>The main barrier to good energy efficiency is that the industry does not know how to do it correctly, especially for solid walled buildings. However, orgs like Rounded Developments Enterprises, CADW, Museums and Wales etc do know. We should be using these orgs to spread the message, provide training and provide the data with which to inform the public.</p> <p>'Energy efficiency' as it stands is not the right way forward to many Welsh homes and so it is good that this has stalled as it is saving us millions by providing us with the time to get it right. No point doing something twice when it can be done correctly once. It might cost more in the short term, but it will be much cheaper in the long term.</p> <p>It must be seen as a provision of a long term improvement to the home rather than just an energy efficiency measure. We need to tackle the real issues that affect people - damp being the biggy. If we can improve people's houses by making them more efficient and less damp and ensuring that this is a permanent solution then people might be more likely to buy into it.</p> <p>Correct / approved energy efficiency measures should also have an incentive. Maybe a very low interest loan or lobbying to reduce VAT on certain products.</p>
<b>82</b>	<p><b>Mathew Davies, Grwp Cynefin</b></p> <p>There are many things that people can do to recognising the benefits of energy efficiency, we have created a leaflet that we give to our clients on things they can do to household appliances that can save them money in the long run.</p>
<b>83</b>	<p><b>Sylvia Peat, Grwp Cynefin</b></p> <p>Education is the way forward, "reversed role" teach the children and they in return will teach their parents, on methods of saving energy in the home, open their eyes to renewable energy, a better cleaner Wales approach.</p>
<b>84</b>	<p><b>J.Richard Davies, J.r.davies property services</b></p> <p>Solid wall insulation is so expensive. That people either can,t afford it, or don't believe that it would be cost efficient. They also fear the disruption of internal</p>

	insulation, and doubt the visual impact of external insulation
<b>85</b>	<p><b>Julie Edwards, Pembrokeshire Housing Association</b></p> <p>Initial cost of installing new energy efficiency measures is the biggest barrier as I see it both for those private home owners most in need and RSL's who have budget restrictions.</p>
<b>86</b>	<p><b>Graeme Harrold, 3-e Electrical Ltd</b></p> <p>Implement a clearly defined VAT structure for energy efficiency, and if needs be have a 0% drive for 12 months. Introduce a new FIT/RHI that focuses on self consumption rather than total generation. Look holistically at housing standards as there is so much management technology that should be mandated for new builds. Increase VAT on filament and CFL products to drive forward LED adoption. Re-offer the discounted insulation products.</p>
<b>88</b>	<p><b>Allan Smith, Energy Effective Ltd</b></p> <p>Bad media campaigns drawn up by advertising people who do not understand the mindset of the people the message is aimed at. Have real examples that people can relate to.</p>
<b>90</b>	<p><b>Nicola Vaughan, City Energy South Wales Ltd</b></p> <p>Barriers (householders) - lack of information of the benefits Barriers (communities/local authorities) - lack of knowledge on how to administer processes. Long winded procurement processes and protocols</p>
<b>91</b>	<p><b>Elwyn Williams, E.W.Consultancy</b></p> <p>Costs&lt;7 lack of understanding on how it can save them money &amp; enhance the environment they live in.</p>
<b>92</b>	<p><b>Neil Lewis, Robert Owen Community Banking Fund</b></p> <p>From my experience and our experience at ROCBF in Powys and Flintshire: People agree that investing in energy efficiency is a "No Brainer" but NEVER invest. If you say to a busy business owner/householder: "Spend £200 now and save "£500 p.a. they will agree to do it but never quite get round to it. Zero Interest Loans are an excellent solution. Better still pay as you save schemes. Free installation and pay over 18 months from the money saved. Guaranteed success.</p>
<b>93</b>	<p><b>Jonathan Hyde, Bron Afon Community Housing Ltd</b></p> <p>Cost is a barrier to private /social landlords and communities. The benefits if Feed in Tariffs and RHI's ( Off gas - rural areas) encourage take up .Concerns have resulted in the poor roll out and procedures for the Green Deal and there was further issue with the way Green Deal Home Improvement Fund(GDHIF)</p>

	was administered but hopefully with the re- launch will improve and there will be more opportunities and take up for the right properties.
<b>94</b>	<p><b>Clare Parsons, Brecon Beacons NPA</b></p> <p>barriers: 1.cost-financial inability to invest for long term saving 2.natural resistance to change 3.concerns about planning permissions for some installations</p> <p>suggestions: re2.funded demonstration projects within target communities (eg 1st 10 applicants get free installations) with condition of information provision on savings and 1 or 2 "open days". Peer to peer information provision helps break down natural resistance to change. . (BBNPA used this approach successfully developing Brecon beacons Solar Club encouraging Solar Thermal installations. re 3. BBNPA run a preapplication planning advise service</p>
<b>95</b>	<p><b>Stewart Matthews, Torfaen County Borough Council</b></p> <p>Costs of installing and energy running costs.</p> <p>Building construction types.</p> <p>Availability of schemes to those mostly on benefits. example free boilers only available to non workers.</p> <p>There are those people who are on low wages that should be able to access boilers</p>
<b>96</b>	<p><b>Christine Peploe, Torfaen County Borough Council</b></p> <p>The funding should be channelled through the Local Authorities. For most people the LA's are the first port of call and the public understand the way the LA's work and they are trusted. People are less trusting of private companies and this serves as a barrier.</p>
<b>97</b>	<p><b>Alison Fuller, Groundwork North wales</b></p> <p>apathy lack of knowledge lack of understanding of how to go about it inability to undertake simple efficiency implementation</p>
<b>98</b>	<p><b>Mark Williams, M Williams Energy Assessments</b></p> <p>At 'grass root level' from the perspective of an Energy Assessor, the first contact anyone has with an Energy Performance Certificate is when they decided to sell or rent their property and they contact an Estate Agent. In my experience every Estate Agent I deal with tells their customers that they need to get an EPC but not to worry as 'nobody looks at them anyway'. Estate agents on the whole are not buying in to Energy Efficiency, they don't</p>

	<p>understand what an EPC is for and they have no idea of what information it contains - it is just another piece of paper creating more work for them and they are not explaining anything about the EPC, to their customers. If the people supplying the EPCs to the general public don't believe or understand EPCs and in their ignorance, are telling people that they are a waste of time, then how can we move forward in this industry. EPCs, their uses and benefits and the information they contain are, after 7 years of producing them, an unknown item to about 90% of the householders I deal with and I'm still getting asked - 'when did they start using these?'</p>
<b>99</b>	<p><b>Ben Dever, adever engi cyf</b></p> <p>if it's free people may take it up if not they won't.</p>
<b>100</b>	<p><b>Rachael Rowlands-Jones, GLyndwr University</b></p> <p>Consistency of information is key. Households are wary of ever changing grant schemes and think that it isn't worth the effort. Simple measures such as insulation and draft proofing would benefit many households in Wales, but the housing stock of stone built properties make traditional measures inappropriate for these properties and external cladding often impacts on the character of these buildings. Additional grant to help address this and open days/site visits to show how these technologies can be implemented may help with uptake, though attendance at such events may still prove difficult.</p>
<b>102</b>	<p><b>Robert Vokes, Joyner</b></p> <p>We need to provide a better insight into the measure that are being provided to the householders and promote the significant advantages to them. The major strength of the Arbed offer in Wales is that the works are provided for Free and this needs to continue to ensure continued success.</p>
<b>103</b>	<p><b>Steve Martin, Caerphilly County Borough Council</b></p> <p>As previously stated the boom and bust scenarios has not helped. Constant fluctuations of the current grants system and feed in tariff has not lend itself to growth within the industry. This has even had a negative impact with a number of businesses going into liquidation.</p>

	<b>Question 4 responses: Barriers to businesses.</b>
	<b>What do you think are the barriers to businesses recognising the benefits of energy efficiency and taking action? Do you have any suggestions for improving and extending business take up of energy efficiency? What are the current strengths and successes and how can they be developed further?</b>
<b>8</b>	<b>NSA Afan</b>  NSA Afan has no comment to make on this question
<b>9</b>	<b>Merthyr Tydfil County Borough Council</b>  Expensive up front costs.  Interest free loans may be of interest.
<b>11</b>	<b>Cert Sure</b>  <i>We feel the following are barriers that need to be removed –</i> <ul style="list-style-type: none"> <li>• <i>Difficult economic conditions</i></li> <li>• <i>Cost of replacing older less efficient equipment with new – the capital cost to replace may exceed the businesses payback time (return on investment)</i></li> <li>• <i>Lack of knowledge and focus on energy conservation within business – where best to spend the capital to get the best results</i></li> <li>• <i>Business focus is on the day to day profit and not looking at the long term financial benefit and savings that could be realised by investing in efficient products today.</i></li> </ul> <p>Do you have any suggestions for improving and extending business take up of energy efficiency?</p> <p>What are the current strengths and successes and how can they be developed further?</p> <ul style="list-style-type: none"> <li>• <i>Substantial fines for business and building owners that are not ‘energy efficient’ – ensuring the level of fine is not a cheaper option than improving the energy efficiency of the building.</i></li> <li>• <i>Tax breaks</i></li> <li>• <i>Building design needs to ensure that any Building Regulation</i></li> </ul>

	<i>requirements are met.</i>
<b>12</b>	<p><b>Pembrokeshire County Council</b></p> <p>Knowing what your actual energy use is is still the most fundamental thing for all businesses. Unless you know you can't act or quantify savings. Smart meters should be provided (for free) to all properties (commercial and domestic) in Wales by the Big 6 energy companies. This could also be extended to Welsh Water meters. Smart meters give detailed actual consumption information that can then be easily accessed by all business to establish their baseline energy consumption and start controlling energy/water use. This process actually benefits the energy companies too as they don't have to chase debts due to their poor estimated billing as per the present system.</p> <p>Time. Awareness. Resources. Accessible finance for investment. Cost of energy efficiency measures. Complexity of various schemes – tax credits for installing energy efficiency measures, Green Deal, FIT/RHI – these are all noble schemes but all have their own rules, their own forms and businesses just get put off by the paperwork, monitoring and processes. Make things as simple as possible.</p> <p>Almost 60% of the 600 senior decision makers surveyed by YouGov in October 2014 are 'not very confident' or 'not at all confident' that current energy policies reflect the needs of business in Britain, while 62% expressed a similar lack of confidence in planned energy policies. Cost is a key issue, with 81% ranking affordability as an important energy related issue for their businesses, ahead of security of supply (77%) and the move to a low-carbon economy (41%). Businesses also appear reluctant to pay more to help fund low-carbon energy schemes, with 58% saying they are not willing or unlikely to be willing to see their bills increase to finance mechanisms such as the forthcoming Contracts for Difference. (Source: <a href="http://www.energylivenews.com/2014/11/10/guest-blog-npowers-wayne-mitchell-onenergy-policies-not-reflecting-the-needs-of-business/">http://www.energylivenews.com/2014/11/10/guest-blog-npowers-wayne-mitchell-onenergy-policies-not-reflecting-the-needs-of-business/</a>)</p> <p>If these views are widespread then much more work needs to be done by Government to show examples of business success stories where energy costs have been drastically cut and profitability improved. These case studies should be sent to all private businesses. Saving energy is very simple. Switch things off. Turn things down. Upgrade inefficient plant and equipment. It's not complex and people should have this explained in simple layman's terms. The International Energy Agency now calls energy efficiency the world's 'first fuel', after finding that savings now deliver a larger 'supply' of energy than fossil fuels. That's the best way to reduce bills</p>

	<p>– use less of the commodity in the first place. At least then cost rises are mitigated. If businesses do nothing and costs go up (which they will as it's necessary to 'green the grid' and increase energy security) they will a lot worse off than competitors who have taken energy efficiency action. This is key. By not acting in an energy efficient manner business are losing their competitive edge. Saying that business does not support Government policy which could increase bills does not change the fact that Government policy will increase bills. Government has no choice due to climate and energy security issues. The long term approach Government is taking is on the right track. Ignoring the issue and blaming inevitable prices rises is obtuse. Such attitudes with business should be challenged as it's basically an objection to inevitable progress. Like using manual labour instead of a steam engine.</p> <p>Another issue is that employees often don't act in an energy efficient manner in work as they do not pay the energy bills. Companies need to educate the workforce that being energy efficient keeps them employed and make the company more profitable and successful. Some generic education material should be sent to companies to assist them in this and media campaigns could assist the process. "Make Wales green and competitive at home and in work".</p> <p>It is also worth noting a very current impact on Pembrokeshire is the collapse of the buyout deal for the Murco oil refinery in Milford Haven with the loss of around 400 skilled jobs. Pembrokeshire is the energy capital of Wales and would like to remain at the forefront of the welsh energy sector as well as the green energy sector. The Murco closure is a practical example of how the shift to low carbon technologies is impacting on the traditional economy. Any support from Government level that can be provided to enable Pembrokeshire to continue to lead the way in energy and clean energy is vital to the economic, social and environmental wellbeing of the county.</p> <p>Industrial energy efficiency should be very high on the agenda. Large industry is a huge energy user. There is a role for the public sector and Government in getting big energy users to cluster or share 'waste' heat from one process to be used for another. This could be actioned via planning policy.</p>
13	<p><b>ICE</b></p> <p>The barriers to businesses are considered to be:</p> <p>(a) Lack of belief that taking energy saving measures will actually result in</p>

	<p>cost savings.</p> <p>(b) Initial up-front costs that might be incurred to generate savings later.</p> <p>A suggestion would be as above in Q3 but for businesses.</p>
<b>14</b>	<p><b>ETI</b></p> <p>The ETI believes that many of the barriers to take-up of energy efficient interventions identified for the residential sector are also common for businesses i.e. transaction barriers and capital constraints. Long payback periods may be even more of a problem for businesses than for householders so it may be appropriate for the Welsh Government to offer capital grants and/or low interest rate loans to businesses to install energy efficiency measures.</p>
<b>15</b>	<p><b>Wolseley</b></p> <p>Many of the same arguments for householders are relevant to commercial organisations and the economic arguments carry more weight on a balance sheet. There are some serious roadblocks to progress and one of the most serious is the high propensity of <b>leasehold properties</b> where <b>landlord's consent</b> and short term leases are features.</p> <p>In many circumstances, well executed case studies can provide the necessary impetus to stimulate action, provided there are sufficient apt and relative examples to illustrate the economic benefits.</p>
<b>16</b>	<p><b>Miller Research</b></p> <p>There is scope for increased promotion of micro-generation on industrial buildings - especially PV. Evidence suggests that those engaged in energy generation become more aware of energy use as a result. Businesses could also be encouraged to do far more to reduce use of cars for travel to work and on business, through car sharing schemes, increased use of pool cars and encouragement for use of public transport and cycling.</p>
<b>17</b>	<p><b>Ynni Glan</b></p> <p>The following barriers are relevant to each sector, fuel cells and hydrogen technologies offer answers:</p> <ul style="list-style-type: none"> <li>• increasing energy prices – the burden could be moved to capital costs.</li> <li>• connecting to the grid – practical barriers and community opinion.</li> <li>• storing energy – to realise full potential of renewable energy.</li> </ul>
<b>18</b>	<p><b>Torfaen County Borough Council</b></p>

	<p>Investing in energy efficiency often requires considerable up front funding with a long term payback period, which can be a barrier to some smaller businesses. A lack of expertise or resources can also deter businesses from exploring the opportunities available, which can only be overcome by greater levels of support and information being made available to them.</p>
21	<p><b>Ceredigion County Council</b></p> <p>Ceredigion Council commissioned a local ‘Ynni i Ffynnu’ scheme using RDP funding, targeted at micro enterprises in the county. This gave businesses a mostly free survey and a costed set of recommendations which detailed investment options and pay back periods for renewable energy installations and energy saving investments. Whilst the take up of surveys was reasonably good (181 in 2.5yrs) the subsequent investment in renewable energy installations was relatively poor, with investment in energy saving measures slightly better but still disappointingly low given guaranteed periods of payback and subsequent enhanced profitability. Follow up questioning as to reasons for poor take up generally showed a reluctance or inability to borrow money to make the investments. This was sometimes due to existing levels of debt, sometimes because of poor confidence in time of recession, or sometimes due to structural reasons with quite a lot of businesses in Ceredigion being not for profit social enterprises – where borrowing or risk taking is difficult. At the commencement of the FIT scheme there was a clause that allowed Social Enterprises to access grant aid for renewable energy capital installations, this was however removed after a few months which brought several schemes in this area to a halt. We are aware that this might have been less of a problem in more wealthy areas of Wales, where businesses either had the money to invest or were better placed to borrow to invest. This leads to the invidious situation of wealthy areas benefitting more than poorer regions.</p> <p>Furthermore, short term funding for such projects limits their success, as, especially in rural areas, projects take a length of time to set up and word of mouth to promote their existence and successes, by which time funding is nearing to an end.</p> <p>It is considered that there is a need to consider financial incentive aspects to encourage take up of energy efficiency measures for private businesses such as the removal or a reduction upon the rate in VAT; capital allowances and tax relief schemes for business investment in energy efficiency capital investment.</p>
23	<p><b>Energy Savings Trust</b></p> <p>Members of the Commission (which include EST, Carbon Trust, CEW, WLGA, Cardiff University) have a huge amount of expertise on energy</p>

efficiency within households, communities, businesses and the public sector and their responses to this consultation will include specific supporting information on the various barriers to action.

We would like to support Cardiff University's response in relation to the importance of behaviour change and the significant research work they have done on public attitudes and behaviour in relation to energy efficiency. Findings from initiatives such as Supporting Sustainable Living<sup>19</sup> (SSL) to fund specific behaviour change projects needs to be recognised and taken into account, as does the role of communities in supporting community-wide behaviour changes.

Support mechanisms such as the new REW are critical – REW should be a clear focal point for delivery so that we get clarity and consistency of message. Given that REW was established before the consultation process was initiated, how will this process be reflected in their delivery plans over the coming months? Also on that basis, REW also needs to be completely accessible and needs a governance structure that engages stakeholders at all levels – we would welcome clarity around how this will be achieved.

Initial feedback on REW is that it has provided an effective initial response to householders but has yet to achieve in terms of facilitating direct delivery. There needs to be far greater connectivity between the various delivery and support structures that are in place e.g. with Renew Wales, Cynefin etc.

The Commission is currently working with COIN to deliver workshops on communicating climate change, to look at language and messaging, and we are happy to share any relevant findings with yourselves.

The link with smart technology is also critical and in particular Smart meters – there have been issues and delays to date but this must be the key opportunity and a focus for linking with behaviour change at household level. EST is proposing to develop a "Smart living Hub" which will be able to feed in.

In terms of the public sector there have been some major achievements here, as highlighted in the Commission's Annual Report 2014<sup>20</sup>, through support from Carbon Trust and other. However progress is threatened because of issues such as budget cuts, local government reorganisation,

<sup>19</sup> <http://www.cynnalcyrmru.com/project/supporting-sustainable-living-scheme>

<sup>20</sup> <http://www.cynnalcyrmru.com/news/climate-change-commission-wales-launches-its-2014-annual-report>

	<p>lack of capacity/expertise and the fact that issues such as climate change and energy efficiency are often low on the list of priorities. The introduction of the Wellbeing of Future Generations Bill offers an opportunity for Public Service Bodies to work together to promote resource efficiency across public buildings in Wales.</p> <p><sup>1</sup> <a href="http://www.cynnalcyrmru.com/project/supporting-sustainable-living-scheme">http://www.cynnalcyrmru.com/project/supporting-sustainable-living-scheme</a></p> <p><sup>1</sup> <a href="http://www.cynnalcyrmru.com/news/climate-change-commission-wales-launches-its-2014-annual-report">http://www.cynnalcyrmru.com/news/climate-change-commission-wales-launches-its-2014-annual-report</a></p>
24	<p><b>Neath Port Talbot CBC</b></p> <p>Barriers to businesses recognising the benefits of energy efficiency and taking action:</p> <ul style="list-style-type: none"> <li>• Buildings can be old and energy inefficient, so businesses may not see energy efficient measures as value for money to implement big changes for small returns</li> <li>• Impractical for businesses – Some retail units prefer to trade with their main doors open so they may see some energy efficiency measures (such as double glazing or closing doors) as detrimental to their volume of trade</li> <li>• Employees are key players in implementing and continuing energy efficiency measures for businesses, some employers may not see the benefits of investing time and resources to inform, train and monitor employees</li> <li>• For large scale businesses, new or changed processes required to become more energy efficient may be too disruptive to production to implement easily</li> </ul> <p>Suggestions to improve and extend businesses take up of energy efficiency:</p> <ul style="list-style-type: none"> <li>• Emphasis on potential financial gains for undertaking energy efficiency measures as many businesses often prioritise costs over environmental gains</li> <li>• There are often cost implications for small businesses to introduce energy efficiency measures. In addition, the payback period for investments can be in excess of 12 months making the investment difficult to justify</li> <li>• Businesses are not always aware of the benefits of investing in energy efficiency measures</li> <li>• Incentives to encourage the introduction of energy efficiency measures such as grants; loans; tax rebates</li> <li>• Encourage the use of community funds linked to large scale renewable projects such as Pen y Cymoedd (Vattenfall Wind Energy</li> </ul>

	<p>Project) to support businesses with the costs of introducing measures as well as helping tackle fuel poverty and high energy bills in the community</p> <ul style="list-style-type: none"> <li>• Educate businesses about the benefits of investing in energy efficiency improvements by arranging seminars, information or briefings on subjects such as how investments can help reduce pollution, improve production and lead to improved productivity and competitiveness</li> </ul>
25	<p><b>Climate Change Commission</b></p> <p>Members of the Commission (which include EST, Carbon Trust, CEW, WLGA, Cardiff University) have a huge amount of expertise on energy efficiency within households, communities, businesses and the public sector and their responses to this consultation will include specific supporting information on the various barriers to action.</p> <p>We would like to support Cardiff University’s response in relation to the importance of behaviour change and the significant research work they have done on public attitudes and behaviour in relation to energy efficiency. Findings from initiatives such as Supporting Sustainable Living<sup>21</sup> (SSL) to fund specific behaviour change projects needs to be recognised and taken into account, as does the role of communities in supporting community-wide behaviour changes.</p> <p>Support mechanisms such as the new REW are critical – REW should be a clear focal point for delivery so that we get clarity and consistency of message. Given that REW was established before the consultation process was initiated, how will this process be reflected in their delivery plans over the coming months? Also on that basis, REW also needs to be completely accessible and needs a governance structure that engages stakeholders at all levels – we would welcome clarity around how this will be achieved.</p> <p>Initial feedback on REW is that it has provided an effective initial response to householders but has yet to achieve in terms of facilitating direct delivery. There needs to be far greater connectivity between the various delivery and support structures that are in place e.g. with Renew Wales, Cynefin etc.</p> <p>The Commission is currently working with COIN to deliver workshops on communicating climate change, to look at language and messaging, and we are happy to share any relevant findings with yourselves.</p> <p>The link with smart technology is also critical and in particular Smart meters</p>

<sup>21</sup> <http://www.cynnalcyfmrw.com/project/supporting-sustainable-living-scheme>

	<p>– there have been issues and delays to date but this must be the key opportunity and a focus for linking with behaviour change at household level. EST is proposing to develop a “Smart living Hub” which will be able to feed in.</p> <p>In terms of the public sector there have been some major achievements here, as highlighted in the Commission’s Annual Report 2014<sup>22</sup>, through support from Carbon Trust and other. However progress is threatened because of issues such as budget cuts, local government reorganisation, lack of capacity/expertise and the fact that issues such as climate change and energy efficiency are often low on the list of priorities. The introduction of the Wellbeing of Future Generations Bill offers an opportunity for Public Service Bodies to work together to promote resource efficiency across public buildings in Wales.</p> <p><sup>1</sup> <a href="http://www.cynnalcyrmru.com/project/supporting-sustainable-living-scheme">http://www.cynnalcyrmru.com/project/supporting-sustainable-living-scheme</a></p> <p><sup>1</sup> <a href="http://www.cynnalcyrmru.com/news/climate-change-commission-wales-launches-its-2014-annual-report">http://www.cynnalcyrmru.com/news/climate-change-commission-wales-launches-its-2014-annual-report</a></p>
26	<p><b>Wrexham CBC</b></p> <p>The initial cost for the energy efficiency work and a lack of awareness can be a barrier and also uncertainty on the business lifespan and minimum paybacks. Investing in energy efficiency will minimise the increasing cost of energy and future innovations will reduce the demand for energy. Government funding for energy efficiency measures supplements the commodity savings post installation. The Arena network across Wales was really effective at promoting Green Dragon and working with SMEs – it was disbanded, but seemed a useful way to get businesses themselves to realise the cost to their bottom line of wasting energy</p>
27	<p><b>Glass and Glazing Federation</b></p> <p>It is vitally important that all energy efficiency schemes, including the Green Deal provide opportunities for all installers of eligible energy efficiency measures, and that organisation size won’t serve as a barrier to market entry for smaller companies. The GGF is therefore anxious that despite the possible increase in demand for energy efficient products, SMEs will not be able to access the market and may suffer business loss as a result.</p> <p>This suggests that the impact assessment of the Green Deal, which warns of a potential “detrimental impact on the market, due to a lack of competition, variety and thus potential innovation or cost savings associated with small business competition”, has been ignored.</p>

<p><b>28</b></p>	<p><b>Citizens Advice Bureau</b></p> <p>In a Wales-wide supply chain which involves local business in the implementation of domestic and non-domestic energy efficiency installations, there will be numerous opportunities for SME's to see the benefits first-hand. A company which reduces waste in its energy use can pass on savings to its customers and become more competitive.</p> <p>It is important to note that the supply market for non-domestic customers looks significantly different to domestic. Consumer Focus' <i>Under the Microscope (2012)</i> report found that a majority of SME's don't have a gas supply, and levels of gas consumption by SME's has decreased continually over the past decade<sup>6</sup>. Therefore any new energy efficiency offer for businesses must be one which electricity-only micro-business customers can take advantage of.</p> <p>Another Consumer Focus report, <i>A Smart Business (2013)</i>, explored SME's views of demand reduction in respect of smart meter rollout. It found that accurate billing was the greatest motivator for SME's who had requested a smart meter from their supplier. SME's also cited reduced admin costs from supplying meter readings, and potential savings from better understanding their energy usage. No SME's mentioned environmental concerns as a reason for wanting to reduce usage<sup>7</sup>. This suggests that in promoting energy efficiency to business, it will be the potential financial and time savings that are likely to be a key motivator.</p> <p><sup>6</sup> <a href="http://www.consumerfocus.org.uk/files/2012/09/Under-the-microscope.pdf">http://www.consumerfocus.org.uk/files/2012/09/Under-the-microscope.pdf</a>(page 19 para 4.2, UK figures)</p> <p><sup>7</sup> <a href="http://www.consumerfutures.org.uk/files/2013/08/A-smart-business.pdf">http://www.consumerfutures.org.uk/files/2013/08/A-smart-business.pdf</a></p>
<p><b>29</b></p>	<p><b>Sustainable Energy Association</b></p> <p>The needs of the commercial sector are very different to those of domestic properties. That said, the commercial sector is impacted by many of the same barriers that apply in the domestic rental market. The British Property Federation, CBI, and others have suggested linking business rates relief to retrofitting activity, or linking business rates to the level of energy performance of a commercial building (determined by the building's EPC). The Green Deal was originally intended to apply to commercial as well as domestic sectors.</p>
<p><b>31</b></p>	<p><b>Constructing Excellence in Wales</b></p> <ul style="list-style-type: none"> <li>• Conflicting priorities</li> <li>• Time constraints</li> <li>• Limited evidence/confidence to demonstrate long term savings</li> </ul>

**British Gas**

There are a number of barriers to the promotion of energy efficiency in non-domestic properties.

The non-domestic building stock is incredibly varied, with a far broader range of uses and types than in the domestic sector. Many energy efficiency investment decisions in the private sector are based around expected payback times of five years or less<sup>3</sup>, and many measures have longer payback times. As a result, larger projects are less likely to happen, and cost effective replacement technologies - such as high efficiency lighting - are the most popular measures<sup>4</sup>.

Non-domestic property owners are business people, and will be motivated to act if there is a clear commercial case for them to do so. As such, a combination of carrots and sticks is required to drive improvements.

In our experience, the use of Energy Performance Contracts<sup>5</sup> has been successful for encouraging organisations to take a longer term view of their energy usage and energy efficiency measures, but these have generally only been deployed in the public sector.

This longer-term approach to energy efficiency and energy management could be extended further in the non-domestic sector if businesses had greater certainty over future requirements and obligations. For example, consideration could be given to providing a longer-term forward cost curve for carbon prices in the Carbon Reduction Commitment Energy Efficiency Scheme. For large energy users, this would provide greater certainty around the cost benefit of investments in energy efficiency, and may encourage greater investment.

In our experience, small and medium sized businesses are generally less well-informed about the energy efficiency options available to help them reduce their consumption.

The biggest barrier to taking action to improve the energy efficiency of their businesses is, in our view, knowing where to get the reliable advice to identify the best measures to install.

Relatively small investments in energy efficiency measures can result in dramatic reductions in consumption and bills – having a significant impact on many small businesses running costs.

**Case Study: Energy Efficiency Fund<sup>6</sup>**

The British Gas Energy Efficiency Fund (EEF) is designed to help micro-businesses manage their energy costs in the long term, by providing free

expert advice and energy efficiency measures.

The Fund provides eligible businesses with a free on-site energy survey plus fully-funded installations of energy saving measures valued up to £6,000 per business, helping them to save money on their energy bill. At the swimming pool in Harlech, Gwynedd, assessment identified 11 energy saving measures that could save £33,600 in annual energy costs and 134,000kg of annual carbon emissions. Support from EEF could reduce costs by £3,328 per year, with a reduction of 14,206kg of carbon. Another recent beneficiary of the EEF was a hairdresser on a high street in Lincolnshire. This small business had previously relied upon inefficiency storage heaters in the winter, and up to 12 fans for cooling in the summer. The EEF replaced all of the existing cooling, hot water and heating systems with the latest air source heat pump. Following the installation of this technology, we anticipate that energy savings will be between 50% and 70% depending on the time of year.

To access the EEF, applicants must be classed as a micro-business by meeting certain criteria relating to their energy usage and the size of the business.

Measures available can include lighting, boiler upgrades, solar PV and improved ventilation.

British Gas is keen to work with Welsh Government on improving take up of this fund.

In our experience, the largest businesses are the most likely to have dedicated energy managers. (The same applies to public sector organisations – see question 5.) These individuals will have expertise in, and responsibility for, keeping energy bills as low as possible. Awareness of the opportunities for reducing energy costs is significantly lower among most small business owners, who are often time poor and with a less detailed understanding of how they could reduce their energy bills.

We suggest that consideration is given to how SMEs could be encouraged to invest in energy efficiency, what the barriers might be to growth in this area, and how they could be overcome.

3 Energy Efficiency Trends Vol.8 (October 2014) Figure 17. Trends in expected payback periods.

4 Energy Efficiency Trends Vol.8 (October 2014) Figure 11. Uptake of energy efficiency technologies.

5 Energy Performance Contracts are long-term partnership arrangements – typically 3-15 years – designed to reduce an organisation's energy bills through a detailed energy audit, the installation of energy efficiency measures and on-site renewable energy generation, and ongoing performance management

	6 This Fund was established as part of a settlement with Ofgem
<b>33</b>	<p><b>Saint Gobain</b></p> <p>The low hanging fruit in most businesses has been done and the challenge is to incentivise businesses that neither have the internal resource to look further at energy efficiencies nor do they have the right level of urgency to bring it to the top of their priorities, it always gets pushed back down the list. Is there an opportunity to incentivise businesses through tax levy reduction if they are ISO 50001, at the minute it would cost a business to achieve this?</p>
<b>34</b>	<p><b>CLA Cymru</b></p> <p>CLA Cymru suggests that the barriers to businesses recognising the benefits of energy efficiency and taking action are similar to those outlined in question three.</p> <p>Sustainable business will only be realised through the private sector and in order to have a thriving business sector it must not be overly burdened by red tape and bureaucracy.</p> <p>The regulation surrounding technologies that improve energy efficiency is the biggest barrier to business take-up. Anaerobic Digestion plants have excellent energy efficiency credentials with the re-use of waste products to produce useful new materials and energy. The integration of AD into a farming business can offer efficient slurry management, “recycle” nutrients within food waste and provide opportunities for sustainable local energy with local waste supply chains. These potential benefits are unfortunately not widely realised due to extensive, cumbersome regulation. Synergy between governmental departments, local authorities and other statutory bodies is essential if you want to see beneficial change.</p>
<b>35</b>	<p><b>PLANED</b></p> <p>Cost and bureaucracy involved are the main concerns particularly amongst SMEs. The amount of schemes and initiatives, companies that are in operation is also baffling to the less well informed. The Energy Savers project was well received by businesses, because it delivered information for the owner to base decisions on, tailored to their individual needs.</p>
<b>38</b>	<p><b>Hywel Dda University Health Board</b></p> <ul style="list-style-type: none"> <li>• Difficult if buildings are leased and rely on landlords to take action or cooperate</li> </ul>

	<ul style="list-style-type: none"> <li>• Lack of knowledge or support on energy management? Not likely to have an energy officer</li> <li>• Moving towards using more technology - mask or counteract efficiency improvements</li> <li>• Match funding from government or councils to undertake improvements e.g. insulation</li> </ul>
39	<p><b>NHS Wales</b></p> <p>Education is vital if we are to ensure success in the energy industry and meeting the carbon saving targets. We are not an energy aware society as a whole and this has to change if we are to achieve the savings and targets required.</p>
41	<p><b>Community Housing Group</b></p> <p>Research has shown that the energy efficiency sector sees a strong prevalence of region based small businesses who often struggle to bid for large scale projects. This can mean an unequal coverage of the wide variety of measures across areas. Implementation, verification, accreditation and commercialization of new technology are often too onerous and costly for small businesses. Small business owners need help to gain access to capital for efficiency investment.</p> <p><a href="http://www.nef.org.uk/themes/site_themes/agile_records/images/uploads/BreakingBarriers_SummaryReport.pdf">http://www.nef.org.uk/themes/site_themes/agile_records/images/uploads/BreakingBarriers_SummaryReport.pdf</a></p>
43	<p><b>Low Zero Carbon Hub</b></p> <p>It is clear that not every Welsh business has yet taken steps to minimise its energy consumption. Furthermore, the requirement for Display Energy Certificates (DECs) is insufficiently policed, nor driving the market sufficiently to establish a more energy efficient estate. As part of the energy efficiency strategy scoping Welsh Government should review what links could be made between business rates and DECs. As with the domestic sector, there is an increasing body of evidence to demonstrate a premium for more energy efficiency properties.</p> <p>The WLZCH remains uncertain of how readily businesses in Wales can find information on green leases, funding mechanisms to support refurbishment work and as with domestic customers, the real value and return on investment. For example the network, Building Better Partnerships<sup>20</sup>, a collaboration of commercial property owners working to develop solutions to improve the sustainability of existing commercial building stock and achieve substantial CO2 savings, could provide some useful tools and resources to businesses here.</p>

	<p>The uncertainty of funding mechanisms continues to be a barrier for businesses seeking to invest in energy efficiency.</p> <p>20 <a href="http://www.betterbuildingspartnership.co.uk/home/">http://www.betterbuildingspartnership.co.uk/home/</a></p>
45	<p><b>Rockwool</b></p> <p>Access to low cost finance remains a significant barrier to the take up of energy efficiency among businesses. There are schemes in operation to overcome this and the Welsh Government should ensure these are well communicated. For example, the Carbon Trust offers 0% financing for the installation of energy saving measures to SMEs in Wales.</p>
46	<p><b>SSE</b></p> <p><u>Barriers – delivery</u></p> <p>In Wales, the Arbed scheme has sometimes inadvertently hindered supplier delivery of the ECO due to an overlap of potential properties and partners. One of the primary reasons for this is the key role played by local authorities, whose procurement teams have been identified as both barriers and enablers to the delivery of ECO, with the procurement process often favouring Arbed schemes over resident or supplier-led ECO projects. While SSE is keen to see greater local authority involvement, any schemes should compliment not conflict with one another.</p> <p>The speed with which the Welsh Government has administered the ‘ECO top-up’ funds announced in October 2013 may have also prompted both public and private sector stakeholders to allocate funding elsewhere in the UK.</p> <p><u>Barriers – engagement</u></p> <p>Recent research<sup>3</sup> undertaken by YouGov on behalf of SSE has shown that customers are generally engaged with energy efficiency. However, only half of those surveyed believe they can save money by reducing their consumption without negatively impacting their quality of life. While two out of three do believe reducing their energy usage will save them money, only one in five have taken any significant action to do so. The most commonly cited barriers to taking further EE actions are concerns about cost, visual appearance and the overall ‘hassle factor.’ Increasing customer engagement with energy efficiency will therefore rely on both education, to make people aware of the potential to reduce consumption without sacrificing quality of life, and on initiatives to help people manage the up-front costs – perhaps through revamped ‘pay-as-you-save’ schemes, if</p>

	<p>finance can be made available at very low or zero cost.</p> <p>3 YouGov / SSE. (2014). Putting The Customer First: How We Can Drive Real Consumer Engagement With Energy.  tinyurl.com/sseyougov</p>
<b>49</b>	<p><b>GBSPM</b></p> <p>Lack of clear direction from the government, both in Cardiff and London, mean industry cannot plan and have a clear reason for investing. Mabey Bridge &amp; the recent foreign producer closing down production. The slow progress of the Swansea bay Tidal Lagoon and setting of a realist price for the energy produced.</p> <p>We need to have a clear and unambiguous requirement within Wales to produce the 20% of Carbon free generation and drive these forward.</p> <p>With regards to the SME companies, although well bedded within the industry we have found it difficult to understand what assistance is out there and for what. We have tried unsuccessfully to gain support for a number of small energy efficiency schemes.</p>
<b>51</b>	<p><b>Flintshire County Council</b></p> <p>In some cases past programmes have not “sold” the benefits to businesses in the right way. These programmes should lead with the greatest potential financial savings to the business.</p> <p>Roll out of annual DEC’s to private sector would force businesses to look more closely at their energy consumption. ESOS only captures large manufacturing companies so is not applicable to SMEs. These SMEs won’t have anyone with in-house energy knowledge and have not been targeted by previous support structures in the main.</p> <p>Carbon Trust Wales have been successful through their breakfast meetings for SMEs. They need to re-establish their links with public and private sector to provide impartial advice to this sector.</p>
<b>52</b>	<p><b>Egnida</b></p> <p>Key barriers to business are lack of access to investment capital and/or very short internal payback criteria for investment (typically less than 2 years) which then doesn’t allow for viable energy efficiency or renewable projects. SMEs in Wales also tend to be smaller than the UK average and are therefore considered a higher credit risk for any third party funding providers. Welsh Government may wish to consider replicating what was in essence a Green Deal type arrangement it had in place in partnership with third party private sector delivery partners to install and fund energy</p>

	efficiency solutions for Welsh SMEs. This was a very successful initiative for all concerned.
<b>53</b>	<p><b>NEA</b></p> <p>As noted in our evidence to the Environment and Sustainability Committee the main impact for Wales of the changes to the Energy Company Obligation (designed to help the poorest families) announced in December 2013 was a reduction in the total resources with an estimated 634,000 fewer hard to treat measures being delivered in the UK through the obligation.</p> <p>The continuing changing shift in policy impacts on Welsh energy efficiency businesses and their long-term plans and sustainability and undermines Welsh Government's aspirations to eradicate fuel poverty by 2018.</p>
<b>54</b>	<p><b>Scottish Power</b></p> <p>We consider that others are better placed to respond in detail to this question.</p>
<b>55</b>	<p><b>WLGA</b></p> <p>For large energy consuming industry the cost of energy efficiency measures may be prohibitive in the short term (even when there is a longer term business case)</p> <p>For other businesses, energy costs may be a relatively small proportion of overall costs (even if increasing) and may therefore receive limited attention in time and resources – especially for SME.</p>
<b>56</b>	<p><b>Carmarthenshire County Council</b></p> <p>Businesses probably do not see energy efficiency as a priority. They are probably not aware of assistance – even in the form of loans – to help.</p> <p>Awareness raising could help with business</p>
<b>58</b>	<p><b>Pembrokeshire Coast National Park</b></p> <ul style="list-style-type: none"> <li>• Capital for initial outlay and cashflow issues around payback periods.</li> <li>• Lack of confidence in new technology and/or installation.</li> <li>• Inertia – lack of resource to devote.</li> <li>• Work and time involved to obtain required permissions.</li> </ul>
<b>60</b>	<p><b>Alan McCarthy, Hafod</b></p> <p>Renewables Mostly over complicated management with few decision makers.</p>
<b>61</b>	<p><b>Stephen Vaughan, Housing Renewal Team, Torfaen County Borough</b></p>

	<p><b>Council</b></p> <p>I'm not familiar with any schemes that help businesses with meeting the costs of energy efficiency measures. Maybe it's the case that if they do exist then they are not publicised well enough?</p> <p>Business people would not need to be convinced that they will realise a return on any investment made to improve energy efficiency and that short term, this would not cause financial hardship to the business.</p> <p>If not already set up, a system of assessing the energy efficiency rating of a building could be employed-similar to the EPC in domestic situations.</p> <p>Perhaps a loan scheme could be set up to help businesses spread the cost of any improvements.</p>
62	<p><b>Andy Thomas, Butler &amp; Young Wales.</b></p> <p>Barriers are that the savings and benefits for Housing associations and landlords are only to the tenants. this means difficult financial modelling.</p>
63	<p><b>Neil Evans, Carmarthenshire County Council</b></p> <p>Lack of knowledge re. measures and ignorance of organisations able to help.</p> <p>Again some form of SALIX type funding and tax breaks for green technologies.</p>
64	<p><b>Kate Smith, KFS Consultancy Ltd</b></p> <p>I haven't worked with businesses much, though property owning landlords of residential property are now increasingly aware of energy efficiency and forthcoming requirements to attain Band E for example.</p>
65	<p><b>Gary Spiers, South West Insulation &amp; Extractions LTD</b></p> <p>up front cost !</p>
66	<p><b>Phil Powell, Gwent Energy CIC</b></p> <p>businesses are focused on there own tasks energy saving is not regularly thought of as a key business task</p> <p>examples of successful energy reduction are very useful in demonstrating the benefits</p>
67	<p><b>Mark Greenfield, Greenfield Energy Solutions</b></p> <p>Get Local authority buildings all up to standard and display the energy savings on large screens. This is a culture change and will take time to implement and is still unaffordable to the small business owner in leased premises.</p>

<b>68</b>	<b>Daryl Price, DK Property Services</b>  Lack of knowledge, lack of interest from builders. LA could distinguish energy efficient housing in terms of Council Tax rebates, or other rewards to the householder/occupants.
<b>69</b>	<b>Brett Langdon, SPMS (Wales) Ltd</b>  None
<b>70</b>	<b>Carrie Parisella, Greendealshop.com Ltd</b>  Too much restriction on implementation and difficult criteria.
<b>71</b>	<b>Jeffrey Smith, First Phase Electrical</b>  as i said above a solar panel program should be rolled out in Wales with every building and especially new builds must have solar energy and heat source pumps and air recovery systems installed this would creat huge amounts of jobs
<b>72</b>	<b>Dawson Evans, Torfaen County Borough Council</b>
<b>73</b>	<b>Sian Edwards, J D Energy Services</b>  A lot of businesses do not want to change and there is not enough importance on reducing their energy costs. Education is key
<b>74</b>	<b>Ian Titherington, City of Cardiff Council</b>  In terms of water management (my area), a financial incentive for manging surface water more sustainably would most certianly help (over to DCWW!).
<b>75</b>	<b>Bex Gingell, Taff Housing Association</b>  We do not have a dedicated member of staff who looks at energy efficiency etc. so it is a task on top of peoples everyday duties - so time is a major issue.
<b>76</b>	<b>Rob Newell, Joyner PA Cymru Ltd</b>  the complications that must be overcome before you can be considered usually means the house owner will give up before they get to the outcome.
<b>77</b>	<b>Rachel Davies, City and County of Swansea</b>  Again education, and unwillingness to take a risk on change.
<b>78</b>	<b>Samir Hussien, site services</b>  lack of funding in setting up recycling business. alot of ideas (recycle) but not put into use.
<b>79</b>	<b>David Powell, Vale of Glamorgan Council</b>

	<p>Energy is generally a very small proportion of the turn over of a business. Perhaps ESOS will help. Same issues on understanding of energy issues for householders will apply to businesses.</p>
<b>80</b>	<p><b>Shaheena Chowdhury, energy saving direct</b></p> <p>there should be a website dedicated to what funds are available for consumers. Also payments made to businesses must be a lot quicker, its very hard for business to keep afloat as it is now, but when many installations are carried out and the funds get delayed because of administration or any other purposes it becomes detrimental to the business</p>
<b>81</b>	<p><b>Peter Draper, Rounded Developments Enterprises Ltd</b></p> <p>People are already scared of the long term responsibilities associated with interventions like EWI and IWI and rightly so. We need to have a safer / less risky solution than the existing EPS systems. A wood fibre board with lime render is the solution for many and this industry could be grown in Wales with Gov backing.</p>
<b>83</b>	<p><b>Sylvia Peat, Grwp Cynefin</b></p> <p>Energy saving methods could be enforced, such as optimal voltage use. reducing from 240v to 220v.</p>
<b>84</b>	<p><b>J.Richard Davies, J.r.davies property services</b></p> <p>The green deal food chain is so bureaucratic and complex that companies cannot afford the time required to get involved</p>
<b>86</b>	<p><b>Graeme Harrold, 3-e Electrical Ltd</b></p> <p>Business are always looking for ways to cut costs and tend to be early adopters. Some of this has been tainted due to the promise of capital loans for equipment, however delays made many sceptical. The EST should be given more funding/direction to engage directly with tradesmen and control costs of installation. Having witnessed some mad pricing of Solar PV through Green Deal contractors need to be held accountable for inflated pricing.</p>
<b>87</b>	<p><b>Elrond Burrell, Architype Ltd</b></p> <p>out of date mindsets, energy efficiency in buildings can be delivered by good design this is often not understood.</p>
<b>88</b>	<p><b>Allan Smith, Energy Effective Ltd</b></p> <p>I have spent twenty years sitting on the executive of the FSB-Wales and the perception is that all initiatives are designed for large company's. Instead of spending vast amounts of money on PR exercises work with company's who are (a) Wales businesses themselves (b) have a message others can</p>

	relate to. Set up roadshows and get Wales businesses involved. We will help you.
<b>89</b>	<p><b>Malcolm Wilson, RCT Homes Ltd</b></p> <p>One of the main barriers is funding from mcash flow the up front costs of energy measures. Some form of accdcssable cheaop loan finance or grants, easily accesable, will help over come this problem.</p> <p>Also demystifying the whole green agenda is in my view essential. The number of initatives and options out there tends to make it unattractive to try deal with energy efficeney measures.</p>
<b>90</b>	<p><b>Nicola Vaughan, City Energy South Wales Ltd</b></p> <p>Barriers - cost of non-domestic EPC to evaluate business premises. lack of knowledge and support for businesses</p>
<b>91</b>	<p><b>Elwyn Williams, E.W.Consultancy</b></p> <p>Total lack on the concept of the benefit of becoming Greener,&amp; the cost against short &amp; long term savings. Resistance to change.</p>
<b>92</b>	<p><b>Neil Lewis, Robert Owen Community Banking Fund</b></p> <p>As above , a simple Pay as you Save scheme. The Business is guaranteed to succeed. I did this with a lighting company. If you offer someone £100 now or £150 in 6 months-most will take the £100-Human Nature.</p>
<b>93</b>	<p><b>Jonathan Hyde, Bron Afon Community Housing Ltd</b></p> <p>Cost/Training/Accreditation /different systems.</p> <p>Tax breaks /business rates 0 or 0.5% finance over say fixed term.</p> <p>Subsidies on LED lighting</p>
<b>94</b>	<p><b>Clare Parsons, Brecon Beacons NPA</b></p> <p>barriers: 1.cost-financial inability to invest for long term saving 2.natural resistance to change 3.concerns about planning permissions for some installations suggestions: re2.funded demonstration projects within target communities (eg 1st 10 applicants get free installations) with condition of information provision on savings and 1 or 2 "open days". Peer to peer information provision helps break down natural resistance to change. . (BBNPA used</p>

	<p>this approach successfully developing Brecon beacons Solar Club encouraging Solar Thermal installations. re 3. BBNPA run a preapplication planning advise service</p>
<b>95</b>	<p><b>Stewart Matthews, Torfaen County Borough Council</b></p> <p>Businesses should be given incentives if they promote and put in place energy efficient policies.</p>
<b>97</b>	<p><b>Alison Fuller, Groundwork</b></p> <p>North wales lack of time  lack of money to undertake changes  lack of awareness amongst staff and managers  need incentives</p>
<b>99</b>	<p><b>Ben Dever, a dever engi cyf</b></p> <p>apathy and lack of knowledge .</p>
<b>100</b>	<p><b>Rachael Rowlands-Jones, Glyndwr University</b></p> <p>Businesses are keen to improve energy efficiency as there is a real benefit to the business. Individual assessments seem to have been the best approach in uptake, where a qualified environmental officer has assessed a business and highlighted opportunities to make savings (cost and carbon) with summary of realistic costs and timings for the work.</p>
<b>102</b>	<p><b>Robert Vokes, Joyner</b></p> <p>In relation to business, there should be some offers made available for people to invest in energy efficient measures. I am sure like us most businesses have already invested in measure which have a positive financial outcome.</p>
<b>103</b>	<p><b>Steve Martin, Caerphilly County Borough Council</b></p> <p>As previously stated the boom and bust scenarios has not helped. Constant fluctuations of the current grants system and feed in tariff has not lend itself to growth within the industry. This has even had a negative impact with a number of businesses going into liquidation.</p>

	<b>Question 5 responses: Barriers to the public sector.</b>
	<b>What do you think are the barriers to the public sector recognising and acting to realise the benefits of energy efficiency? Do you have any suggestions for improving and extending public sector action on energy efficiency? What are the current strengths and successes and how can they be developed further?</b>
<b>8</b>	<p><b>NSA Afan</b></p> <p>NSA Afan recommends the re-instatement of the HECA reporting process by Local authorities and that all public sector organisations show clearly, in all annual reporting processes that is required by Welsh Government, what energy efficiency savings, if any, they have made over the previous 12 months. If the Welsh Government could find a way to incentivise this process: for example offer match funding for any energy efficiency measures installed or any energy saving equipment purchased – would start to generate the groundswell of excellence so desired.</p>
<b>9</b>	<p><b>Merthyr Tydfil County Borough Council</b></p> <p>Lack of revenue resources aligned to many of the Welsh Gov programmes, make it difficult for LAs to have experienced and knowledgeable staff in place to submit bids and create projects/programmes.</p> <p>Welsh Gov – could make the appointment of an energy efficiency officer - a statutory requirement for all large public sector organisations – eg.1000 staff +</p>
<b>11</b>	<p><b>Cert Sure</b></p> <p>What do you think are the barriers to the public sector recognising and acting to realise the benefits of energy efficiency?</p> <ul style="list-style-type: none"> <li>• Difficult economic conditions – local authority and government cut backs</li> <li>• Cost of replacing older less efficient equipment with new – the capital cost to replace may exceed the businesses payback time (return on investment)</li> <li>• Lack of knowledge and focus on energy conservation within business – where best to spend the capital to get the best results</li> </ul> <p>Do you have any suggestions for improving and extending public sector action on energy efficiency? What are the current strengths and successes and how can they be developed further?</p> <p>Government investment based on a consistent long term strategy that is</p>

	<p>built on a foundation of improving efficiency in public buildings – the Government needs to lead by example.</p> <p>Also local authorities need to consider partnerships with the private sector to look at managing energy use. The savings from the reduction in energy use could be used to fund the partnership. This means no additional spend to Government and in most cases it should see a reduction in spend as well as a reduction in energy use.</p>
<p><b>12</b></p>	<p><b>Pembrokeshire County Council</b></p> <p>Some of the answers to Q's 3 &amp; 4 are also applicable to public sector. The public sector has been leading the way in energy efficiency largely due to the legislation imposed by the EU Energy Performance in Building s Directive, changes to Part L.</p> <p>The Carbon Reduction Commitment, Performance Indicators and BREEAM requirements etc. A lot of the easy wins have been made at LA level. Money for investment in energy efficiency is needed (e.g. a fund for the installation of LED lighting across the estate). The biggest barrier to the public sector currently is the dramatic cuts being made to local authority budgets and the uncertainty that has been caused by the Williams Review into local authority mergers. The Williams Review has the potential to completely stall energy efficiency investment.</p> <p>The production of DEC's in public building has been a success and is a very useful guide to progression. This should be mandatory in the private sector.</p> <p>Local Authorities (LAs) in Wales could host CHP units for large energy companies.</p> <p>WG and LAs could approach the power industry. Energy generation in the UK is fast running out of reserve electricity generating capacity. Generating companies are reluctant to invest in new large power stations blaming UK Government "policy wobbles". Traditional power stations which reject heat to the atmosphere rather than exploiting it are not the best answer. Welsh LAs &amp; WG should enquire if generating companies would consider installing Combined Heat &amp; Power (CHP) generating sets in suitable premises – larger gas-connected schools, care homes or leisure centres, for example. The reasoning for this is:</p> <ul style="list-style-type: none"> <li>- large schools/care homes/leisure centres tend to have high capacity electricity and gas connections, so the infrastructure is already there;</li> </ul>

	<ul style="list-style-type: none"> <li>- most sites are in towns, so the electricity generated would be consumed locally, minimising transmission losses;</li> <li>- a CHP unit is easily made to substitute for existing central heating boilers;</li> <li>- if a CHP unit's supplier retained ownership of it, and just charged the site for the heat supplied, the LA would not be committed to capital outlay;</li> <li>- if a scheme proved successful, the site might eventually become one of many "satellite heat stations" in a distributed district heating scheme.</li> </ul> <p>This idea would be achieved at no cost to the LA (apart from heat purchased). It would embed electricity generation in local communities and aid local grid reinforcement/capacity/balancing whilst producing lower carbon electricity.</p>
<b>13</b>	<p><b>ICE</b></p> <p>The barriers to the public sector are considered to be:</p> <ul style="list-style-type: none"> <li>(a) Initial up-front costs that might be incurred to generate savings later.</li> <li>(b) Individuals in the public sector have no 'ownership' and some would not care in the least about energy saving (as it would not directly affect them financially).</li> </ul> <p>A suggestion would be to ensure that energy consuming systems are automatically set to shut down overnight unless specifically set not to do so.</p>
<b>14</b>	<p><b>ETI</b></p> <p>The ETI believes that a lack of defined responsibility for local authorities for energy efficiency targets acts as a barrier. Other barriers can include lack of capability and capacity, management input, lack of finance and planning constraints. These barriers can be partly addressed by collaboration between the public and private sectors. The ETI is working very closely with the Welsh Government, and Bridgend County Borough Council is collaborating as a delivery partner, to develop modelling tools which will aid appropriate decision-making in local energy transformation. These tools include the EnergyPath Networks Tool which uses detailed local energy use and demand data alongside housing stock and energy infrastructure data to generate cost-effective local energy system designs. Combined with other ETI-developed modelling tools such as EnergyPath Economics, local authorities will be provided with greater degrees of confidence in determining effective energy interventions.</p>

<p><b>15</b></p>	<p><b>Wolseley</b></p> <p>We believe that the supply chain to deliver ambitious energy efficiency programmes already exists in terms of products, materials suppliers and installers. What is missing is the long term commitment to schemes which would give businesses and SMEs in particular, to invest in the necessary tools and accreditations to be come involved.</p> <p>Local heating installers can be key to driving uptake of such schemes if they are suitably incentivised to do so. They are uniquely qualified with their blend of technical expertise and extensive knowledge of the local community. They are often invited into the home and are ‘trusted’ sources of knowledge. Approximately 5,000 boilers are fitted every day and many thousands of additional calls for servicing and repairs are made by the 135,000 registered heating engineers. (30,668 boilers fitted per week – five year average from HHIC).</p> <p>Suitably qualified installers could be invited to register as delivery partners and be offered up-skilling in assessments and associated practices. Since most SME installers work within a tight geographical area they are both easy to manage and their reputation is critical to their business success.</p>
<p><b>16</b></p>	<p><b>Miller Research</b></p> <p>The public sector needs to be encouraged to be a beacon for promoting energy efficiency. Many local authority buildings are situated in places where driving is essential, use of physical meetings, rather than Skype or teleconferences is the norm and availability of showers and changing facilities to encourage cycling need to be improved.</p>
<p><b>17</b></p>	<p><b>Ynni Glan</b></p> <p>The following barriers are relevant to each sector, fuel cells and hydrogen technologies offer answers:</p> <ul style="list-style-type: none"> <li>• increasing energy prices – the burden could be moved to capital costs.</li> <li>• connecting to the grid – practical barriers and community opinion.</li> <li>• storing energy – to realise full potential of renewable energy.</li> </ul>
<p><b>18</b></p>	<p><b>Torfaen County Borough Council</b></p> <p>One barrier that exists in the public sector is that energy efficiency is cross cutting, which can often result in its prioritisation being diluted. Ensuring that energy efficiency links to all key agendas (e.g. Housing, Health, Poverty, education, Regeneration, Social Care), and presents tangible solutions, will assist in its integration as a shared and raised priority. As previously</p>

	<p>mentioned, taking a strategic approach should help. An obvious strength is where local strategies have been developed which have helped to co-ordinate actions and provide evidence to secure greater investment into the boroughs. Other similar good examples include the Wales Regional Arbed Project Managers.</p>
<p><b>21</b></p>	<p><b>Ceredigion County Council</b></p> <p>At a time when the public sector funding is being dramatically reduced resulting in a review and/or reduction in service provision, there is a risk that non statutory services are withdrawn. It may be argued that energy efficiency related improvements to housing stock forms part of the local authority's duty to monitor and act upon housing standards within the Housing Act 2005, nevertheless this is a competing priority in amongst many others that the local authority provides. Within Ceredigion, the importance of energy efficiency and carbon management is recognised as a corporate and Local Service Board priority. Ceredigion County Council fully updated its Carbon Management Plan in 2013 and the first annual review of the new plan was undertaken in September 2014. Therefore as an Authority we are committed to supporting this agenda. However, with the significant reduction in Welsh Government Specific Capital Grant funding for Housing Renewal Areas over recent years, and is due to end in the next 14 months, opportunities for local authorities to maximise and target funding for area based approaches to improving the energy efficiency of the housing stock is becoming increasingly restricted.</p> <p>If the withdrawal of this funding is reviewed and/or ring fenced regeneration area funding is used for the purpose of energy efficiency projects, then there will be opportunities to improve and extend public sector action on energy efficiency through top up funding to energy company schemes in order to ensure that schemes are financially viable for householders to take up ECO/Green Deal opportunities. This top up funding could be through loans, equity release schemes and / or grants depending on financial circumstances of the householders.</p> <p>As well as the limited funding outlined above, additional barriers to the public sector recognising and acting to realise the benefits of energy efficiency include limited expertise and capacity within some local authorities to maximise the potential of funding due to the complex and technical nature of the energy efficiency market. This could be resolved through a regional network of support for public sector bodies including RSLs to access.</p> <p>Furthermore, lack of funding (for feasibility studies etc), capacity, expertise and in-house knowledge often means that local authorities don't undertake</p>

	<p>large invest to save projects due to the uncertainty and financial risk involved.</p> <p>There are opportunities posed by utilising local authorities and local RSLs as a vehicle for coordinating and overseeing energy efficiency projects on the housing stock: it is recognised that the local authority has a strategic housing function in overseeing and targeting activity in the housing market, it also has a community leadership and engagement role for its citizens in the development and delivery of such projects. One of the biggest challenges is the variation and variety of funding. For LA's the lack of transparency surrounding ECO funding levels themselves, which is then difficult to define for bids, maintain the latest knowledge to then share with householders. There is a need to benchmark quality and costs of works across Wales.</p> <p>Sitting alongside energy efficiency, Ceredigion, along with several other local Authorities have been trying to identify opportunities for renewable energy production. However, Ceredigion is consistently hampered by lack of grid capacity in locations where renewable energy resources exist. This is part of a larger grid network problem with the need for grid connections through Powys being blocked by local opposition / planning constraints. Conceivably this problem may become more acute as the trend for private households continues to move away from oil heating to electric heating associated with heat pumps – placing an increased demand in the grid which is not equipped to deal with it. Ceredigion also has an added disadvantage in that the County is split into two Grid Network areas, with Scottish Power being the Distribution Network Operator (DNO) in the North of the County, and Western Power Distribution the DNO in the South. This could be a significant barrier when considering larger scale renewable projects, as coordinating projects via two DNOs can be time consuming and lengthy.</p> <p>The removal of funding for the Carbon Trust Wales has been a significant backward step for Welsh Local Authorities. The Carbon Trust had spent many years building an exceptionally good working relationship with Welsh Local Authorities, whilst at the same time providing free and impartial advice, assistance, expertise, networking and funding for energy initiatives to businesses. Whilst it is acknowledged that Resource Efficient Wales will in the future attempt to address the gap left by the Carbon Trust, this hasn't happened as yet.</p>
23	<p><b>Energy Savings Trust</b></p> <p>The public sector in Wales is undergoing change and restructuring of the local authorities in Wales will provide further uncertainties, and in the midst</p>

	<p>significant fiscal pressures. Any action that can be taken centrally by Welsh Government to encourage and enable the public sector to carry out energy efficiency works should be outlined within the energy efficiency strategy. For example:</p> <p><b>Ensuring good datasets are available:</b> The last Wales wide fuel poverty mapping was produced in September 2008<sup>11</sup>. The Scottish Government has procured all existing EPC's for homes in Scotland, and is utilising the Energy Saving Trust's Home Analytics software to enable central and local government and registered social landlords to access the enhanced dataset<sup>12</sup>. This national dataset has enabled programmes to become more targeted when seeking to: improve energy efficiency, install renewable microgeneration technologies and alleviate fuel poverty.</p> <p><b>Demonstrating strong estate management:</b> In recent years the Welsh Government had rationalised its own estate, invested in energy efficiency measures and low carbon, renewable technologies.</p> <p><b>Resource levels and match funding:</b> It is clear a number of potential sources of funding exist to public sector stakeholders and the access Wales has to European funding should also be maximised to deliver benefits. Also providing the opportunity to expose other European nations to the forward thinking approach adopted in Wales.</p>
24	<p><b>Neath Port Talbot CBC</b></p> <p>Undoubtedly the public sector is fully aware of the benefits across the spectrum of energy efficiency. From a Local Authority perspective there is a need to define the scope of energy efficiency and categorise into the following areas:</p> <ul style="list-style-type: none"> <li>• Internal energy/carbon and water management within Authority operational buildings</li> <li>• Domestic energy efficiency</li> <li>• Energy infrastructure</li> <li>• Community energy</li> <li>• Energy efficiency in the wider context (Local Service Board and Private Sector)</li> </ul> <p>There is the need for a basic outline structure to be developed that will ensure a standardised approach to energy management/efficiency, it is appreciated that there will be regional differences between geographical areas. However an effective standardised energy management structure, researched and developed by Welsh Government would ensure that the profile energy efficiency is raised to an adequate level.</p>

	<p>A key strength from a Local Authority perspective in regard to energy efficiency is the wealth of knowledge and experience within internal energy management units, although there are barriers with the expansion to a wider Authority context due to resource limitations.</p>
25	<p><b>Climate Change Commission</b></p> <p>Members of the Commission (which include EST, Carbon Trust, CEW, WLGA, Cardiff University) have a huge amount of expertise on energy efficiency within households, communities, businesses and the public sector and their responses to this consultation will include specific supporting information on the various barriers to action.</p> <p>We would like to support Cardiff University’s response in relation to the importance of behaviour change and the significant research work they have done on public attitudes and behaviour in relation to energy efficiency. Findings from initiatives such as Supporting Sustainable Living<sup>23</sup> (SSL) to fund specific behaviour change projects needs to be recognised and taken into account, as does the role of communities in supporting community-wide behaviour changes.</p> <p>Support mechanisms such as the new REW are critical – REW should be a clear focal point for delivery so that we get clarity and consistency of message. Given that REW was established before the consultation process was initiated, how will this process be reflected in their delivery plans over the coming months? Also on that basis, REW also needs to be completely accessible and needs a governance structure that engages stakeholders at all levels – we would welcome clarity around how this will be achieved.</p> <p>Initial feedback on REW is that it has provided an effective initial response to householders but has yet to achieve in terms of facilitating direct delivery. There needs to be far greater connectivity between the various delivery and support structures that are in place e.g. with Renew Wales, Cynefin etc.</p> <p>The Commission is currently working with COIN to deliver workshops on communicating climate change, to look at language and messaging, and we are happy to share any relevant findings with yourselves.</p> <p>The link with smart technology is also critical and in particular Smart meters – there have been issues and delays to date but this must be the key opportunity and a focus for linking with behaviour change at household level. EST is proposing to develop a “Smart living Hub” which will be able to</p>

<sup>23</sup> <http://www.cynnalcyrmru.com/project/supporting-sustainable-living-scheme>

	<p>feed in.</p> <p>In terms of the public sector there have been some major achievements here, as highlighted in the Commission's Annual Report 2014<sup>24</sup>, through support from Carbon Trust and other. However progress is threatened because of issues such as budget cuts, local government reorganisation, lack of capacity/expertise and the fact that issues such as climate change and energy efficiency are often low on the list of priorities. The introduction of the Wellbeing of Future Generations Bill offers an opportunity for Public Service Bodies to work together to promote resource efficiency across public buildings in Wales.</p> <p><sup>1</sup> <a href="http://www.cynnalcyrmru.com/project/supporting-sustainable-living-scheme">http://www.cynnalcyrmru.com/project/supporting-sustainable-living-scheme</a></p> <p><sup>1</sup> <a href="http://www.cynnalcyrmru.com/news/climate-change-commission-wales-launches-its-2014-annual-report">http://www.cynnalcyrmru.com/news/climate-change-commission-wales-launches-its-2014-annual-report</a></p>
26	<p><b>Wrexham CBC</b></p> <p>One of the main barriers for the public sector is the lack of funding and/or difficulties in bidding for external funding (process complex, lack of staff capacity to put together bid etc). There can be long paybacks on the more expensive and more intensive energy efficiency measures which can make accessing funding difficult. The high borrowing cost extends the paybacks and makes the actual cost for installation much higher. The general poor maintenance of buildings can mean a large capital investment is required to make the building energy efficiency, which is further exacerbated by potential asset transfer. The current climate of public sector reorganisation, budget cuts and uncertainty of the future limits the ability for the public sector to invest in long term, high cost energy efficiency projects. This is furthered by central government cuts which has led to a FTE reduction and lack of capacity to deliver big projects</p> <p>There is an opportunity for local authorities to take on a community well-being role and the opportunity for an integrated approach with Welsh Government. There is the opportunity to share best practice and a network of local Advice Centres.</p>
27	<p><b>Glass and Glazing Federation</b></p> <p>The GGF believes that the Government must consider in all energy efficiency schemes, including the Green Deal, the way in which these schemes fit into wider carbon reduction policies, Building Regulations, and reduced rates of VAT. A co-ordinated and regulated approach is needed in regards to energy efficiency in order for these schemes to have maximum impact upon carbon emissions.</p>

<p><b>31</b></p>	<p><b>Constructing Excellence in Wales</b></p> <p>A lack of cross-departmental working in many public sector organisations is limiting the abilities of these organisations to introduce energy efficiency measures. Very often those who could benefit do not have the resources or capabilities to implement such measures whilst those who do are not incentivised or motivated to introduce these measures eg capital construction teams not wishing to increase capital costs for end users (eg schools) to benefit from savings.</p> <p>Examples of the benefits gained from a removal of these barriers can be found at Newport and Llanwern High Schools <sup>5</sup> where alternative and additional income sources through energy efficiencies are helping to support their core services. Other examples are available via CEWs' Exemplar Programme case studies <sup>6</sup>.</p> <p><sup>5</sup> <a href="http://www.cewales.org.uk/cew/wp-content/uploads/7007Exemplar-LlanwernHighSchool-D-2.pdf">http://www.cewales.org.uk/cew/wp-content/uploads/7007Exemplar-LlanwernHighSchool-D-2.pdf</a></p> <p><a href="http://www.cewales.org.uk/cew/wp-content/uploads/Llanwern-Post-Occupancy-Case-Study1.pdf">http://www.cewales.org.uk/cew/wp-content/uploads/Llanwern-Post-Occupancy-Case-Study1.pdf</a></p> <p><sup>6</sup> <a href="http://www.cewales.org.uk/best-practice/best-practice-programmes/exemplar-programme/">http://www.cewales.org.uk/best-practice/best-practice-programmes/exemplar-programme/</a></p>
<p><b>32</b></p>	<p><b>British Gas</b></p> <p>In our experience, there are a number of excellent examples of energy efficiency delivery in the public sector, and a significant opportunity for further work to be done.</p> <p>Energy Performance Partnerships can be an excellent way for organisations in the public sector to reduce their costs, replace ageing energy related infrastructure, and guarantee cost savings. For example, British Gas is working with Hywel Dda Health Board in a partnership where we have been able to guarantee a reduction in the health board's energy bills over the life-time of the contract across its sites. Funding from the Welsh Government is paying for a new biomass boiler at Glangwili Hospital in Carmarthen, as well as other measures including energy management systems and energy efficient lighting upgrades.</p> <p>While this model can be extremely successful, there are currently some restrictions in areas of the public sector that prevent organisations from entering into arrangements such as the example above. We have found examples of schools prevented from accessing finance to fund energy efficiency projects which would reduce their running costs and their carbon emissions. We believe this is an area that should be addressed in order to help cut costs in the education sector.</p> <p>As with the response to question 4, access to advice and information is key.</p>

	<p>British Gas would be keen to work with Resource Efficient Wales to ensure more organisations have access to guidance which could be of benefit to them.</p>
<b>33</b>	<p><b>Saint Gobain</b></p> <p>The public sector should lead by example and ensure they have plans in place to make their own building stock energy efficient.</p>
<b>34</b>	<p><b>CLA Cymru</b></p> <p>It is extremely concerning that the public sector is perceived as not recognising and acting to realise the benefits of energy efficiency as this has been a fairly persistent action point for many years with Welsh Government. Leading by example would be an excellent stimulus to encourage change of behaviour with the wider public.</p>
<b>35</b>	<p><b>PLANED</b></p> <p>Need better coordination e.g. to have fuel poverty (often within social sector) divorced from wider energy – often under environment and services.</p> <p>Demonstration and sharing of experience /information with other sectors when delivering on energy efficiency, as happens at our Community Energy Network, is what organisations value: communication and good practice.</p>
<b>38</b>	<p><b>Hywel Dda University Health Board</b></p> <p>Old building stock (a particular problem for Hywel Dda UHB) which includes some remaining single glazed windows, lack of insulation / poor quality insulation, poor heating control and old engineering systems, systems designed when energy efficiency was not a consideration.</p> <p>When looking to tackle the above issues, investment is high and payback for these types of scheme can often be over 5 years for individual projects. Insulation schemes have much longer paybacks. This is outside the conditions for available funding.</p> <p>Payback periods should be adjusted for these types of schemes, which account for the fact that the life of the building is likely to be 50 + years and therefore the longer payback periods are appropriate.</p> <p>Issue with efficiency can be interconnectedness – increasing insulation is only of benefit if you can then accurately control heating and cooling. A step by step approach may cause more disruption in the short term, large all encompassing schemes may not be an option however due to the scale of</p>

the project and funding requirements.

Most efficiency projects are retrofit, less cost effective and less viable. Also efficiency supporting measures e.g. installing sub meters or controls are not included in projects due to limited funds.

New builds are often not as efficient as they could be as they are designed to meet minimum standards and the key part of efficiency e.g. controls, high spec glazing and insulation are not installed. Investing in cheaper technology also results in poor operational efficiency over time. The challenge is often a limited budget, with no ring fenced spending on suitable high spec energy and efficiency measures which are worth it considering the lifespan of a building.

Energy efficiency is not a priority for funding when pitched against front line services

Public Sector bodies want to take action, and have been for many years, but because of payback / funding restrictions they have targeted the quicker, easier, cheaper projects. Future action needs to be at a larger and more complex scale which requires much more time, resource and investment. This is largely beyond the ability of public bodies without an increase in support or new financial mechanisms for investment.

WG could provide more investment for specific projects / business cases, as our UHB was pleased to receive following a 2 year feasibility and submission of a business case. This resulted from significant time and financial commitment from the UHB with no guarantee of success. This can be a barrier to undertaking large scale projects.

A framework for Energy Performance Contracts for public sector is vital. There has been talk of this but no recent feedback has been provided from WG, and no indication of what could be available within which timescales. This uncertainty can also prevent action as organisation wait for the solution they want and delay potential plans. This would be a welcome supporting scheme. Having independently entered into an EPC we recognise that much of the difficulty experienced could be removed by a framework (already in place in England and Scotland).

We have control systems but not always the staff to utilise them, or to act on the issues noted – this is a big barrier to efficiency. Perhaps WG could identify what they feel is needed in terms of resource for full proactive energy management of an estate e.g. number of staff per m<sup>2</sup> floor area, and cross reference this to the resource and time actually available in public bodies. Provide support or mandate than minimum resource requirements are met. At present action such as staff energy awareness campaigns,

	<p>ongoing auditing and performance improvement etc is a real challenge as they need a continued resource commitment which is not available. This is vital for efficiency savings.</p> <p>A positive scheme from a number of years ago was the WGs Central Energy Fund – HBs bid for money for schemes which were then fully funded by WG. Would be beneficial to have this for efficiency schemes which would not be supported by traditional funding due to the payback periods e.g. single glazing replacement, insulation or heating controls (these would also have a patient experience benefit when applied in a hospital setting). Or could match fund HB capital investment to bring these projects within payback periods?</p> <p>Carbon Trust Wales prior to changes in Sept 2014 had funded first 2 (of 5) steps of a behavioural change project. Would be helpful to have the support to complete the program – not currently able to progress with limited internal resource.</p> <p>Ask for an energy efficiency plan from public sector bodies and make use of the information e.g. common issues where an All Wales solution could be provided e.g. suppliers of cost effective cavity wall insulation due to funding from WG.</p> <p>PSB – as these develop more options may become available to work together – this could be made a mandatory part of PSBs – to have a subgroup of staff committed to energy and energy efficiency (some already exist but currently on stop – scope for action limited due to lack of supporting resource or funding). Could this group submit regional business cases to WG for funding for specific projects e.g. LEDs from same supplier for street lighting – better purchase rates?</p>
39	<p><b>NHS Wales</b></p> <p>Barriers to progress in the NHS estate include financial restrictions, not only the limited capital funding available in the current economic climate, but the fact that Health Boards are restricted their ability to access many sources of finance by their constitutions (see the response to Q9). The NHS can be risk averse in its approach to the application of potentially innovative new technologies (often as we have to ensure that patient safety and comfort is priority and so resilience and reliability is key). Energy efficiency can be seen as a low priority when compared to funding demands for front line services. It is also perceived that there is less expert support available since the changes to the way Carbon Trust Wales etc were made.</p> <p>Opportunities exist to strengthen and improve the links and collaboration</p>

	<p>between different parts of the public sector; for example between NHS and Local Authorities or Higher Ed etc.</p> <p>Current strengths for the NHS include the close networks that exist linking Energy Managers across Wales, including a Forum that meets regularly to discuss and share good practice etc. There is a lot of expertise within the existing people. Additionally there has been a target in place for all NHS organisations to achieve ISO 14001 certification and it would be expected that organisations would have objectives and targets within their improvement programmes to improve energy efficiency. Also the BREEAM tool is used as a means of driving energy efficiency improvements in new and refurb schemes as energy / carbon reduction is a key category for achieving credits in BREEAM.</p>
40	<p><b>Rhondda Cynon Taf County Borough Council</b></p> <p>We have utilised various streams of funding within RCT to carry out energy efficiency projects on our portfolio (these can be seen listed in the accompanying report). However, other Local Authorities and public sector bodies may not have the same personnel who have the time and impetus to implement schemes such as these. Therefore a barrier for the public sector will be fluctuating levels of staff available to carry out schemes, especially in times of reduced public sector spending settlements over the forthcoming years.</p> <p>Procurement is increasingly becoming an issue due to the value of contracts/funding but only a limited number of organisations are able to deliver in line with the Community Benefits Toolkit requirements.</p>
43	<p><b>Low Zero Carbon Hub</b></p> <p>The focus within the public sector is not currently on energy efficiency; concern over the future and reorganisation distracts from the need to engage on appropriate estate management and energy efficiency. The requirement for DEC's and displaying the poor performance has not stimulated action to improve building stock. The Welsh Government should lead by example demonstrating good estate management and share where technologies have worked well for others to adopt. For example, switching to LED's could be badged as an energy efficiency saving, but can also realise improved security, lower maintenance and testing costs. Energy efficiency provides an opportunity for organisations to become less silo'ed in their team delivery and financial management enabling both capital and revenue budgets to be used to enable refurbishment works.</p>
45	<p><b>Rockwool</b></p>

	<p>Government should act as an exemplar in this field, leading by example, setting a long term vision, with a roadmap and targets and reporting on progress.</p>
<p><b>46</b></p>	<p><b>SSE</b></p> <p><u>Barriers – delivery</u></p> <p>In Wales, the Arbed scheme has sometimes inadvertently hindered supplier delivery of the ECO due to an overlap of potential properties and partners. One of the primary reasons for this is the key role played by local authorities, whose procurement teams have been identified as both barriers and enablers to the delivery of ECO, with the procurement process often favouring Arbed schemes over resident or supplier-led ECO projects. While SSE is keen to see greater local authority involvement, any schemes should compliment not conflict with one another.</p> <p>The speed with which the Welsh Government has administered the ‘ECO top-up’ funds announced in October 2013 may have also prompted both public and private sector stakeholders to allocate funding elsewhere in the UK.</p> <p><u>Barriers – engagement</u></p> <p>11- Recent research<sup>3</sup> undertaken by YouGov on behalf of SSE has shown that customers are generally engaged with energy efficiency. However, only half of those surveyed believe they can save money by reducing their consumption without negatively impacting their quality of life. While two out of three do believe reducing their energy usage will save them money, only one in five have taken any significant action to do so. The most commonly cited barriers to taking further EE actions are concerns about cost, visual appearance and the overall ‘hassle factor.’ Increasing customer engagement with energy efficiency will therefore rely on both education, to make people aware of the potential to reduce consumption without sacrificing quality of life, and on initiatives to help people manage the up-front costs – perhaps through revamped ‘pay-as-you-save’ schemes, if finance can be made available at very low or zero cost.</p> <p><small>3 YouGov / SSE. (2014). Putting The Customer First: How We Can Drive Real Consumer Engagement With Energy.  tinyurl.com/sseyougov</small></p>
<p><b>51</b></p>	<p><b>Flintshire County Council</b></p> <p>Austerity measures are the main barrier to continued energy savings in the public sector. The excellent results attained by welsh local authorities in the past 5 years is at great risk of being lost unless capital energy efficiency</p>

budgets can be ring-fenced to protect past savings and yield further significant savings. Dedicated energy efficiency staff save more than they cost authorities.

CRC is presently a blunt instrument and not evenly levied on all Welsh LA's. This creates an inequality between neighbouring authorities and therefore does not promote energy efficiency to the same extent across all Welsh Authorities.

A potential alternative delivery model could be for the WG to regionalise public sector commercial energy efficiency operations and directly manage them. This would hopefully take out the yo-yo effect and assist Wales in achieving its carbon reduction targets. All actions would then be following the same direction.

We have seen good results in our council commercial buildings with lighting refurbishment projects. Refurbishment instead of replacement can provide a cost effective option for lighting and this could be rolled out further. LED light fittings have improved dramatically and can be used in a wide range of applications.

In terms of housing and communities, local authorities play a major role in the success of energy efficiency projects. As well as contributing to the reduction of fuel poverty there is a role for local housing service providers and associated partners to work together to demonstrate the full potential of energy efficiency retrofit as an investment opportunity.

Local authorities are recognised in this consultation document as key players in reducing carbon emissions in the wider community, particularly in the residential sector and in using their position and influence to get everyone in the community to reduce their own carbon footprint.

Encouragement for the majority of residents to take up energy efficiency measures continues to come largely through the local authorities and local advice centres and frontline support organisations. Without support, organisation, and promotion of energy efficiency programmes by the local authority and the local energy advice centre, there is even lower take-up of measures, more opportunity for rogue traders to take advantage of residents and greater confusion about where to go for impartial advice. As there are very few other local authorities in Wales with a dedicated domestic energy service or in-house expertise on renewables, BREEAM, DEC's, there is limited capacity in the majority of the country, and this needs to be strengthened through clear guidance, real financial support and statutory targets, rather than weakened.

52	<p><b>Egnida</b></p> <p>Key barriers to the public sector are access to investment under a backdrop of budget deficits and “procurement”. We are successfully overcoming these barriers with unique innovative funded delivery models but Welsh Government may wish to encourage such innovative partnerships between Welsh SMEs and the public sector to allow Local Authorities in particular to explore more innovative solutions, albeit in a risk managed way.</p>
53	<p><b>NEA</b></p> <p>There is currently no statutory obligation on local authorities in Wales to tackle fuel poverty. However, the Welsh Government’s Fuel Poverty Commitment for Wales adopted a target that, as far as is reasonably practicable, no household in Wales should be living in fuel poverty by 2018, and “local authorities and social housing providers have a critical role to play in tackling fuel poverty” (Welsh Government’s Fuel Poverty Strategy 2010).</p> <p>The Housing Health and Safety Rating System (HHSRS), introduced in the 2004 Housing Act, is already regulating minimum standards in housing. The main relevant enforcement category is Excess Cold, one of the most common Category 1 hazards. However, local authority enforcement action has been badly affected as a result of limited resources and competing pressures on local authority Environmental Health Officers.</p>
55	<p><b>WLGA</b></p> <p>The major barrier to adopting energy efficient practices is anonymity and relevance to the individual. Energy bills tend to be for the whole organisation, or across a site or a whole building so it is not relevant to the individual and the benefit of any savings or efficiencies are not realised by the individual. It is acknowledged that everybody has a responsibility but nobody takes responsibility. The bill is paid by a different department.</p> <p>Leadership is important – if the boss turned off lights, reduced the thermostat by 1 or 2 degrees it works through the organisation.</p> <p>Financial systems don’t always acknowledge a spend to save approach – with annually reducing budgets the decisions are for the here and now not realisation of savings several years hence</p>
58	<p><b>Pembrokeshire Coast National Park</b></p> <ul style="list-style-type: none"> <li>• Initial outlay due to funding cuts/restrictions.</li> <li>• Obtaining planning permission if required.</li> </ul>

	A current strength or success could be demonstrated by our Greening the Buildings Programme aided by working in partnership with the National Trust to gain better knowledge and understanding and then implementation of new biomass boiler etc with our Display Energy Certificate going from C to B rating.
	5: Barriers to the public sector. What do you think are the barriers to the public sector recognising and acting to realise the benefits of energy efficiency? Do you have any suggestions for improving and extending public sector action on energy efficiency? What are the current strengths and successes and how can they be developed further?
<b>60</b>	<b>Alan McCarthy, Hafod Renewables</b>  Complicated Green Deal programmes with no local advice Bureau dedicated to energy efficiency.
<b>61</b>	<b>Stephen Vaughan, Housing Renewal Team, Torfaen County Borough Council</b>  I think-speaking from own experience -that local authorities are keenly aware of the need to act on energy saving measures. I don't believe there are barriers but think more could be done to release funds to local authorities that can be used to help householders improve the energy efficiency of their homes. The Welsh Government has targets to meet in terms of lowering the carbon footprint and I believe that the only way to tackle this challenge is to make money available -reponsibly managed- to homeowners, social and private landlords and businesses.
<b>62</b>	<b>Andy Thomas, Butler &amp; Young Wales.</b>  there are no real barriers if the legislation, incentives and product / scheme design is available
<b>63</b>	<b>Neil Evans, Carmarthenshire County Council</b>  Number 1 has got to be procurement !!  There also continues, despite all the evidence, to be much denial regarding climate change.
<b>64</b>	<b>Kate Smith, KFS Consultancy Ltd</b>  No experience
<b>66</b>	<b>Phil Powell, Gwent Energy CIC</b>  energy efficiency needs to be promoted by higher level officers otherwise little progress will be made

<b>67</b>	<b>Mark Greenfield, Greenfield Energy Solutions</b>  Budget cuts? Start spending at the top of the government and this will be the best investment they make over the next 20 or 30 years.
<b>68</b>	<b>Daryl Price, DK Property Services</b>  The public sector is a law unto themselves, but I could not say who the public sector is, Perhaps your questions could be more specific?
<b>70</b>	<b>Carrie Parisella, Greendealshop.com Ltd</b>  As previous comment
<b>71</b>	<b>Jeffrey Smith, First Phase Electrical</b>  just by more media telling people the benefits educating people investing in solar power and tidal but not in useless wind turbines as the welsh assembly are promoting the only ones benefiting is the greedy land owners who get paid to have turbines on their land
<b>73</b>	<b>Sian Edwards, J D Energy Services</b>  Education education education. Make people aware of the benefits to THEM most don't care about the environment however may be persuaded if they are more aware of the direct savings and related benefits (ie FIT and RHI)
<b>74</b>	<b>Ian Titherington, City of Cardiff Council</b>  All public sector organisations within a region need to have a joint strategy, to really make savings. Sharing best practice and expertise can really transform the gains made.
<b>75</b>	<b>Bex Gingell, Taff Housing Association</b>  not known
<b>76</b>	<b>Rob Newell, Joyner PA Cymru Ltd</b>  Government cut backs on spending.
<b>77</b>	<b>Rachel Davies, City and County of Swansea</b>  Funding and expertise to develop an energy efficiency policy. Procurement could have huge potential here.
<b>78</b>	<b>Samir Hussien, site services</b>  better system of refuse collecting motivate public sector by some incentive to achieve better recycling
<b>79</b>	<b>David Powell, Vale of Glamorgan Council</b>

	Lack of leadership and support in some cases. Budget pressures. Procurement difficulties.
<b>81</b>	<b>Peter Draper, Rounded Developments Enterprises Ltd</b>  See all my comments regarding the issues of ECO and rdSAP.  Public sector should be encouraged to work with community groups to deliver energy generation projects.
<b>82</b>	<b>Mathew Davies, Grwp Cynefin</b>  A lack of awareness of the opportunity, a lack of confidence in manufacturer or supplier claims about energy efficiency and a lack of available budget or finance.
<b>83</b>	<b>Sylvia Peat, Grwp Cynefin</b>  All properties need to be above E, Rdsap rated, before they can be rented out to the public. ensuring all lofts at 300mm and walls i.e. cavity/external are adequately insulated.
<b>84</b>	<b>J.Richard Davies, J.r.davies property services</b>  Cut backs
<b>86</b>	<b>Graeme Harrold, 3-e Electrical Ltd</b>  There is very little for the public at large unless your elderly or on benefits. Clarity on pricing and confidence in contractors pricing would help greatly. EST could become a body providing assurance to the public for companies installing energy efficiency at reasonable prices
<b>87</b>	<b>Elrond Burrell, Architype Ltd</b>  out of date mindsets, energy efficiency in buildings can be delivered by good design this is often no understood.
<b>88</b>	<b>Allan Smith, Energy Effective Ltd</b>  In 2014 we met with nearly all South Wales local authorities and the majority of their technical teams saw the benefits of installing Nanoparticle Technology as an effective energy saving measure but we failed to gain a single order as the accountants (who refused to talk directly with us) all refused to proceed even though it is a proven cost effective technology.
<b>89</b>	<b>Malcolm Wilson, RCT Homes Ltd</b>  Capital funding is a barrier. Procurement rules can be a barrier. In term sof third sector and community groups the public sector could make loans avaiable to fund the capital costs and provide good advice on the best

	installations and companies to use.
<b>90</b>	<b>Nicola Vaughan, City Energy South Wales Ltd</b>  Long winded procurement processes and lack of knowledge on how to acquire and administer
<b>91</b>	<b>Elwyn Williams, E.W.Consultancy</b>  Reeducation on the Greener approach.
<b>92</b>	<b>Neil Lewis, Robert Owen Community Banking Fund</b>  Salix is working well. However there is at best an inertia in L.A.s Seems if they don't make a decision, they can't get anything wrong. If every L.a. had installed PVs and LEDs on every school they'd slash 66% of energy bills and teach Energy literacy as part of the curriculum. Also if every LA in Wales owned 2x 500kW wind turbines they'd be protected from cutbacks.
<b>93</b>	<b>Jonathan Hyde, Bron Afon Community Housing Ltd</b>  FIT RHI We are currently involved with Gen Comm in conjunction with BG to install further PV arrays to our housing stock
<b>94</b>	<b>Clare Parsons, Brecon Beacons NPA</b>  Invest to save funding
<b>95</b>	<b>Stewart Matthews, Torfaen County Borough Council</b>  I believe that the Public Sector does promote and encourage the public to be energy efficient and adopt energy efficiency ideas within their own buildings.  The amount of funding directly to local government for promotion of energy efficiency, should be increased, allowing them to do more work with the public, increasing the number of dwellings which are energy efficient and not sign posting the public to other bodies, frustrating the public.
<b>97</b>	<b>Alison Fuller, Groundwork North Wales</b>  lack of funding
<b>99</b>	<b>Ben Dever, adever engi cyf</b>  my feeling is that the decision makers don't care about energy savings
<b>100</b>	<b>Rachael Rowlands-Jones, Glyndwr University</b>  There is a distrust of Energy Performance Certificates and the ever

	changing funding landscape makes the public wary. Consistency will help address this. A lack of understanding often means the public are making decisions that are not well informed.
<b>101</b>	<b>Mark Wilcox, Business Step Up</b>  In my line of business would strongly recommend we agree to a meeting to discuss?
<b>102</b>	<b>Robert Vokes, Joyner</b>  We need to have the public sector involved in decisions and actions . We need to get their involvement in promoting measures and delivering projects. I appreciate that some of this is happening but i believe a bigger involvement is needed in some areas.
<b>103</b>	<b>Steve Martin, Caerphilly County Borough Council</b>  Once again one of the biggest barriers in finance, especially with the budget cuts local authorities are experiencing. Current strengths are the Arbed and ECO capital funded projects which have benefitted a number of communities throughout Wales. A common procurement process would also be beneficial.

	<b>Question 6 responses: Supply Chain.</b>
	<b>What are the strengths and weaknesses of the supply chain and how can we build on the strengths and tackle the weaknesses?</b>
<b>9</b>	<p><b>Merthyr Tydfil County Borough Council</b></p> <p>Strengths - more SMEs are becoming interested in this type of work – so supply chain is growing slowly but steadily</p> <p>Weakness – delays between programmes often make it difficult to plan procurement activities and to support SMEs in tendering. Larger contractors often then win the work and sub it out to SME's squeezing their profits.</p>
<b>11</b>	<p><b>Cert Sure</b></p> <p>We have no comment as we have insufficient knowledge on the supply chain</p>
<b>12</b>	<p><b>Pembrokeshire County Council</b></p> <p>Care needs to be taken in allowing very large businesses (e.g. the “big 6” energy companies) to provide the energy efficiency solutions. The big companies can absorbing SME's to do the work for them. Those SME's may thrive better if allowed to carry out the work themselves instead of acting as subcontractors. Keeping local; contractors employed is better than the work being carried out by multinationals.</p>
<b>14</b>	<p><b>ETI</b></p> <p>There is currently limited local capability to support wide-scale energy efficient interventions in Wales, the Rockwool plant in Bridgend being an obvious exception. However, little or no capability currently exists in Wales for manufacturing heat pumps or Home Energy Management Systems (HEMS) – the Welsh Government may want to consider how it can encourage manufacturers of this equipment to relocate to Wales.</p> <p>It may also be necessary to facilitate organisations such as large DIY-retailers to offer “whole-house” energy efficient advice and renovation. Installers could also be trained to be multi-skilled, for instance, plumbers could be trained to be able to fit and optimise any heat supply/generation and home management systems together as a working system. This type of activity could be facilitated by the new Energy Systems Catapult.</p> <p>An approach to allow the supply-chain to offer performance guarantees (e.g. linked to home energy management systems) should also be considered.</p>

<p><b>15</b></p>	<p><b>Wolseley</b></p> <p>We believe that the supply chain to deliver ambitious energy efficiency programmes already exists in terms of products, materials suppliers and installers. What is missing is the long term commitment to schemes which would give businesses and SMEs in particular, to invest in the necessary tools and accreditations to be come involved.</p> <p>Local heating installers can be key to driving uptake of such schemes if they are suitably incentivised to do so. They are uniquely qualified with their blend of technical expertise and extensive knowledge of the local community. They are often invited into the home and are ‘trusted’ sources of knowledge. Approximately 5,000 boilers are fitted every day and many thousands of additional calls for servicing and repairs are made by the 135,000 registered heating engineers. (30,668 boilers fitted per week – five year average from HHIC).</p> <p>Suitably qualified installers could be invited to register as delivery partners and be offered up-skilling in assessments and associated practices. Since most SME installers work within a tight geographical area they are both easy to manage and their reputation is critical to their business success.</p>
<p><b>16</b></p>	<p><b>Miller Research</b></p> <p>We have an excellent supply chain at the installer end, stimulated by initiatives such as Arbed. However, we are still weak at the highest value end of the sector - for example making wind turbine towers, but not turbines. Social ownership of our energy resources would stimulate the creation of a more integrated supply chain.</p>
<p><b>18</b></p>	<p><b>Torfaen County Borough Council</b></p> <p>A vibrant Welsh Supply Chain that is easily accessible by LAs and partners would be welcomed. The sporadic nature of funding and the levels of uncertainty have meant that some contractors are reluctant to invest in recruiting and training unless they know that there is going to be sufficient work available for their workforce. The demise of some solar PV companies following the Governments change to Feed in Tariffs is a prime example.</p>
<p><b>21</b></p>	<p><b>Ceredigion County Council</b></p> <p>It is acknowledged that as a result of the Welsh Government led Arbed programme for domestic housing, significant steps have been taken to develop the supply chain for external wall insulation manufacture, supply and distribution. Ceredigion County Council welcomes the benefits and success of the Arbed Scheme in Llandysul that is being hailed as an exemplar project throughout Wales for the EWI (External Wall Insulation)</p>

	<p>system used and its project management. This project has demonstrated the benefits of choosing an appropriate EWI product particular to the property construction type and weather exposure area. The consequence of this as well as what is demonstrated in local ECO projects delivered in the county is that the lowest cost option for EWI installation is rarely the best option for rural and weather exposed areas.</p> <p>For Ceredigion, the main weakness of the supply chain is the lack of local accredited contractors/installers for energy company approved works. Although local contractors have expressed an interest in becoming accredited, the paperwork and lack of guaranteed work following the completion of the accreditation process has deterred take up.</p> <p>There is a limited supply of alternative technology companies in the County, as well as fuel supply companies. The further development of the supply chain is evidently dependant on demand, which in turn is limited by the cost of installation, access to the grid network as mentioned previously and low incomes within the county.</p>
22	<p><b>Ofgem</b></p> <p>There may be scope for the Welsh government to drive improvement in the quality of energy efficiency measures installed in homes in Wales. As administrators of ECO, we carry out audits and data checks on the energy efficiency measures notified to us to confirm that they are installed to the appropriate standard. This is supported by technical monitoring commissioned by energy companies and carried out by qualified independent technical monitoring agents.</p> <p>Technical monitoring is designed to ensure that ECO measures comply with the relevant standards of installation. Measures are assessed against a standard questionnaire developed by Ofgem, energy companies and industry experts<sup>3</sup>. Energy companies are required to conduct monitoring on 5 per cent of measures each quarter, across a representative sample of measure types, geographical areas, installers and obligations.</p> <p>We publish a technical monitoring report on the ECO pages of our website. The most recent report indicates that there is scope to improve the quality of the measures installed under ECO and we are working with energy companies to achieve this<sup>4</sup>. The Welsh government may also wish to consider how it can drive improvements in the quality of installations.</p> <p>Through schemes such ECO, the supply chain has proven that it is capable of delivering energy efficiency schemes at scale. However, a common theme in recent government energy efficiency programme is the goal to</p>

	<p>utilise a whole house approach. That is, to assess the need for full range of energy efficiency measures in a given house and then to provide those measures at one time rather than upgrading a home measure by measure over a number of years. Monthly ECO data published by DECC <sup>5</sup> shows that the c988,000 energy efficiency measures installed to the end October were installed in c800,000 homes at average of 1.25 measures per household. This demonstrates that there remains scope for innovation in the supply chain to find a business model that will facilitate the whole house approach in a way that can compete effectively for ECO funding.</p> <p>4 Energy Companies Obligation (ECO) Technical Monitoring Report – October 2014  <a href="http://www.ofgem.gov.uk/publications-and-updates/energy-companies-obligation-eco-technical-monitoring-report-%E2%80%93-october-2014">www.ofgem.gov.uk/publications-and-updates/energy-companies-obligation-eco-technical-monitoring-report-%E2%80%93-october-2014</a></p> <p>5 Table 6a, Data tables: Green Deal and ECO statistics  <a href="https://www.gov.uk/government/statistics/green-deal-and-energy-company-obligation-eco-monthly-statistics-december-2014">https://www.gov.uk/government/statistics/green-deal-and-energy-company-obligation-eco-monthly-statistics-december-2014</a></p>
<p><b>23</b></p>	<p><b>Energy Savings Trust</b></p> <p>The greatest issue in the supply chain is the lack of certainty in a challenging market. The Green Deal provided them with the reason to invest for the future with the promise of “the greatest change to the housing stock since the Second World War”. This anticipation failed to be realised. We have worked with the supply chain in Wales for over four years and have facilitated a webinar recording and e-questionnaire to enable the Welsh Government’s energy efficiency strategy team to hear directly from the supply chain network. Their comments are provided separately, the following text outlines our findings and experience of working with the network.</p> <p>Business development and cross selling amongst the network is increasing but remains slow. Our experience of working with installers, across the UK to update the Green Orb (webpage listing GD installers etc) has been surprising. Not all installers, it appears, wish to update their entries, even though the Orb is free and a key marketing tool for them to gain new trade.</p>
<p><b>24</b></p>	<p><b>Neath Port Talbot CBC</b></p> <p>It is acknowledged that there is a formulated supply chain within Wales for the provision of energy efficiency improvements to a number of sectors. However there is the need to develop further intelligence on the supply and demand patterns on proposed and potential programmes of work.</p> <p>There is the requirement to undertake a work study by Welsh Government</p>

	<p>to determine the capacity for future/potential activities and projects. Additional point that work needs to be undertaken with developers (general and energy) to support and expand local supply chains especially in areas such as civil engineering, electrical infrastructure, logistics and maintenance to ensure up-skilling of local businesses and growth within the sector.</p> <p>From a domestic perspective when there are a high number of local schemes but on occasions it is difficult to have an adequate supply of materials delivered to site on time, more work required with suppliers to increase stocks and availability. In respect to labour on domestic schemes there is a shortage of skilled and trained trades people, this results in people with little experience carrying out work to substandard levels, causing problems and creating a poor reputation for energy efficiency schemes of work.</p>
26	<p><b>Wrexham CBC</b></p> <p>Corporate procurement/single contractor model means local companies/SMEs miss out on the opportunity as they do not meet the required tender criteria. This leads to utilisation of products/companies from outside of Wales which then stifles innovation and further R&amp;D investment. Large capital projects and the associate risks and financial regulations mean that often local SMEs cannot bid for works. There is limited potential for sustainable development in current procurement rules. As the industry market requires economically viable solutions, cheap and ineffective technologies are being used. There is the potential to get better at aligning SMEs with schools, universities. The supply chain needs certainty of work – Welsh Government could join up and make its funding streams clearer and longer term.</p>
27	<p><b>Glass and Glazing Federation</b></p> <p>The GGF welcome the initiatives by the Welsh Government which have resulted in having an energy efficient supply-chain, from manufacturing to installation, within Welsh boundaries. The GGF would, however, highlight the need for small business and SMEs to be supported and to ensure a regulatory framework that allows for smaller providers of energy saving products to be able to compete. Whilst a supply chain from manufacturing to installation provides an effective and successful method of achieving energy efficiency, it is similarly important to provide a legislative framework that allows for the inclusion of smaller scale manufacturers and providers.</p>
28	<p><b>Citizens Advice Bureau</b></p> <p>As we are not directly involved in the delivery of energy efficiency measures, we do not have first-hand evidence relating to the supply chain</p>

	<p>in Wales. If the aspiration to create a stable supply chain can be achieved this should go some way to meeting the industry's concerns noted above, also potentially facilitating the delivery of UK wider energy efficiency programmes – with future consumers in Wales reaping the benefits.</p> <p>Consumer Focus' <i>Jobs, Growth and Warmer Homes (2012)</i> report did find that 'there is a direct and immediate stimulus effect to the construction sector and its associated supply chains (..) through increased demand for inputs such as metals and minerals' from energy efficiency investment. This suggests there could be reciprocal benefits to looking directly at improving the energy efficiency supply chain in Wales.</p> <p>Citizens Advice are currently undertaking additional, GB-wide, research into local delivery of energy efficiency and fuel poverty schemes which may be useful in informing this aspect of the strategy. We will share this with the Welsh Government in due course.</p>
29	<p><b>Sustainable Energy Association</b></p> <p>We cannot comment specifically on the supply chain in Wales. We can say that the experience across the UK has been that short term policy change can have damaging effects on the energy efficiency supply chain. Installers are also key- and our engagement with the energy efficiency and heating installer base suggests that Government could do more in terms of funding training and development- particularly as policy gets more complex, or where different parts of the supply chain (for example, heating and energy efficiency markets) are being brought together.</p>
31	<p><b>Constructing Excellence in Wales</b></p> <p>CEW provides a platform for cross sector working and discussion by providing networking events, awards and information events to our 9000 strong database of contacts. Our network brings together micro, SME and larger organisations across the industry.</p> <p>CEW helps to provide an opportunity for the supply chain to speak directly with Welsh Government, Natural Resources Wales and DECC staff on changes to policy and regulations to provide them with information as to how Wales is working on the ground. Two most recent examples of how we work involved firstly setting up a conference on the 5th December 2014 which gave DECC the chance to engage with professions and manufactures that work with SAP ahead of formal consultation of the proposals to change SAP going forward. On the 10th December 2014 we also held a workshop which gave NRW and Welsh Government officials the chance to meet with and hear the views of waste management companies who will be expected to implement the separate collection regulation which</p>

impacts on 1st January 2015.

Our role affords us a particular insight into the built environment sector and we consider there to be a flexible workforce in this sector in Wales. For the most part the supply chain for energy efficiency delivery is essentially the construction sector supply chain. For example, the application of external wall insulation products is usually carried out by traditional building trades e.g. carpenters, bricklayers, plasterers etc, who after very little training acquire the necessary techniques to enable them to carry out this type of work. Similarly installation of solar panels is most often carried out by traditional roofing trades in conjunction with electricians. The underlying issue for the supply chain in going through this upskilling process is continuity of work. Without confidence in a forward programme of work it is considered unlikely that the supply chain would invest their time in training real prospects of a return on investment. Retaining new gained skills may also become an issue if, going forward there is no longer term programme of work. For example, if there is a significant gap between the end of Arbed 2 and the start of Arbed 3 there is a potential risk that newly acquired skills will be lost.

We are currently working very closely with four live construction projects as part of our initiative Enabling Zero Waste. We believe that many of the quality and waste problems we are seeing are a result of behavioural issues exacerbated by the time pressures which impact on site management. These behavioural issues are also likely to transfer into the energy efficiency agenda and without careful planning and time management quality, waste may be an issue with regard to installation of energy solutions.

CEW has been working with the construction sector supply chain for more than twelve years and we know that this chain predominantly comprises small to medium enterprises. Our experience has highlighted that there can be a disconnect between principal client, the designers and the delivery workforce .This can and should be overcome by adopting an inclusive and collaborative approach at the earliest possible stage of the whole procurement process so that all parts of the supply chain have the opportunity to input their experience and knowledge well before site work begins.

One of the greatest barriers to utilising the inherent strengths of the construction supply chain is the often adversarial way in which the client, particularly in the public sector, engages with supply chains. Traditional forms of construction procurement constrain opportunities for collaborative working based on integrated teams and fail to capture the skills and

	<p>competencies of the supply chain early enough. The improved performance of the supply chain at Newport and Llanwern High Schools <sup>7</sup> is based on collaborative working, early engagement of the supply chains and continuous improvement from project to project via continuity of the same supply chain. These practices, which follow WGov procurement policies, can and should be implemented across the public sector if energy efficiency measures are to be implemented consistently, effectively and “at scale”. Other examples where collaborative working adds value in terms of energy efficiency, job creation and reducing poverty are available via CEWs’ Exemplar Programme case studies.</p> <p><sup>7</sup> <a href="http://www.cewales.org.uk/cew/wp-content/uploads/7007Exemplar-LlanwernHighSchool-D-2.pdf">http://www.cewales.org.uk/cew/wp-content/uploads/7007Exemplar-LlanwernHighSchool-D-2.pdf</a></p> <p><a href="http://www.cewales.org.uk/cew/wp-content/uploads/Llanwern-Post-Occupancy-Case-Study1.pdf">http://www.cewales.org.uk/cew/wp-content/uploads/Llanwern-Post-Occupancy-Case-Study1.pdf</a></p>
<p><b>32</b></p>	<p><b>British Gas</b></p> <p>For more than three years, British Gas has, as managers of the Nest programme, worked with small and medium enterprises across Wales to build the capacity of the supply chain.</p> <p>All the requirements of the scheme - in terms of gas, LPG, oil, solid fuel and biomass heating systems plus loft, cavity, and external wall insulation measures – are now met through this supply chain.</p> <p>Nest has achieved this through meeting regularly with the local supply chain. In addition, we have been able to create around 20 apprenticeships in local communities.</p>
<p><b>33</b></p>	<p><b>Saint Gobain</b></p> <p>As per the response to question 3, the EEPB report outlines the barriers (page 10 for supply chain issues) and proposes solutions (page 22 to 23).</p> <p>Giving industry the confidence to invest time and resource in setting up the necessary supply chains, technologies and processes is vital. Saint-Gobain has been working with the Construction Product Association on a study of the factors underpinning investment in the construction products industry. The report shows case studies of policy and regulation which have had both a positive and negative impact on manufacturers and their supply chains and makes recommendations on how policy can be designed to reduce uncertainty for business and encourage investment. The report can be found here: <a href="http://www.constructionproducts.org.uk/publications/external-affairs/display/view/a-study-of-the-factors-underpinning-investment-in-the-constr/">http://www.constructionproducts.org.uk/publications/external-affairs/display/view/a-study-of-the-factors-underpinning-investment-in-the-constr/</a> . Give early notice of what is intended and provide a roadmap, liaise fully with industry to overcome any potential issues and once implemented, do not make unplanned unnecessary changes. Allowing a transition period</p>

	<p>from current policy to the new policy by overlapping the schemes will help prevent peaks and troughs in demand caused by surges at the end of one scheme and slow start to the other while the supply chain adjusts to deliver.</p>
<b>34</b>	<p><b>CLA Cymru</b></p> <p>The unlimited potential inherent with having the full energy efficiency supply chain available in Wales is most threatened by over-regulation. As previously highlighted, private enterprise is essential to a sustainable industry, but will struggle to survive in a red tape environment.</p> <p>The cyclical benefit of having a full supply chain should ensure that improvements to energy efficiency lead to increased business and job growth. The biomass market has the potential to deliver against many of the factors highlighted in this consultation, yet forestry policy and actions disseminated from Welsh Government are fragmented and biased against private enterprise. There is a perception that the interests of the public forestry estate always take preference over those of private forests with regard disease control and felling licences.</p>
<b>35</b>	<p><b>PLANED</b></p> <p>Currently a dispersed and uncoordinated field – and much is in the hands of the big ‘6’.</p> <p>Need a more transparent system where choice and competition is simpler, rewarding those who are efficient in their use of energy.</p> <p>There needs to be a review of anomalies in the system e.g. initiatives for generation that currently reward potential wastage e.g. RHI</p>
<b>38</b>	<p><b>Hywel Dda University Health Board</b></p> <ul style="list-style-type: none"> <li>• Very few frameworks (any?) available for action relating to energy, particularly equipment</li> <li>• Large scale tenders often go to large national companies, need to encourage and make these processes more accessible to local business.</li> <li>• New framework for supplying advice etc (Resource Efficient Wales ) removed the match funding element of the support, and points of contact for general, free advice and support. These 2 points were both key in seeking support.</li> </ul>
<b>40</b>	<p><b>Rhondda Cynon Taf County Borough Council</b></p>

	<p><u>Strengths</u> - plenty of companies in the energy industry sector in Wales.</p> <p>Opportunities - Small local SME's currently carrying out traditional building repairs need training to be able to understand the benefits of installing energy efficient products and materials when carrying out their work. This will ensure energy saving opportunities are not lost when other repair or maintenance work is carried out. RCT work with small local SME's via a framework contract to deliver repairs and adaptations for vulnerable clients. These contractors may be interested in training to up-skill to carry out basic or more advanced energy efficiency work. Welsh Government could work with Local Authorities to develop and offer training courses for these contractors to help sustain existing and create new employment opportunities.</p> <p>Local Authorities who specify repair or adaptation work should look to incorporate energy saving products and materials into their specifications where practicable.</p> <p><u>Weaknesses</u> - very little trust of energy sector; advice very inconsistent; personnel in industry not very knowledgeable (call centre or cold-calling representatives of companies); too convoluted to obtain funding due to various different streams; public don't understand the processes or procedures; public feel they are constantly being hoodwinked by 'energy companies'. Also, companies who are aware of the different areas that qualify for EWI for example, will exploit this but not take into account other measures that the household may qualify for, i.e., not using a 'whole house approach'. This has resulted in qualifying households receiving EWI, but the SAP has been raised to a higher level which then means they cannot then receive any other measures under other schemes due to the increased SAP rating. Companies should therefore be encouraged/forced to adapt a 'whole house approach' in every instance.</p>
41	<p><b>Community Housing Group</b></p> <p><u>Using local labour</u></p> <p>Using local suppliers and installers is key to keeping money in the Welsh economy. Through procurement consortia and other means, Welsh Housing Associations are already engaged in the process of working with local suppliers and contractors to build partnerships. This also makes a contribution to carbon reduction by reducing transport of materials and personnel. When considering the vision to organise the way we live in housing, carbon reduction can be affected not just through the analysis of production and consumption. Spatial factors, such as the location of new housing, access to public transport, employment sites and key services will also affect our collective carbon footprint in the future. There is also the</p>

issue of embodied energy which is the energy used in manufacture and movement of materials – there is a need to reduce carbon impacts from the manufacture and supply of construction materials, space and water heating, power for appliances and lighting, water and sewage treatment, and transport. It is vital that all agencies involved in development consider ways to reduce the carbon impact of construction and homes once completed – this will involve continuing to develop skills in the housing sector around energy efficiency, on-site energy provision and others. Effective procurement is a major part of what housing associations are doing. The 3% annual reduction is considerable due to its annual cumulative nature. Meeting this target will require sustained focus, change management and major investment in design, infrastructure development (including manufacturing) affecting housing construction, as well as the marketing necessary to require behavioural change in energy consumption by residents to ensure the delivery of these savings. The need for zero carbon developments is therefore essential, but to make substantive cuts in emissions we need to tackle the existing stock of housing. New build will make up 1/3 of all homes by 2050 - but 2/3rds of us will be living in existing homes.

Welsh Government also have the opportunity to look at supply chain issues in regards to the duty in the wellbeing of Future Generations bill, which should explicitly recognise and give regard to the international impacts of Wales through the supply chains of the sectors in Wales (the activities of Welsh businesses abroad, and the carbon emissions produced in Wales). There is a need to achieve the wellbeing of people within the environmental limits of the planet in a way that does not compromise the wellbeing of future generations. The implications of Welsh sustainable development policy does not end in Wales, but rather extends globally. Investment in retro-fit can be a major catalyst for regeneration, providing economic impact with positive effects on supply chain SMEs and the labour market, when linked to training and skill development.

We propose that the Welsh Government's established work on Community Benefits is developed into a legal requirement, through the wellbeing of Future Generations bill, to ensure that all public bodies in Wales consider how their procurement activities contribute to sustainable development and environmental, social and economic benefits. There are already a number of examples throughout Wales of purchasers securing additional social, economic and environmental benefits as part of procurement processes. Community Benefits can contribute to growth through the recruitment and training of economically inactive people and through opening up contract opportunities for smaller organisations. The CHC Group supports the continued development of the i2i approach and the Can Do Toolkit, and its

	<p>extended application across the public sector in Wales. In the years between September 2008 and December 2011, i2i have calculated that this work led to the creation of 2,581 job and training opportunities. Therefore, CHC welcomes the development of the Can Do Toolkit 2 – SME-friendly procurement. Linking regeneration to housing development, renewal and refurbishment can contribute significantly to the economic recovery of communities by providing targeted recruitment and training opportunities at a local level. We should be promoting ethical, fair trade and sustainable procurement practices and deliver public services which meet the social justice and equality needs of the citizens of Wales. WG could also consider enabling pan-Wales procurement of key construction materials to drive down costs.</p> <p>In order to future proof the supply chain, we must make sure that the supply chain is not underdeveloped and fragmented. There can be limited amounts of time to develop projects and gaps between large energy efficiency programmes can have negative impacts on supply chains. We must have long-term thinking, trust in joint working, one stop shops, coordination, cooperation, quality standards and control over the interface. We must not have piecemeal delivery. Renovation for energy efficiency must be coordinated with building system renovation to avoid poor use of resources and inefficient building performance. Suppliers only provide half the solution - not always noting the downsides and how to get around problems. Necessary building and industry capacity, the size of the supply chain and a lack of reliable suppliers available to assist with planning and carrying out work are all barriers to whole house retrofit. Solution development, design integrity, coordination and the sharing of best practice are key factors to helping develop the supply chain. The supply chain needs to be sufficiently geared up to produce and recognise whole house plans and be able to deliver whole house retrofits cost effectively over the lifetime of the dwelling. Whole house retrofits should be implemented in a manner that is not wasteful and is able to capitalise on the opportunity to protect against future climate change impacts (flooding, overheating etc.) and also ensure occupants can lead a more sustainable lifestyle e.g. through the provision of recycling, water harvesting, vegetable growing facilities, etc. In order to work together, bridges must be built between the industry players (e.g. manufacturers, distributors and installers) and markets (e.g. social housing landlords)</p>
<p><b>43</b></p>	<p><b>Low Zero Carbon Hub</b></p> <p>The Welsh supply chain is broad and able to support many aspects of energy efficiency works. But, within the construction and specifically the energy efficiency sector, it comprises mostly of small to medium enterprises. The network events that CEWales and the WLZCH have held</p>

in recent years have enabled dissemination of policy, consultations and best practice to this workforce across Wales. The continuation of the Generate Wales supply chain support programme is welcomed, although the opportunity to integrate further with the construction sector at large should be considered. This would allow for greater collaboration to be made, supporting ideas such as the Integrated Design<sup>21</sup> approach, developed to deliver near zero energy buildings, but demonstrates collaboration applicable to retrofit and energy efficiency projects equally.

During 2014 the WLZCH held two workshops<sup>22</sup> to disseminate the findings of the Zero Carbon Hub's end of term report for "Closing the gap between design and as built performance"<sup>23</sup>. The collaborative project involved 160 experts and seeks to put forward potential methodologies for the industry to demonstrate progress in achieving the "2020 Ambition". The "2020 Ambition" is to demonstrate at least 90% of all new homes meet or perform better than the design energy / carbon performance. A number of the report's findings may provide useful insight in identifying the weaknesses within the supply chain in Wales.

Further collaboration between the Zero Carbon Hub and the WLZCH continues. We are supporting and enabling Welsh representation on the following two projects:

- Tackling overheating in buildings - the ambition for this project is to translate what is known about the problem of overheating in homes into recommendations on the types of framework and actions which could be needed to address the issue in a systematic way<sup>24</sup>.
- Ventilation Strategies - the project intends to support indoor air quality objectives for new homes by carrying out an analysis of the construction process (end-to-end) and assessing in detail how the quality and performance of ventilation systems is or could be assured at each stage.

In order to sustain a strong and competent supply chain a long term programme of works needs to be evident to all. For example, there is currently no known programme beyond arbed 2, which is due to complete in March 2015 and Nest in March 2016. The 15 month gap between arbed 1 and 2 demonstrated a problem in retaining skills, which had developed to overcome the on-site issues of installing external wall insulation (EWI)<sup>25</sup>. There needs to be a clear message and timeline issued to the Welsh supply chain, who already deal with fast changing policy and funding mechanisms from the UK Government (e.g. GDHIF), to enable them to have confidence

	<p>to sustain their business and grow.</p> <p>21 <a href="http://www.cewales.org.uk/zero-low-carbon-hub/lowzero-carbon-construction/">http://www.cewales.org.uk/zero-low-carbon-hub/lowzero-carbon-construction/</a>  22 <a href="http://www.cewales.org.uk/cew/wp-content/uploads/Performance-Gap-All-Presentations.pdf">http://www.cewales.org.uk/cew/wp-content/uploads/Performance-Gap-All-Presentations.pdf</a>  23  <a href="http://www.zerocarbonhub.org/sites/default/files/resources/reports/Design_vs_As_Built_Performance_Gap_End_of_Term_Report_0.pdf">http://www.zerocarbonhub.org/sites/default/files/resources/reports/Design_vs_As_Built_Performance_Gap_End_of_Term_Report_0.pdf</a>  24 <a href="http://www.zerocarbonhub.org/current-projects/tackling-overheating-buildings">http://www.zerocarbonhub.org/current-projects/tackling-overheating-buildings</a>  25 Arbed 1 Scheme - Evaluation of the Warm Wales Programme, August 2012, Welsh School of Architecture, Cardiff University</p>
45	<p><b>Rockwool</b></p> <p>The supply chain in Wales is well developed due to long term investment in energy efficiency through schemes such as arbed. In particular, SMEs have been able to directly access opportunities via arbed which have enabled them to grow and strengthen their businesses. The clear framework and measures of success in the scheme, focussing on long term societal benefits beyond the installation of measures, enable businesses to plan and invest to meet these challenges head on and deliver strong results.</p> <p>The weakness of energy efficiency schemes is often in maintaining momentum. The transitions between different phases of schemes need to be managed carefully to avoid sudden dips in work volume which can severely affect SMEs, forcing them to lose skilled employees or go out of business altogether. This has an impact on the beginning of the next phase too as the supply chain needs to rebuild and reskill to fill the gaps.</p>
46	<p><b>SSE</b></p> <p>Under current ECO scheme, suppliers and the supply chain carry a number of risks due to the highly complex nature of the scheme criteria and the associated reporting and verification requirements. This means that a significant volume of measures carried out can be 'at risk' of failure at any given time, as suppliers have a duty of care to their customers to only fund measures which are subsequently approved by Ofgem. Not only does this have cash flow implications for the supply chain, it also increases the risk of fraud. It is right that there are strict criteria in place to ensure that all work carried out is done to an appropriate standard and that sufficient paperwork and assurance is in place to verify this and protect customers. However, any efforts to simplify and speed up this process in future schemes would help both suppliers and the supply chain. As a minimum, SSE believes that reporting and verification requirements should be set out clearly and in a timely fashion, with changes kept to a minimum and not enforced retroactively.</p> <p>A significant challenge facing the supply chain is the piecemeal nature of funding for energy efficiency schemes. SSE believes any energy efficiency</p>

	<p>policy should seek to provide stable funding over the long term, so as not to create peaks and troughs of demand, which can be difficult for the supply chain to manage.</p>
<b>47</b>	<p><b>National Trust</b></p> <p>Welsh Government could also support the development of a supply chain of retrofitting products in Wales by supporting suppliers through public procurement and promoting those suppliers whose materials meet standards for traditional buildings. It could also assist in the training of individuals with skills needed in the industry around installation, maintenance and repair of retrofit and efficiency measures.</p>
<b>51</b>	<p><b>Flintshire County Council</b></p> <p>DLOs in LA's and RSLs could develop in-house installation and/or maintenance teams for green technologies. This would free up officer procurement time and present a potential income opportunity for the private sector.</p> <p>We have experienced a lack of scalable quality in terms of small local renewable energy installers in North Wales. Good procurement solves some of this issue, but there is still development work to be done with Welsh businesses who with the right support, are more than capable of holding their own.</p> <p>There needs to be a much longer term strategy for renewable energy to compensate for the uncertain future of FITs and RHIs. If these schemes are pulled too soon, the Welsh Government may wish to or need to fill further gaps in the supply chain. Start stop funding is not conducive to a long term business strategy. We have seen the impact of that under all energy company obligations.</p> <p>Local delivery of energy efficiency, including advice, financial support, and installation shows greater value for money and greater impacts on fuel poverty compared with centralised services. This is supported through the community benefit toolkit and proven through the local economic multiplier.</p>
<b>52</b>	<p><b>Egnida</b></p> <p>The strength of the supply chain is it has some experience in delivering grant funded initiatives such as Arbed. The weakness is that it cannot survive on a sustainable basis delivering privately funded work and therefore the businesses collapse once the grant funded work is completed. Perhaps Welsh Government should consider encouraging more initiatives involving private housing (not RSL in-fills) to ensure sustainable employment around the inherent feast and famine of grant funded work.</p>

55	<p><b>WLGA</b></p> <p>Is energy efficiency an integral part of contract negotiation?</p> <p>There have been several years of trying to get whole life costings incorporated into contract pricing but still a long way to go.</p> <p>Lack of resource and available expertise to research energy efficiency measures into contracts and then incorporate them.</p> <p>There are a variety of sources of data on energy efficiency in the supply chain – Constructing Excellence Wales, BREAM standards but not always available or accessible to those directly involved in procurement.</p> <p>There needs to be investment in training to increase capacity across the procurement function</p>
56	<p><b>Carmarthenshire County Council</b></p> <p>Suppliers try to second guess opportunities based on unknown future funding opportunities. Better forward planning across the whole industry would help.</p>
58	<p><b>Pembrokeshire Coast National Park</b></p> <p><u>Strength</u>  Pembrokeshire is able to exploit some existing advantages of the fossil fuel industry in the area to develop and promote itself as an energy hub and continue to support the development and export of tidal energy technology. We could use Tidal Energy Ltd as an example of cutting edge work taking place and also the work of Marine Energy Pembrokeshire to share knowledge and expertise and to raise awareness of the current work and future potential towards energy security and efficiency.</p> <p><u>Weakness</u>  There is a lack of experience as energy efficient technologies can be considered as relatively new, resulting in limited numbers of people with an obvious wealth of accumulated knowledge to fall back on.</p>
60	<p><b>Alan McCarthy, Hafod Renewables</b></p> <p>Have one department to approve suppliers on a performance related creditability.</p>
61	<p><b>Stephen Vaughan, Housing Renewal Team, Torfaen County Borough Council</b></p> <p>I'm not sure what is meant by this term but if the actual materials and skilled</p>

	workforce needed to carry out improvements is meant then I think that there is a ready supply of materials and enough training centres available to give people the skills needed to meet demand.
<b>62</b>	<b>Andy Thomas, Butler &amp; Young Wales.</b>  this will develop with demand - PV is a great example. there is now a factory in Treforest that has a major source of funding via the FIT.
<b>63</b>	<b>Neil Evans, Carmarthenshire County Council</b>  Technical knowledge is building amongst local suppliers e.g. being able to provide energy saving calculations in addition to quotations.
<b>64</b>	<b>Kate Smith, KFS Consultancy Ltd</b>  strengths - there are more and more opportunities weaknesses - perhaps open to substandard workmanship/suppliers
<b>66</b>	<b>Phil Powell, Gwent Energy CIC</b>  there are a wide range of goods such as led lighting available in certain outlets but many people are unaware of them  one way to promote this might be energy shows to businesses where certain retailers with interesting kit could be promoted
<b>68</b>	<b>Daryl Price, DK Property Services</b>  The supply chain is fine, they will sell whatever the builders/contractors ask for.
<b>70</b>	<b>Carrie Parisella, Greendealshop.com Ltd</b>  Supply chain are eager to deliver Energy efficiency measures. Lack of funding is a problem. Brokerage doesn't really exist and channels of funding are virtually non existent.
<b>71</b>	<b>Jeffrey Smith, First Phase Electrical</b>  you can improve something when your not promoting it wales lost a solar panel production plant in Wales government is at fault
<b>73</b>	<b>Sian Edwards, J D Energy Services</b>  Often suppliers are not ready to deal with orders due to import lead times. Not enough affordable products manufactured in the UK
<b>74</b>	<b>Ian Titherington, City of Cardiff Council</b>  We need to learn the lessons of having procurement systems that advantgae local businesses, while staying within competition rules. States

	like Germany manage this far better than we do!
<b>75</b>	<b>Bex Gingell, Taff Housing Association</b>  don't know
<b>76</b>	<b>Rob Newell, Joyner PA Cymru Ltd</b>  By planning a long term programme over a continuous timeframe, the supply chain are then able to commit to longer term investment to jobs community benefits apprenticeships etc.
<b>77</b>	<b>Rachel Davies, City and County of Swansea</b>  Don't have any expertise in this area.
<b>78</b>	<b>Samir Hussien, site services</b>  add more collection centres for all types of refuse. trained the collection centre staff to deal better more friendly with customers and queries. privatize collection centre.
<b>79</b>	<b>David Powell, Vale of Glamorgan Council</b>  Not sure that there are particular problems here. Although insulation contractors are not interested in my business any more.
<b>81</b>	<b>Peter Draper, Rounded Developments Enterprises Ltd</b>  We have a very poor supply chain for the correct materials for many solid walled properties. We could be developing our own wood fibre insulation industry, but this requires Gov. to insist on using this type of insulation for solid walled buildings.  Most supply chains do not know the correct specification for individual buildings, they are just interested in supplying materials to make a profit. We need to have independent specifiers for projects so that profit does not cloud decisions.
<b>82</b>	<b>Mathew Davies, Grwp Cynefin</b>  Main strength is that if the organisation is well co-ordinated and gives better customer service then it cant go wrong and weakness is that it only takes one part of the supply chain to crumble and if that happens then there's a chance then that the whole thing will the fall apart.
<b>83</b>	<b>Sylvia Peat, Grwp Cynefin</b>  Need more housing
<b>84</b>	<b>J.Richard Davies, J.r.davies property services</b>

	Beurocracy
<b>86</b>	<p><b>Graeme Harrold, 3-e Electrical Ltd</b></p> <p>Small business struggle with a 20% levy on VAT for purchases when charging 5% to customers. The supply chain should be able to conduct B2B sales either at 5% or Zero for the end contractor to collect.</p>
<b>88</b>	<p><b>Allan Smith, Energy Effective Ltd</b></p> <p>If our name was British Gas the supply chain would fall over themselves to work with us but as a small company we are ignored. RWE criteria prevents any small company from providing their services. One weakness is that civil servants are more interested in protecting their jobs than actually doing their jobs and that inaction actually prevents innovation.</p>
<b>90</b>	<p><b>Nicola Vaughan, City Energy South Wales Ltd</b></p> <p>experienced and accredited suppliers/installers short term funding from energy companies and hard to meet criteria for Green Deal plans make it difficult to increase volumes</p>
<b>91</b>	<p><b>Elwyn Williams, E.W.Consultancy</b></p> <p>Too many supply chain people trying to make a fast return on their capital outlay &amp; only in it for the short term,not the long haul.</p>
<b>92</b>	<p><b>Neil Lewis, Robert Owen Community Banking Fund</b></p> <p>Local companies would grow.</p>
<b>93</b>	<p><b>Jonathan Hyde, Bron Afon Community Housing Ltd</b></p> <p>Strengths are PAS2030 control measures to eliminate contractors who cut corners and these need to be eliminated. The world is going IT and communication is being lost. With an ageing population in the UK this change should be managed to get the message over.</p>
<b>95</b>	<p><b>Stewart Matthews, Torfaen County Borough Council</b></p> <p>I do not work in this area.</p>
<b>97</b>	<p><b>Alison Fuller, Groundwork North wales</b></p> <p>more information</p>
<b>99</b>	<p><b>Ben Dever, adever engi cyf</b></p> <p>don't know</p>
<b>101</b>	<p><b>Mark Wilcox, Business Step Up</b></p> <p>In my line of business would strongly recommend we agree to a meeting to</p>

	discus?
<b>102</b>	<p><b>Robert Vokes, Joyner</b></p> <p>We are part of the supply chain providing measures and as such have answered this elsewhere.</p>
<b>103</b>	<p><b>Steve Martin, Caerphilly County Borough Council</b></p> <p>A number of different approaches being adopted possibly confuse the supply chain, this is where a national procurement agreement could be beneficial</p>

	<b>Question 7 responses: Skills and Education.</b>
	<b>What opportunities and barriers are there for skills and education to develop a qualified and skilled workforce in the field of energy efficiency?</b>
<b>8</b>	<p><b>NSA Afan</b></p> <p>Consider adding energy efficiency training and green jobs training to the Welsh Government apprenticeship schemes as a specific topic to be separately funded. Establish an award scheme for excellence funded by the Welsh Government and industry sponsors.</p>
<b>9</b>	<p><b>Merthyr Tydfil County Borough Council</b></p> <p>Very short term national policies – so reluctance to train for a long period, as work may disappear over night – e.g. change to FIT for solar, which decimated an industry overnight.</p>
<b>10</b>	<p><b>Tony Leahy</b></p> <p>Energy Efficiency has always been part of the educational frameworks relating to the engineering, building and building services industries but to a limited content. The content can be even less in other vocational and academic learning routes.</p> <p>If we are to improve Energy Efficiency for Wales we must put it into the thought process of our learning systems similar to other European and Global Countries. A suitable programme for schools, FEIs, Industry and People not in Education or Training should be designed and implemented not by awarding bodies but by the experts and more importantly end users.</p> <p>It needs to be modular and sized accordingly being as brief or as complex as necessary to meet the required learning level of the group in question.</p> <p>A key outcome would be the knowledge gained by all beneficiaries to form an educated response and support to energy efficiency proposals in the future to the point where self efficiency and regulation may be effected.</p> <p>To my knowledge bits and bobs are being discussed/implemented on a regional fractional basis and a Welsh Government structured “pan Wales” approach is needed which would be more beneficial and mostly more cost effective.</p> <p>It is feasible to also introduce a New Apprenticeship route – The Energy Efficient Engineer where the content would include specific accredited modules of study and the same modules could be offered to up-skill existing</p>

	<p>personnel as part of a CPD exercise.</p> <p>There are many streams to energy efficiency and the Green Deal Project seems to target the end user but the limited feedback I have on this that it has potential but for some reason it is under utilised. I would ask why?</p>
<b>11</b>	<p><b>Cert Sure</b></p> <p>The main opportunity we can see for the workforce would be able to develop a new market for energy efficiency product manufacturers, designers, installers and auditors. This could also create a career map/plan for new entrants in to the construction industry and show where a career can lead the individual on too. However we can see some potential barriers, which are -</p> <ul style="list-style-type: none"> <li>• Cost of upskilling current workforce to a basic core skills level then the additional training in new technologies and energy efficient measures</li> <li>• Uncertainty in market place – is there a sustainable business model?</li> <li>• Difficult attracting new entrants in to apprenticeships as the perception of the construction industry isn't seen as 'sexy'</li> <li>• Time taken to achieve the critical mass of 'trained' individuals for the expected demand</li> </ul>
<b>12</b>	<p><b>Pembrokeshire County Council</b></p> <p>The Skills Implementation Plan for Wales is encouraging. Properly funded apprenticeship schemes are needed to assist this process. Employers should be encouraged to ensure 'succession strategies' in businesses where graduates/school leavers are recruited and mentored by experienced practitioners at all levels. Including 'blue' and 'white' collar disciplines. 'Green collar' may be a better term!</p>
<b>13</b>	<p><b>ICE</b></p> <p>Skills in the field of energy efficiency should be considered as 'in the workplace' training delivered by specialists. The bigger problem is considered to be the general standard of education in Wales which seems to have fallen behind other parts of the UK, Europe and many of the developed nations. Individuals from elsewhere are more likely to get the jobs in the first place and then the 'workplace' training. The vision suggests that energy efficiency measures will be put in place by local suppliers, this is doubted and more likely that it will be implemented by large companies operating nationally and even beyond.</p>
<b>14</b>	<p><b>ETI</b></p> <p>The Welsh Government could work with the new Energy Systems Catapult,</p>

	<p>local authorities and educational establishments to offer appropriate training courses and qualifications. As part of its Smart Systems and Heat Programme, the ETI will also consider how appropriate skills and resources can be developed in Wales as part of a large-scale demonstration, working closely with Bridgend and Welsh Government.</p>
<b>15</b>	<p><b>Wolseley</b></p> <p>The punitively high cost of training and accreditation is a serious barrier to businesses and individual tradesmen to working in the field of energy efficiency. In our Plumb Center ‘Manifesto for a more energy conscious society’<sup>25</sup> we have dedicated an entire chapter to the issues related to training and accreditation. In this document we calculate that for an individual to go from being untrained to achieving Gas Safe, MCS and Green Deal accreditation could cost in excess of £16,000 in fees alone, before taking into account lost earnings.</p> <p>We believe that small business should be incentivised to achieve accreditations and that government should develop a single Energy Efficient Technician Certification Scheme (EETCS) to cover both MCS and Green Deal Certification. We would also strongly recommend that in mapping accreditations and qualifications that common skills should be transportable to avoid high levels of duplication and wasted time, a cause of huge frustration to installers. The ‘passport’ of skills would then become the single source of accreditations reducing cost, time and confusion.</p>
<b>16</b>	<p><b>Miller Research</b></p> <p>Higher levels of ownership of energy production would per se increase employment opportunities through increased retention of profits, circular economy benefits and engagement in higher-value activities.</p> <p>On a practical level there is still much more that could be done to ensure that schools and FEIs build better links with employers, through meaningful placements, hybrid courses and constant interaction I support of CPD. Whilst some FEIs (Llandrillo Menai, for example) are very active in this space, others have a long way to go.</p> <p>One area that should not be missed from the skills system is that of equipping people to become entrepreneurs, in energy efficiency and other sectors.</p>
<b>18</b>	<p><b>Torfaen County Borough Council</b></p> <p>Existing energy funding has led to the creation of apprenticeships and an</p>

<sup>25</sup> <http://www.wolseleysbc.co.uk/Download>

	<p>increase in skills and education amongst local worker, however, there is still a need for greater levels of training amongst those involved in the surveying and installing of measure. Increasing the opportunities for surveyors to gain qualification that are nationally recognised will help to achieve this. However, employers can be reluctant to invest in training if there is a risk that there will be no funding or work for their staff.</p> <p>It is essential that the education and further education system in Wales adapts to the changing skill sets required in relation to the planning and implementation of energy efficiency works. This would help Wales to correlate with an emerging labour market and incentivise Welsh business growth and the Welsh pound (£). Ensuring that the school and college syllabus across Wales reflects an increasing demand regarding the energy efficiency industry and jobs is essential to ensuring a ready and competent work force. Planning, identifying and undertaking proactive work force development early on regarding energy efficiency is essential for Wales to fully benefit from the EU carbon legislation and increased investment in this area (including ECO).</p>
<p><b>20</b></p>	<p><b>Isle of Anglesey County Council</b></p> <p>Despite a distinct lack of detail about the skills and education that would be needed to fulfil this, we agree that this is an important area for growth, particularly important on Anglesey with the development of Energy Island. This means that adequate resources and a co-ordinated approach will be needed to meet the demands of ensuring sustainable energy sources, suitably qualified and skilled work-forces and thereby reducing unemployment and poverty. It is therefore essential that government educational policy particularly the upcoming curricular changes (at GCSE level) and other developments complement and strengthen schools' abilities to develop skilled and confident young people in the STEM subjects.</p> <p>The Skills Implementation Plan for Wales should therefore lead to a seamless transition from the under-19/schools and college sectors in order to fulfil the ambitions outlines in the strategy.</p>
<p><b>21</b></p>	<p><b>Ceredigion County Council</b></p> <p>As described in the previous question, one of the barriers identified in ECO and CESP schemes has been the controls exerted by the energy companies on only using those contractors on their framework. An option to overcome this would for Government to ensure that the energy companies use one overall framework that will enable contractors to only need to complete the procurement requirements once for all energy companies as opposed to individually for each.</p>

	<p>The skills and accreditation requirements for undertaking energy efficiency installations can be confusing therefore improved guidance and clarity on the 'step process' required to receive full PAS2030 accreditation would be beneficial, and improved links with colleges that offer such training.</p>
<p><b>22</b></p>	<p><b>Ofgem</b></p> <p>There may be opportunities for the Welsh government's energy efficiency strategy to promote the development of skills and qualifications that align with standards of installation across other energy efficiency schemes such as ECO and the Green Deal.</p> <p>The ECO Order requires that all measures notified to Ofgem under ECO be installed in accordance with the requirements of the <i>Publicly Available Specification 2030:2014</i> (PAS). PAS covers the majority of energy efficiency measure types included on the ECO Measures Table<sup>6</sup>. It provides a common standard of practice for installing measures and therefore level of skill which the workforce should attain. Installers become certified against PAS by one of 25 Green Deal Certification bodies<sup>7</sup>, thus providing a means of demonstrating that they meet the standard. Installations financed through the Green Deal must also be carried out by PAS accredited installers.</p> <p>6 Energy Companies Obligation (ECO): Measures Table  <a href="https://www.ofgem.gov.uk/publications-and-updates/energy-companies-obligation-eco-measures-tables">https://www.ofgem.gov.uk/publications-and-updates/energy-companies-obligation-eco-measures-tables</a></p> <p>7 A list of Green Deal Certification bodies can be found on the Green Deal Oversight and Regulation Body  <a href="http://gdorb.decc.gov.uk">http://gdorb.decc.gov.uk</a></p>
<p><b>23</b></p>	<p><b>Energy Savings Trust</b></p> <p>Through our experience of working with the supply chain we feel that the Welsh sector remains reactive to policy, frequently UK Government, rather than proactively seeking to demonstrate a low carbon future. The opportunity that a low carbon future provides, in terms of local decentralised energy and storage is within a 5-10 year framework, not in the distant future. Smart meters and the associated applications that will follow (for mobile devices, e.g. the Nest learning thermostat or British Gas Hive<sup>13</sup>) will alter how customers interact with energy and their bills. The supply chain needs to be motivated and invigorated to enable Wales to lead the UK with the smart meter roll out.</p> <p>We feel that there are opportunities for Swansea to be a demonstration area, piloting a supply chain model for Wales and the benefits of smart metering – re-engaging people with their energy use. The large scale lagoon project and aspirational project CREES (Swansea City Council) are both likely to deliver</p>

	<p>low carbon energy to the city within a five year time frame. There are great opportunities for the local colleges, academia and supply chain to develop and learn from both projects.</p> <p>There is significant opportunity for the supply chain to link more strongly with the academic network in Wales, which is providing innovative products and approaches to energy efficiency. For example the following projects could help develop a more skilled workforce:</p> <ul style="list-style-type: none"> <li>• BEST<sup>14</sup>: specifically the courses on existing buildings will reach a broad cross section of the supply chain, from architects, surveyors and contractors.</li> <li>• WEST<sup>15</sup>: specifically the training delivered through the Low Carbon Built Environment and Solar PV themes.</li> <li>• Other research projects: For example the Sustainable Building Envelope Demonstration (SBED) project<sup>16</sup> and Smart Operation for a Low Carbon Energy Region (SOLCER)<sup>17</sup> are providing demonstrations in Wales of what energy efficiency retrofit programmes could incorporate and achieve.</li> </ul> <p><sup>13</sup> <a href="https://nest.com/support/article/How-to-read-the-Nest-Energy-History-on-the-Web-and-Mobile-apps">https://nest.com/support/article/How-to-read-the-Nest-Energy-History-on-the-Web-and-Mobile-apps</a> or <a href="https://www.hivehome.com/hive-active-heating">https://www.hivehome.com/hive-active-heating</a></p> <p><sup>14</sup> <a href="http://www.best.cf.ac.uk/">http://www.best.cf.ac.uk/</a></p> <p><sup>15</sup> <a href="https://www.westproject.org.uk/">https://www.westproject.org.uk/</a></p> <p><sup>16</sup> <a href="https://sbed.cardiff.ac.uk/">https://sbed.cardiff.ac.uk/</a></p> <p><sup>17</sup> <a href="http://www.solcer.org/">http://www.solcer.org/</a></p>
24	<p><b>Neath Port Talbot CBC</b></p> <p>Opportunities for skills and education to develop a qualified and skilled workforce:</p> <ul style="list-style-type: none"> <li>• Welsh Government Backbone projects under the European Social Fund could provide an up-skilling programme (2015 – 2020)</li> </ul> <p>Barriers for skills and education to develop a qualified and skilled workforce:</p> <ul style="list-style-type: none"> <li>• Potential to enter the energy efficiency job markets post qualification; if little jobs are available then there would be little incentive to enter into education in this field</li> </ul>

	<ul style="list-style-type: none"> <li>• Locality of potential jobs may not appeal to certain geographical areas which are far removed geographically from job hubs in the field of energy efficiency</li> <li>• The cost of training courses may be too high, especially in areas of high deprivation</li> </ul>
26	<p><b>Wrexham CBC</b></p> <p>Barriers include the cost for training, competitive business market (which requires price reduction); lack of local training facilities; shortage of further educations establishments and difficult access to knowledge. There are opportunities to break down silo working between and within organisations.</p>
27	<p><b>Glass and Glazing Federation</b></p> <p>The GGF are extremely supportive of skills and education, having set up FENSA, the original Competent Person scheme for replacement windows and doors in England and Wales. The GGF have also been involved with DCLG in establishing the minimum technical competencies (MTC) required from an installer and surveyor. The GGF fully supports training and skills, having established a training company, GGF Training Ltd who are involved with the co-ordination and assessment of the operatives under the FENSA scheme. They also are developing training courses for the industry sector to improve the skill set.</p> <p>One of the main barriers to developing a qualified workforce stems from the fact that many who have been working in the sector are wary about being assessed for a job they have been undertaking for many years. The absence of a requirement for a qualified workforce in this sector, where competence was the accepted norm, has resulted in certification and qualification being a difficult sell and potentially causing distress to the operatives identified.</p> <p>To aid this barrier, if there were financial incentives available, then the training and assessment could be undertaken without additional fees to the installation company or operative. The GGF would also like to promote the benefits of having a trained and qualified workforce to the industry to assist with the cultural changes which are required.</p> <p>Finally, the GGF are keen to highlight the need for funding for companies in this sector to help them fully engage and embrace energy efficiency schemes. This funding would help tackle the inconvenience of time and cost currently faced in order to become accredited suppliers, taking the Green Deal as an example, and such schemes do not necessarily ensure extra work.</p>

28	<p><b>Citizens Advice Bureau</b></p> <p>The high costs of qualifying across multiple Government schemes such as the Green Deal, or Renewable Heat Incentive could prohibit small installers from being able to train to deliver more than one type of measure; it is clearly in the Government's interests to make sure that all parts of the supply chain are upskilled and confident in delivery. We recommend that the Welsh Government engages the supply chain directly to determine what kind of support would be most effective- and how they would like this to be delivered.</p>
31	<p><b>Constructing Excellence in Wales</b></p> <p>The skills within the supply chain are considered to be there, however, in order for them to be maximised and for quality workmanship to occur, greater emphasis on planning and time allowance needs to be ensured in order to allow a skilled workforce to carry out their work. From the work that we have been involved with, the workforce are under high levels of pressure particularly regarding time which can sometimes impact upon the quality produced. A degree of supervision is also considered to be required.</p> <p>We feel that there is an opportunity to partner with local colleges with regards to developing a qualified and skilled workforce. An example of this which had worked well is the Penarth Learning Community Campus <sup>8</sup> which used apprentices to build part of the building ensuring that key skills were embedded early on.</p> <p>Energy efficiency should be inbuilt into training programmes to cement its benefit, relevance and requirement. That way if gaps in programmes were to occur, the skill sets would already have been embedded into common practice.</p> <p>An example of how greater integration and collaboration can support greater energy efficiency was provided by the Building Research Establishment (BRE) MATRID project. CEW and BRE delivered 4 workshops across Wales to construction professionals in 2014. Details can be found via the link in the following footnote. <sup>9</sup></p> <p><sup>8</sup> <a href="http://www.cewales.org.uk/cew/wp-content/uploads/Penarth-Learning-Community.pdf">http://www.cewales.org.uk/cew/wp-content/uploads/Penarth-Learning-Community.pdf</a></p> <p><sup>9</sup> <a href="http://www.cewales.org.uk/2014/11/integrated-design-evolving-the-design-process-to-deliver-near-zero-energybuildings-llandudno/">http://www.cewales.org.uk/2014/11/integrated-design-evolving-the-design-process-to-deliver-near-zero-energybuildings-llandudno/</a></p>
32	<p><b>British Gas</b></p> <p>British Gas employs 30,000 people across the country - we provide training and skills that enables our people to provide a quality service to our</p>

customers.

We now have six Energy Academies across the UK training our people. They are in Dartford, Thatcham, Leicester, Leeds, and Glasgow – as well as in Wales, at Tredegar. Through these academies we train people to become energy experts.

Each of these sites includes a “green” training area where apprentices learn about low carbon technologies of the future, including solar panels and biomass boilers.

Since Tredegar was opened in 2010, more than 2,500 individuals have received training there. Last year, more than 270 trainees passed through the academy there – with a large number of these being Green Deal advisors. During 2014, we trained 42 smart metering apprentices at Tredegar with plans for this activity to continue in 2015.

Earlier this year, a partnership between the Nest programme, based at Tredegar, and the Prince’s Trust Wales saw a group of young people that were considered NEET from the surrounding area undergo a five week pre-employment training programme. As a result of this course, a number of those who took part went on to secure a work based learning apprenticeship supported by Nest’s contractors.

#### Case study: Generation Green

In addition to training and investment in skills, British Gas runs an education programme for schools across Wales, England and Scotland. Free of charge, Generation Green provides learning resources and educational experiences as well as investing millions of pounds in sustainable energy technologies in schools.

The programme seeks to inspire curiosity in young people and help bring energy to life in a fun and innovative way, while reducing energy consumption for schools. In the past year, schools in Rhyl, Llandudno and Cardiff have won energy makeovers that have resulted in the installation of equipment including solar panels, new lighting, and insulation.

At Bryn Deri Primary School in Cardiff, we have recently completed work to install measures that we expect will help the school reduce electricity usage by more than a third (39%) and save £22,780 on energy bills per annum.

The work includes solar panels, new lighting and controls, as well as an onsite display screen which shows solar generation and electricity usage in a

	child-friendly manner.
<b>33</b>	<p><b>Saint Gobain</b></p> <p>As per the response to question 3, the EEPB report outlines the barriers (page 8 for education and skills issues) and proposes solutions (page 20 to 21).</p> <p>It is vital that any energy efficiency measures installed under Government schemes be done to the highest possible standard to protect the consumer and ensure funds aren't wasted. This means having a strong quality framework building on the work started with PAS2030 standard, but ensuring this standard is greatly improved and properly enforced by the relevant oversight body.</p>
<b>34</b>	<p><b>CLA Cymru</b></p> <p>Perception is the largest barrier to any potentially burgeoning career path – a sector that can provide opportunity and career progression is more likely to attract high quality individuals in that field. Such an industry can only be achieved and driven through private enterprise. Private enterprise requires an open-market culture free from red tape and bureaucracy.</p> <p>Education should start at school; to a certain extent it already does, with initiatives which increase awareness of the natural environment. The voice of children is one of the most powerful tools to realise widespread behavioural change and this should be more widely utilised.</p> <p>If we are to continue to benefit from a complete energy efficiency supply chain within Wales, it is imperative that our schools and universities offer relevant courses to ensure the provision of a professional workforce.</p>
<b>35</b>	<p><b>PLANED</b></p> <p>While we welcome the support for the development of post 19 education to prepare a qualified and skilled workforce, there should also be the opportunity for businesses, particularly SMEs to access workforce training to upskill and extend opportunities for existing employees. The displacement seen through previous initiatives, and the subsequent loss of local knowledge and experience has wider impacts than the 'job for a job' thinking suggests.</p>
<b>38</b>	<p><b>Hywel Dda University Health Board</b></p> <p>No comment</p>
<b>41</b>	<p><b>Community Housing Group</b></p> <p>Issues such as climate change and energy efficiency need to be part of the curriculum in schools and we need more climate change young people's</p>

champions. Furthermore, there should be a promotion of ECO schools.

Whilst it is important to maximise energy efficiency and renewable technology installations as priorities to create jobs, reduce fuel poverty, increase our energy security and reduce carbon emissions, research has identified that there are a number of skills and knowledge gaps likely to impede our capacity to meet energy efficiency targets <sup>5</sup>. The report referenced to in the footnote below provides a range of useful recommendations in order to help us meet energy efficiency targets. It is clear from the report that we need increasing awareness of environmental technologies and training providers primed to step up and supply the required training. We need a strong drive forward and a clear direction and incentives for employers to take action. CREW Regeneration Wales' research into the skills gaps for professional practitioners clearly illustrated that this issue is not limited to the trade level of skills development but identifies critical skill gaps in the professional services sector in key provision including planners, architects, engineers, road designers and landscape architects.<sup>6</sup> There is a need for professional education. Meeting targets will require sustained focus, change management and major investment in design, infrastructure development as well as the marketing necessary to require the necessary behavioural change. Design is seen as a barrier, including the design of systems, having no integrated provision of design and delivery, the lack of holistic thinking and a whole house plan. Furthermore, there needs to be improvement in the number of people who can create and deliver a plan and awareness of architects along with an understanding of the full range of measures available-do designers understand how the measures work together and the detrimental impacts of some actions when combining measures? Installers need to understand from the outset that every home is unique and that there won't be a one size fits all energy retrofit solution.

CHC would like to reference the work that the BRE in Wales have been undertaking in relation to Understanding heat losses from solid Walls, investigating how solid walls work, their real 'U' values and how moisture tracks through them. This work should help to inform policy at Governmental level and also highlight 'Un-intended Consequences' of conventional interventions. Furthermore, Peter Draper at Rounded Developments has been undertaking research into the Responsible Retrofit of Traditional Buildings-this work is also important for understanding how well solid walls perform and any skills gaps that need to be addressed in undertaking energy efficiency works to properties.

It is essential that energy efficiency measures are installed correctly for the

full benefits to be realised. Incorrect installation can lead to detrimental impacts rather than improved conditions for householders and reduced CO2 emissions. To ensure that technical problems can be overcome, installation of low carbon technologies should involve a good quality, consistent pre-works survey to establish the standard and requirements of properties before site works commence. Furthermore, an appropriate design then needs to be conveyed to those undertaking the works on site so that time taken to provide good quality design detail is not lost on site. Good quality workmanship is also essential to allow design to perform as planned. Attention must be paid to intricate detailing e.g. the difficulties when dealing with solid walled properties to avoid water penetration, etc. This can be time consuming to apply on site.

The issue of 'hard to treat' homes remains a difficult problem in Wales, largely due to the high number of urban properties built before 1920 and the number of poorly constructed rural properties with solid walls. The challenge from the existing stock is enormous and one which poses problems across Wales due to the various age ranges of the stock and the varying degrees to energy saving techniques adopted. Hard-to-heat homes are going to be the hardest to upgrade. The WG needs to work with its partners to address skills gaps in the energy sector in particular. The particular age profile and state of existing housing stock, still including solid walled dwellings – requires grant targeting and specific regeneration schemes.

One has to pose the question of whether we have the right skills to help organisations in Wales take advantage of opportunities in terms of in-depth home energy advice, identifying the most appropriate solutions for particular buildings (new/existing/older buildings), and installing more expensive measures like solid wall insulation and micro generation. It is also necessary to consider whether energy efficiency skills and knowledge amongst builders and other trades people can be improved to allow them to encourage building owners and householders to consider energy efficient solutions. Obviously, for this to work, trades people need to understand the benefits to them of providing such advice. The public therefore need to trust them and they must be able to refer on to independent advice where appropriate. Trades people need to understand how and when to offer information. There is a lack of / shortage of skills with few trades people experienced in retrofit.

There are few experts that understand all the issues and whole house retrofit requires installers that are multi-skilled. Other barriers include the technical skills of surveyors and designers and installer expertise. Lack of knowledge can also be a barrier including whether we know enough about how whole house retrofit actually works / affects buildings? Installers need to understand

what training is available and how to access it. As well as upskilling Installers, there is a need to introduce training and apprenticeship schemes to make sure installation skills are not lost to the industry. This includes improving links to schools/education, educational programs at all levels (including professional training and development), improvements to education and training throughout the industry in order to replicate the design and construction skills, knowledge and experience gained through experimental retrofit projects, the increased presence of skills on the government agenda, more education around fabric first, more retrofit related CPD, development of a comprehensive skills strategy to help provide the skilled workforce that will be required, relevant accreditation and education and training in the use of sustainable energy technologies and their economic, social and environmental benefits. Education is needed for suppliers, installers, surveyors, designers, project managers (how to run advanced renovation projects) and architects. There is a need to implement educational programs for in-house consultants, planners and on site workers and/or invest in technology clustering as a way to overcome technology dependant lack of skills and competences.

A key opportunity for developing skills and education is the ability to learn from each other and share best practice. This includes sharing intelligence, raising awareness, seminars to share knowledge, promotion of case studies, using demonstration projects and open days at properties as showcases and learning opportunities, determining the barriers and best practice for discussion at workshops, establishing stakeholder communities, more participation in research, making the tools and acquired experience available to all actors, a medium of proactively disseminating information to stakeholders and focused, regular collection of information from stakeholders, involvement of experienced research teams in whole house retrofit projects to minimise the gap between predicted and actual performance and more. CHC welcomes the work of the Energy Saving Trusts supply chain team and generate Wales network in particular. Action at the community scale is vital for engagement and motivation of people to take action. Effective community engagement requires an ongoing process with trained professionals. RSLs have played a key role in the Arbed programme and have proven experience in combining investment in energy saving measures with job creation. The majority of the works in the Arbed scheme were commissioned and managed by housing associations which achieved significant regeneration outcomes by the use of binding social inclusion clauses in procurement contracts.

Renewable technologies

	<p>There are barriers to the design, installation, operation and maintenance of renewable energy systems in particular. Research has shown that renewable energy projects which have involved the community in their development from the outset have seen a positive behaviour change and view of renewables of over 90%, compared to those renewable energy projects in which the community is not directly involved (30%). Community developed micro-energy schemes can have significant social and economic impacts, as demonstrated by recent research by CREW Regeneration Wales, the University of South Wales and the University of Glamorgan (this research can be viewed on CREW's website in February 2015) Despite a significant increase in skills, interest and funding in Wales for Community renewable energy over the past 5 years, there are significant barriers to communities developing their own micro RE systems. Many of these significant barriers lie in the planning system, often resulting in over 5 -10 year delays. More assistance, training and advice for both communities and relevant planning officers would facilitate community – led energy projects.</p> <p>Planning permission requirements can be a barrier e.g. listed buildings with Areas of Outstanding Natural Beauty (AONB) restrictions can be in conflict with whole house retrofit. RSLs have the ability to start addressing these barriers to design, installation, operation and maintenance of renewable heating systems in particular through the relevant expertise in the sector and the willingness to evaluate the effectiveness of such technologies and engage and inform tenants. Due to many reasons (including the cost and the need for renewable heating to be used more widely and be more universally acceptable), from liaising with members, renewable heating projects within the social housing sector in Wales have tended to be small and usually pilots without procurement in large quantities. RSLs are still assessing the effectiveness, running costs and tenant satisfaction from this/last year's installations. What is evident from projects is that householder education is an important factor to improve both the acceptance and operation of renewable heating systems.</p> <p>5 <a href="http://www.buildupskillsuk.org/94/BUSUKFinalReportMay2012.pdf">http://www.buildupskillsuk.org/94/BUSUKFinalReportMay2012.pdf</a>  6 <a href="http://www.regenwales.org/en/resources/publications/">http://www.regenwales.org/en/resources/publications/</a></p>
43	<p><b>Low Zero Carbon Hub</b></p> <p>There are significant opportunities to develop a more qualified and skilled workforce within the field of energy efficiency. Because of our housing stock, rural and off-grid communities and levels of fuel poverty, enabling a vibrant workforce here would not only help the Welsh economy but develop business models and opportunity to export skills beyond Wales and the UK.</p> <p>The WLZCH are aware of a number of skill gap analysis projects underway</p>

in recent years and believe these will identify the needs of the workforce and opportunities to develop a qualified and skilled workforce. Key areas that the WLZCH are keen to see improved are:

- Understanding the value of energy efficiency - our 2014 research around green mortgages, EPC's and property value highlighted the opportunity for engagement with home owners, but there is a disconnect between surveyors and estate agents who remain nervous / unmotivated to promote the advantages of energy efficiency or renewable technology retrofits.
- Traditional and Heritage skills - the findings of STBA's Responsible Retrofit<sup>26</sup> outlines a number of opportunities to be applied to properties built pre-1919, and the training needed by industry to undertake appropriate works.
- Internal and external wall insulation - The general skills attached to EWI and IWI installation is woefully lacking. There needs to be a national standard, with a clear structure and direction based on scientific research, and with a realistic pricing structure for rewarding a well executed job, with independent verification, and no funding for work not undertaken correctly. There is currently no incentive for any member of the supply chain currently involved in EWI or IWI to make correct decisions; the whole reward structure is flawed. The surveyor does not get paid if the house is not suitable, the installer is not paid if they do not do the work, and there is no mechanism for checks to ensure installation is carried out correctly.
- Monitoring and evaluation of refurbishment works - there are limited results of current refurbishment projects available in Wales. We would encourage the Welsh Government to share any case studies and findings from Nest and arbed phases 1 and 2 as soon as possible.
- Smart grids and smart meters - the WLZCH would be supportive of Wales readying itself to make the most of the opportunity smart grids will play in reducing Wales' carbon footprint. For rural communities they offer a mechanism to establish local low carbon energy networks, a source of income (through RHI and FiT) and a mechanism to assist delivery of energy efficiency programmes.

There are barriers to delivering training to a supply chain consisting predominantly of SME's. Their business demands mean that it's not always practical or possible for staff to be released for training. Embedding ESDGC and energy efficiency retrofit within colleges and academia within Wales would assist in ensuring that those entering the workforce are engaged with the need to reduce Wales' carbon footprint and the role that they can play in

	<p>doing so.</p> <p>26 <a href="http://www.sdfoundation.org.uk/downloads/RESPONSIBLE-RETROFIT_FINAL_20_SEPT_2012.pdf">http://www.sdfoundation.org.uk/downloads/RESPONSIBLE-RETROFIT_FINAL_20_SEPT_2012.pdf</a></p>
<b>45</b>	<p><b>Rockwool</b></p> <p>Installation of energy efficiency measures is often undertaken by SME contractors. Such businesses need confidence in the market to invest the time and money to take on new employees, improve skills and gain any necessary certification.</p> <p>Larger businesses, such as ROCKWOOL, also have a part to play in creating opportunities for skills and education. We offer specialised training and guidance through the certification process for the installation of solid wall insulation. The different stages of installation of solid wall insulation are comparable to other building trades, e.g. joinery and wet trades, and retraining so building contractors are able to offer a wider range of services can open the door to ongoing employment and growth opportunities for SMEs.</p>
<b>51</b>	<p><b>Flintshire County Council</b></p> <p>Research and skills development in energy efficiency should be included as a requirement of new developments through planning applications, to ensure there is local benefit and local knowledge retained. We have included necessary training and development costs as a part of our projects through procurement. This can ensure that an energy efficiency programme is more than just panels on roofs and insulation on walls and that benefits are retained locally.</p>
<b>52</b>	<p><b>Egnida</b></p> <p>The biggest barrier to general development of skills and training is the feast and famine in the supply chain as highlighted above. Unless this is resolved no businesses can justify any meaningful amounts of time and financial investment in developing people.</p>
<b>55</b>	<p><b>WLGA</b></p> <p>The raising of awareness in schools in itself is not enough, energy efficiency must be embedded in schools so that the principles become a way of life. Pester-power from child ambassadors in Schools takes energy efficiency to a far wider audience.</p> <p>There is a need to identify the skills required for the future to provide a qualified and skilled workforce.</p>

	<p>There will also be the need to build on the wider economy to provide clarity and a long term commitment for the future capacity needs which will not be affected by the political cycles.</p>
<b>56</b>	<p><b>Carmarthenshire County Council</b></p> <p>Suppliers try to second guess opportunities based on unknown future funding opportunities. Better forward planning across the whole industry would help.</p>
<b>58</b>	<p><b>Pembrokeshire Coast National Park</b></p> <p>There is an opportunity to train workers previously skilled at what are usually considered more traditional technologies or industries e.g. jobs in the fossil fuel energy sector for jobs in the field of renewable or energy efficiency. With the closure of a refinery in Milford Haven there is an even greater possibility for re-training opportunities.</p> <p>The barrier to this is that re-training may be viewed as an obstacle and/or threatening, rather than challenging, interesting and presenting new opportunities, and accessibility/availability of highly skilled trainers may be difficult.</p> <p>Further opportunities should be possible by working with schools and colleges. This can be addressed by provision of more specific targeted post aged 16 vocational traineeship type courses or apprenticeships.</p> <p>The barrier to this is that post 16 education budgets are reducing and priority may therefore be focussed on statutory more traditional subjects.</p>
<b>60</b>	<p><b>Alan McCarthy, Hafod Renewables</b></p> <p>NO funding for apprentices is limiting expansion.</p>
<b>61</b>	<p><b>Stephen Vaughan, Housing Renewal Team, Torfaen County Borough Council</b></p> <p>I'm not informed enough to comment accurately but can only say that from the point of view of our team's involvement in this field that there seems to be no shortage of skilled tradesmen to carry out operations.</p>
<b>62</b>	<p><b>Andy Thomas, Butler &amp; Young Wales.</b></p> <p>THis again will be market led though I do not see enough development of this awareness and knowledge in schools and colleges.</p>
<b>64</b>	<p><b>Kate Smith, KFS Consultancy Ltd</b></p> <p>Lots of opportunities - in particular to get research and development in order for specifying appropriate improvements to individual properties (sorry i keep coming back to this, I deal with a lot of rural property - they are often unique</p>

	<p>in style, mixed construction and do not lend themselves to a generic solution).</p> <p>DEAs (particularly non-Surveyors) need additional training/skills to enable accurate recommendations.</p> <p>The RdSAP system needs some flexibility for its recommendations</p>
<b>65</b>	<p><b>Gary Spiers, South West Insulation &amp; Extractions LTD</b></p> <p>Opportunities - less and less each day Barriers - Greed</p>
<b>66</b>	<p><b>Phil Powell, Gwent Energy CIC</b></p> <p>not sure if there are enough paid positions for people to undertake this work</p>
<b>67</b>	<p><b>Mark Greenfield, Greenfield Energy Solutions</b></p> <p>We have a skilled work force but if there is no work requiring the skill then we move to an area where work is available losing the skills attained.</p>
<b>68</b>	<p><b>Daryl Price, DK Property Services</b></p> <p>There is almost no education towards energy efficiency. It is driven by regulation, that is badly enforced, badly communicated, and too confusing for most builders?</p>
<b>70</b>	<p><b>Carrie Parisella, Greendealshop.com Ltd</b></p> <p>Lack of knowledge and funding available to the supply Chain.</p>
<b>71</b>	<p><b>Jeffrey Smith, First Phase Electrical</b></p> <p>huge potential for new apprenticeships if my idea is put into practice</p>
<b>73</b>	<p><b>Sian Edwards, J D Energy Services</b></p> <p>Not enough focus on renewables. It needs to become a way of life, not just a subject to loosely talk about in schools, colleges and workplaces. Lead by example.</p>
<b>74</b>	<p><b>Ian Titherington, City of Cardiff Council</b></p> <p>A long term funding strategy enables SME's to link with colleges and Universities, to get local students trained and employed in these areas.</p>
<b>75</b>	<p><b>Bex Gingell, Taff Housing Association</b></p> <p>people within Taff housing are keen but the qualification is not seen as being relevant to our roles - its an addition! we try our best to do our bit within energy efficiency but it is time consuming on top of an already busy day!</p>
<b>76</b>	<p><b>Rob Newell, Joyner PA Cymru Ltd</b></p>

	As Above!!!!
<b>77</b>	<b>Rachel Davies, City and County of Swansea</b>  Don't have any expertise in this area.
<b>78</b>	<b>Samir Hussien, site services</b>  free courses from basic recycle course to masters degree and more. adopt to new ideas and make them work by implementing them within the present system.
<b>79</b>	<b>David Powell, Vale of Glamorgan Council</b>  Things are over complicated in terms of qualifications etc.
<b>81</b>	<b>Peter Draper, Rounded Developments Enterprises Ltd</b>  CITB have developed Level 3 Energy Efficiency for Traditional Buildings courses (co-written by Rounded Developments Enterprises). The pilots for this in Wales, Scotland and England highlighted the deficiencies in skills and knowledge in the industry. As stated before we need to train all construction workers in building dynamics, history and material properties so that we have a knowledgeable sector. This needs to be done in colleges as well as CPD.  We also need to ensure that all workers in the industry have NVQ Level 2 and managers / owners to Level 3.
<b>83</b>	<b>Sylvia Peat, Grwp Cynefin</b>  The people of Wales need more engineering, IT development skills, we have no/little trained engineers and skilled people.
<b>84</b>	<b>J.Richard Davies, J.r.davies property services</b>  Few of any value
<b>85</b>	<b>Julie Edwards, Pembrokeshire Housing Association</b>  Financial constraints within my own organisation for training is a barrier.
<b>86</b>	<b>Graeme Harrold, 3-e Electrical Ltd</b>  The Part P scheme has fallen short of its initial reason for being and that was to ensure unqualified/cowboy trades did not operate. The only convictions that have happened are for falsely using the scheme logo, and any prosecutions come when H&S get involved. 10 years on the majority of the public still dont understand Part P or building Regs as a whole.

87	<p><b>Elrond Burrell, Architype Ltd</b></p> <p>passivhaus training needs to be embedded in all construction and architecture related higher education from academic to practical skills based learning.</p>
88	<p><b>Allan Smith, Energy Effective Ltd</b></p> <p>There is an opportunity to set up a well trained workforce for the purpose of installing Nanoparticle Technology across Wales for the next decade but the organisations we have met with to discuss this have not offered any support.</p>
89	<p><b>Malcolm Wilson, RCT Homes Ltd</b></p> <p>there are limited opportunities for apprenticeships. The main barrier is the long term sustainability of the work. for example once EWI has been fitted it is fitted. The gap we have noticed is for trained maintenance people who can repair damaged EWI.</p>
91	<p><b>Elwyn Williams, E.W.Consultancy</b></p> <p>Again too many accreditation &amp; training bodies looking to make a fast return on their capital outlay &amp; only in it for the short term, not the long haul. They see it as the next trend to get rich quick.</p>
92	<p><b>Neil Lewis, Robert Owen Community Banking Fund</b></p> <p>Insulation and draught proofing at Colleges.</p>
93	<p><b>Jonathan Hyde, Bron Afon Community Housing Ltd</b></p> <p>There is a lack of knowledge of the measures which will apply to all building professionals including planners which in Wales resist new technology advances and therefore stunt economic growth. Other European countries are led by the experts as opposed to asking public opinion who are in the main ill informed and can influence as to whether a project goes ahead or not. This delays and increases costs.</p> <p>Permit developments have addressed some issues but again it is still left to interpretation</p>
95	<p><b>Stewart Matthews, Torfaen County Borough Council</b></p> <p>There should be many opportunities through the awareness of energy efficient use of properties.</p> <p>I believe that the public should be educated starting with future generations in schools and trained how to apply, in further education colleges, not only by</p>

	<p>suppliers of products used.</p> <p>Has new materials are developed we must up skill our workforce to a high standard.</p>
<b>99</b>	<p><b>Ben Dever, a dever engi cyf</b></p> <p>courses are out there for those interested</p>
<b>100</b>	<p><b>Rachael Rowlands-Jones, Glyndwr University</b></p> <p>There are opportunities for CPD training in renewables to energy advisors, installers of renewables and the potential customers to ensure informed decisions are being made. A myth busting fact sheet for different technologies may help consumers feel better informed when deciding to adopt an energy efficiency measure.</p>
<b>101</b>	<p><b>Mark Wilcox, Business Step Up</b></p> <p>In my line of business would strongly recommend we agree to a meeting to discuss?</p>
<b>102</b>	<p><b>Robert Vokes, Joyner</b></p> <p>The biggest barrier is the lack of constant works, we have months of the year where there is an extreme demand for works which are usually the wrong months of the year for completing outside works. i.e. EWI completed in the winter months. If we could provide a steady stream of work it would be beneficial for all parties, as you could provide more long term opportunities for apprentices and the like.</p>
<b>103</b>	<p><b>Steve Martin, Caerphilly County Borough Council</b></p> <p>No comment</p>

	<p><b>Question 8 responses: Innovation.</b></p>
	<p><b>What are the opportunities for innovation to help remove the barriers to improving our energy efficiency in Wales?</b></p>
<p><b>8</b></p>	<p><b>NSA Afan</b></p> <p>Energy efficiency has to be a holistic approach to any and all sectors of Welsh life. Innovation should be generated from the top down in terms of the Welsh Government and filtered through to the Public sector, third sector, businesses and finally domestic households. There must be the blueprint for energy use in the business and, homes covering heating, lighting and transport. The blueprint must be long term plan covering – 10 – 15 – 20 year a plan into which all parties sign up to and keep its aims and objectives uppermost in its forward planning whoever is in office if we are to achieve these desired outcomes.</p> <p>The Energy Saving Trust and the Carbon Trust made great inroads into all these sectors in the 90’s and early 2000’s but the steam has gone out of their efforts, however, we are left with some lasting examples of excellent if we chose to examine their legacy. The low hanging fruit has been picked and it’s up to the next generation to start on the more challenging aspects of their work.</p> <p>Such as – the continuation of the provision of a free and independent advice service to households (see our recommendations in Question 1) offering advice leaflets (not all have access to the internet) and a list of trusted contractors to undertake high quality energy efficiency installations, Community presentation and home based advice. This we believe can be delivered by the third sector in partnership with local businesses.</p> <p>We have examples of innovation in the Swansea Bay Tidal Lagoon development, if successful the first of many generating clean energy from the tidal flow in the Bristol Channel. The Welsh Government needs to nurture these types of development and showcase their commitment to future generations and demonstrating that Wales is open for business especially when it comes to the generation of clean energy.</p> <p>We recommend as a starting point that the Welsh Government should ask of itself the following questions:</p> <p>1 - Is there a travel to work scheme that incentivises Welsh Government staff to car sharing and use of public transport?</p>

	<p>2 – Is the use of video conferencing maximised?</p> <p>3 - Is all lighting up to the latest LED specification?</p> <p>4 - Are all unnecessary lights and computers turned off at night?</p> <p>5 – Are the energy bills in all Welsh Government buildings monitored daily?</p> <p>These are fundamental to the issue in question and needs to be implemented as a first phase towards a low carbon society and this campaign must start at the top.</p> <p>The Welsh Government should publish the findings and challenge Cathay's Park to set the standard for others to follow.</p> <p>We believe innovation has taken place in the energy efficiency field with local organisations, businesses and households starting to realise the impact energy has on budgets. These times of austerity have focused minds on all aspects of organisations expenditure and energy use is in the mix for reducing overhead costs.</p>
11	<p><b>Cert Sure</b></p> <p>There are opportunities for the greater use of technology for control of heating and hot water systems as well as lighting and other electrical items. The development of smart appliances and energy meters that are intelligent enough to use energy at times of lower demand will also be an innovation that will drive efficiency.</p> <p>However there needs to be consistency in the products that are developed to enable effective communication between energy meters and intelligent equipment.</p> <p>Development of electrical storage – when electricity is generated either on a national or local level there is no ability to store the excess, therefore mass storage systems should be developed.</p> <p>The introduction of innovation will also drive the need for information, which will lead to education as people will need to understand how to use new equipment</p> <p>Looking at innovation in Building Regulations, specifically relating to building design and construction it could be more innovative by looking at how we design a building making the most of natural light and heat to reduce the overall energy consumption of that building. For example the installation of sun tubes would bring in light to an area where this is no natural light and</p>

	<p>would reduce the use of electrical lighting systems.</p> <p>This would also include the need for the use of renewable technologies in new build developments and refurbishment projects to provide heat and power for that building.</p>
<p><b>12</b></p>	<p><b>Pembrokeshire County Council</b></p> <p>Innovation will assist this process if the innovative techniques actually work.</p> <p>Innovation is good but needs to be proven. Otherwise money can be wasted on innovative products and solutions that don't actually work (e.g. small gable mounted wind turbines or heat pumps incorrectly installed).</p> <p>Funding/competitions/prizes for innovation needs to be made available (possibly via public funds not just venture capital) as it is key to major innovative breakthroughs.</p> <p>Competitions at all levels of academia. Dedicated curriculum teaching on energy innovation is need from Key Stage 2 onwards. Continuation and far more awareness raising of programmes such as the WEST programme is needed. Achievements need to be heavily publicised. E.g. We invested in this innovative solution and we have developed a product that has the potential to be exported globally (e.g. Tidal Energy Ltd tidal turbines in Ramsay sounds – private innovative venture or Swansea Bay Tidal lagoon). All forms of media need to be used – tv, radio, newspaper, Twitter, Facebook, internet, email – for promotion to all sectors of the population.</p>
<p><b>13</b></p>	<p><b>ICE</b></p> <p>It is not considered that it is 'innovation' which will help remove the barriers to improving our energy efficiency in Wales. We are not doing enough of what we already know will improve efficiency. Already known measures include very simple things such as:</p> <ul style="list-style-type: none"> <li>• All relevant businesses which require cold storage should shut down power for these at peak times and re-power at times of low demand.</li> <li>• Public sector offices, police stations, hospitals etc always seem to be a flood of light at night. This can't be necessary and should be switched to automatically shut down except where specifically necessary and specifically switched to permit power use.</li> <li>• Solar / PV should be installed in all new buildings.</li> <li>• Insulation and draught proofing should be installed in all existing buildings.</li> <li>• Double glazing and use of curtains.</li> </ul>

	<ul style="list-style-type: none"> <li>• Energy saving lighting in all buildings.</li> <li>• Electrical equipment should be switched off (not left on standby).</li> <li>• Clothes are perfectly adequately cleaned in washing machines on low heat setting (30o).</li> <li>• The kettle should not be fully filled (only what is required should be boiled).</li> <li>• Minimise use of air conditioning. People quickly get acclimatised.</li> <li>• Ensure central heating is properly temperature controlled.</li> <li>• Turn the central heating down a degree or two from normal. People quickly get acclimatised.</li> <li>• Replace old and inefficient boilers with modern efficient models.</li> <li>• Turn lights off at night.</li> <li>• Encourage showering in lieu of bathing.</li> </ul> <p>Many / most of the above require no capital cost investment at all.</p>
<p><b>14</b></p>	<p><b>ETI</b></p> <p>The ETI has carried out extensive modelling of the UK’s space heating requirements using its ESME tool. ESME considers cost-effective approaches to meeting peak demand and the results show that there needs to be a significant move away from using gas for space heating from the mid 2020’s if the 2050 climate change targets are to be met. Our modelling shows that by 2050, district heating is likely to be the main heat source in urban areas with heat pumps elsewhere with only a limited role for gas (around 20TWh in a total heat requirement of around 360TWh).</p> <p>A key barrier is the ability to move technology from the laboratory through to commercial deployment. To overcome this, we propose a living laboratory of a few thousand homes where new technology, its impact and consumer acceptance of this technology can be tested. This could again potentially be part of the proposed Energy Systems Catapult. We also advocate a large-scale demonstration to show the benefits of new commercial and technical approaches.</p> <p>We believe that the availability of dynamic data on electricity and heat use is imperative to allow strategic models, such as ESME and EnergyPath Networks to identify the most cost-effective pathway to meet demand. The ETI supports heat map data being made available to local authorities. We would suggest some indicative data is published for use by the private sector to develop appropriate modelling tools that can most effectively use heat map data</p> <p>We believe there should be a framework in place which supports integrated</p>

	<p>local future planning to use waste heat from existing industrial plants and large thermal generating stations for community heat. A number of established distributed energy projects are already in operation in the UK, using energy from waste as the primary heat source, normally in CHP mode. However, this is still a largely untapped energy resource as there is still considerable waste going to landfill and many energy-from-waste projects are electricity-only plants recovering only around 30% of the available energy. There is a need to assess the national resource available and relate it to the geographic match of heat demand – EnergyPath Networks will support this.</p> <p>For the longer term, technical innovations in energy generation and storage (as well as efficiency in use) will be important and the work of the SPECIFIC Innovation and Knowledge Centre at Baglan Bay is a valuable feed of new ideas and demonstrations in these areas.</p>
16	<p><b>Miller Research</b></p> <p>The use of FIT tariffs has demonstrated that people respond to incentives where new energy technologies are concerned. This needs to be extended to smart metering and energy storage applications to encourage more effective use of the energy resources available.</p>
17	<p><b>Ynni Glan</b></p> <p>I've attached a paper presented at the Energy Policy in Wales Seminar, 15 December 2014. This presents ideas for innovation in the field of hydrogen and fuel cell technology.</p> <p>The paper generally supports Ynni Glan's answers to the consultation.</p>
18	<p><b>Torfaen County Borough Council</b></p> <p>As a small and accessible nation, there is immense scope for innovation to be built into energy efficiency initiatives that remove barriers, e.g. via different models of WG subsidy and funding, and linking to other already well established programmes of work such as the Housing Renewal Area Programmes and Vibrant &amp; Viable Places, and WHQS.</p>
19	<p><b>Cardiff University</b></p> <p>Our 2011 synthesis of the literature on public attitudes and behaviour in relation to energy efficiency and low-carbon energy concluded that:</p> <ul style="list-style-type: none"> <li>• Since much energy consumption is inconspicuous, habitual and routine, <i>information campaigns</i> to foster energy-saving habits should be expected to have only modest impacts.</li> <li>• Assessments of <i>smart meters</i> (i.e. that show energy consumption clearly)</li> </ul>

show they can help lead to energy savings of 5-15%; there also appears to be widespread public support for the technology and a clear preference for informational feedback in monetary terms.

- *Carbon labelling*: only one UK study has examined public response to carbon labelling, and found that public support of carbon labelling of products is moderated by scepticism about the motives of companies involved and also comprehension difficulties.
- *Carbon calculators*: initial assessments of these tools show they can increase interest in reducing carbon emissions, although not necessarily produce actual behaviour change.
- *Advanced energy billing*: e.g. providing social comparison data – research shows this can help encourage energy reduction in the order of a few percentage points, although it is critical that the comparison group used (e.g., neighbours) are felt to be equivalent and similar to the target audience for this approach to be effective.
- *Economic incentives*: to be accepted, these must be perceived as equitable. Hence revenues from the London Congestion Charge have been used to enhance public transport within the city, while non-hypothecated fuel duty increases have tended to lead to protest by those most affected.

From our recent work on loft insulation, we have made the following recommendations:

- *Distrust / dislike of cold calls*: Contacting households *personally* is likely to be most effective in increasing the uptake of free insulation offers
- *Trust*: use accredited *local contractors* known in the area for high-quality work.
- *Disaffection*: schemes should *not be too restrictive* as being excluded from a scheme is often experienced as unfair and can lead to disaffection with energy efficiency schemes as a whole. Once trust is lost, it is often difficult to restore.
- *Poor quality installations*: need for independent quality control (e.g. by Council or independent organisation, e.g., SE Wales Energy Agency).
- *Practical barriers* (e.g. loft clearing): address these *before* an offer is made.
- *Spillover*: design interventions with broader energy efficiency/lifestyle change as the aim – consider rebound effects and design communications/policies to foster spillover. Our research<sup>26</sup> shows that the opportunity to create spillover was missed with the Welsh carrier bag

<sup>26</sup> Poortinga, W., Whitmarsh, L. & Suffolk, C. (2013). The introduction of a single-use carrier bag charge in Wales: Attitude change and behavioural spillover effects. *Journal of Environmental Psychology*, 36, 240-247.

	<p>charge – but future policy interventions can capitalise on potential for spillover and produce more value-for-money and ambitious lifestyle change.</p> <p>More generally, the research on <i>behavioural spillover</i><sup>27</sup> shows that there is a need to consider links between behaviours across a range of contexts. Most people do not make links between their home and workplace behaviours, for example, so policies to encourage energy efficiency in either domestic or organisational settings are not having the maximum effect possible. Again, communications that help make these links can help encourage people to be consistent across contexts and realise their desire to be energy-efficient.</p> <p>Our and others' research<sup>28</sup>, also shows that the <i>timing of interventions</i> is critical. Given that habits are such a significant barrier to behaviour change, then timing interventions to when habits are disrupted (e.g., when people move house or are undertaking renovation projects) significantly increases the likelihood of adoption.</p>
21	<p><b>Ceredigion County Council</b></p> <p>One overall procurement framework for all energy companies to use that include lots for specific types of installations e.g. EWI, boilers, specialist contractors etc.</p> <p>Publication of research findings that highlight the various types of energy efficiency products available and the methods of application and applicability for different circumstances e.g. weather exposure.</p> <p>Experience has found that the publication of research findings has been slow to the detriment of the delivery of projects and installation of best measures according to property type.</p>
22	<p><b>Ofgem</b></p> <p>The type of measures that should be delivered in Wales will depend on the</p>

<sup>27</sup> Littleford, C., Ryley, T. & Firth, S.. (2014). Context, control and the spillover of energy use behaviours between office and home settings. *Journal of Environmental Psychology*, 40, 157-166.

<sup>28</sup> Whitmarsh, L., Xenias, D., Haggard, P. & Skippon, S. (2014). Promoting Eco-Driving Habits: A Randomised Controlled Trial. *BEHAVE Conference*, University of Oxford, 3<sup>rd</sup>-4<sup>th</sup> Sept.

Verplanken, B., & Wood, W. (2006). Interventions to break and create consumer habits. *Journal of Public Policy and Marketing*, 25, 90-103.  
<http://dornsife.usc.edu/assets/sites/208/docs/Verplanken.Wood.2006.pdf>

Wilson, C. et al. (2013). Understanding Homeowners' Renovation Decisions: Findings of the VERD Project. [http://tyndall.ac.uk/sites/default/files/verd\\_summary\\_report\\_oct13.pdf](http://tyndall.ac.uk/sites/default/files/verd_summary_report_oct13.pdf)

	<p>specific need of homes in Wales as opposed the rest of Britain. The vast majority of energy efficiency measures delivered through ECO are loft insulation, wall insulation and gas boilers and heating controls measures. The ECO Measures Table <sup>8</sup> includes a range other measures that</p> <p>may be installed under ECO and whilst some of these are installed in small numbers there remains opportunity for growth in these areas.</p> <p>While ECO does not include a specific innovation fund as the CERT scheme did, the ECO measures table is non-exhaustive and there exists further opportunity for new energy efficiency technologies and new measures types to qualify for funding under ECO. There may be opportunity for the Welsh government to promote product innovation in Wales and encourage a wider range of measures to suit a wider range of homes in Wales. Gathering and sharing data in relation to Welsh energy efficiency needs will help industry director innovation in the right direction.</p> <p>There are also significant opportunities presented by the rollout of smart metering across Britain that starts in 2016. The Welsh government may benefit from working closely with Smart Energy GB <sup>9</sup> to maximise energy saving and wider benefits to Welsh energy customers. There may also be potential to combine smart meter rollout with the provision of energy related assistance in communities in Wales. An appropriate organisation would be required drive and coordinate such programme. The Welsh government's energy efficiency strategy may be an appropriate place to set a goal for Wales to maximise the energy saving benefits from smart technology by working in partnership with industry.</p> <p>Finally, there may also be opportunities for innovate business models that allow for new and more efficient or effective means of delivering energy efficiency measures through government schemes. For instance Community Interest Companies may offer a new route into local communities that might otherwise be difficult to penetrate or other types of business model may be better able to identify opportunity to deliver energy efficiency measures.</p> <p><sup>8</sup> Energy Companies Obligation (ECO): Measures Table  <a href="https://www.ofgem.gov.uk/publications-and-updates/energy-companies-obligation-eco-measures-tables">https://www.ofgem.gov.uk/publications-and-updates/energy-companies-obligation-eco-measures-tables</a></p> <p><sup>9</sup> Smart Energy GB <a href="http://www.smartenergygb.org">http://www.smartenergygb.org</a></p>
23	<p><b>Energy Savings Trust</b></p> <p><u>Community engagement</u></p> <p>We feel there is considerable opportunity to engage with communities in</p>

Wales on developing a decentralised and low carbon energy network. Excellent examples already exist of this in Wales, for example Talybont on Usk Energy <sup>18</sup> or the 'less is more' project in Ely, Cardiff <sup>19</sup>.

- Community-led approaches to energy efficiency can address key barriers to uptake of energy efficiency retrofit such as:
- Lack of trust – many organisations engaged in local activity on domestic energy efficiency are reporting a lack of trust, not only of energy suppliers, but also more widely in grants and offers on energy efficiency. This is fuelled particularly by aggressive marketing techniques by some companies selling energy efficiency and renewable energy measures as well as wider issues around energy costs.
- Reaching customers – as energy efficiency and fuel poverty programmes continue, they increasingly need to target hard to reach customers and hard to treat measures. As a result customer acquisition costs are increasing rapidly with energy suppliers in particular quoting very high customer acquisition costs.
- Regular changes to national programmes – UK-wide programmes to support domestic energy efficiency have tended towards multiple, time-limited offers which can be confusing to customers.

Working on retrofit at a local scale with community organisations and activists can address these and other barriers in a number of ways:

- Use of local trusted intermediaries can help to overcome suspicion or cynicism about retrofit offers. Many groups report that combining the branding of local community organisations with that of a local authority can be especially effective in winning trust.
- Community organisations have excellent reach within their areas, being adept at tapping into both formal and informal local networks. This often enables them to help to identify those people in fuel poverty who have been missed by previous mass-delivery fuel poverty programmes.
- As illustrated by the work of the “Partnership Development Managers” on the Nest programme, working with local organisations which already support vulnerable people can be a very effective method of marketing fuel poverty programmes
- Investing in community-level outreach to market fuel poverty and energy efficiency programmes can deliver far more social return than conventional marketing by energy suppliers. Examples include:
- Community outreach can deliver advice to householders helping them to use installed measures effectively and adopt energy efficient

behaviour.

- It can build capacity within community networks and help to support other social activity (such as cross-referrals into and from health, or money-management support)
- Engaging members of a community in successful retrofit programmes can help to build community cohesion and aspiration as success is reported locally through trusted networks potentially contributing to establishing new “social norms” around environmental behaviour.

Community groups across the UK have shown themselves to be very effective at increasing their resilience through developing viable business models for community renewables in response to the introduction of Feed in Tariffs. However, due to the national, mass-delivered nature of UK-wide fuel poverty and energy efficiency they have struggled to find a sustainable business-model for energy efficiency activity.

Referral fees for energy efficiency could help to develop that business model, especially as customer acquisition costs through conventional marketing are currently very high. This “payment by results” approach can also address the risk of funding unproductive activity. Key constraints on this approach and possible mitigation measures are listed below:

- Referral fees could compromise the “impartial” status of community groups, which is one of their unique selling points – this could be addressed through a centrally managed referral scheme so that communities are referring into a scheme rather than a specific installer. This approach could also enable economies of scale by aggregating referrals from communities across the country, rather than expecting groups to negotiate individually. Customer support would be needed to deal with customer-installer issues which might come back to communities otherwise.
- Referral fees only provide payment on results when community groups often need up-front funding to build their capacity in order to be able to deliver – this could be mitigated by providing a limited programme of kick start support. This might comprise training, centrally provided resources (such as referral forms, and energy advice tools) and a small kick-start grant.

Community energy projects have already demonstrated their ability to launch viable social enterprises to deliver renewable energy. Building the capacity of community energy and climate change organisations and networks through investing in their ability to promote energy efficiency could help them to evolve into local energy service companies delivering a range of carbon and

energy reduction goods and services within their community.

### Off-grid communities and innovative networks

With approximately one fifth of the homes in Wales off the mains gas network we have a considerable opportunity to provide local decentralised and low carbon energy to communities. Changes in building services and battery technologies mean that how these technologies are provided could increasingly become at a microgrid scale, for example community thermal stores <sup>20</sup> or battery banks <sup>21</sup>.

### Professional networks

Established programmes such as Nest and Arbed have considerable value locked in with the staff delivering the programme. They have developed a strong professional network across a number of sectors including education, health, social services and beyond. In London the “London Fuel Poverty Hub” <sup>22</sup> website provides a platform for professionals to receive up to date information, contacts and knowledge. A fuel poverty hub in Wales would help facilitate a more cohesive and focused understanding of fuel poverty and establish a central resource for professionals working in a diverse range of sectors to keep in touch, for research and policy changes to be disseminated and projects cross promoted. Such a hub could host links to Cyd Cymru, Nest, REW advice centre and other services (such as affordable warmth and financial inclusion groups) and lead to future co-ordinated development across Wales.

### Leapfrogging to smart technologies

From our experience of working with householders we find that interest in energy and energy efficiency remains low, bill literacy is lower than first thought and with an increase in direct debit payments visibility of consumption hidden. The roll-out of smart meters will change how we all interact with energy and our bills. Some of our field trials outlined below provide some insight to how the future may look; Wales could position itself to be ready to make the most of the smart meter roll out within the next five years.

- *SHIMMER: Smart Homes Integrating Meters Money Energy Research* <sup>23</sup>: is a unique system that uses smart meters as a starting point to help fuel-poor, low-income households to manage their energy consumption and finances more efficiently. Unlike existing smart meters that simply measure energy use, SHIMMER combines a metering system with an online interface to offer a range of energy

	<p>and money management tools combined with FiT payments for on-site PV. These enable users to maximize their disposable income, reduce excessive bills and control their expenditure. Initial results from the pilot suggest that SHIMMER can save fuel-poor households between £200 and £3,500 a year.</p> <ul style="list-style-type: none"> <li>• <i>SMAP – Smart Metering Advice Project 24:</i> the Energy Saving Trust worked with around 30 households in Dumfries and Galloway and the Highlands and Islands. Smart metering equipment was installed in each home, and each household piloted a new web-tool which has been specifically developed for this project. Using the data generated from the smart metering equipment the user-friendly web tool displayed, on a private web-portal, the household’s previous day’s energy use, plus weekly, monthly and yearly records for each fuel (gas, electricity and oil). It also provided each household with tailored information about how to reduce their energy use through the installation of measures, and from making behavioural changes, and detail the savings that could result. Throughout the project participating households were supported by their local Home Energy Scotland Advice Centre, whose advisors provided both proactive and reactive advice and support.</li> </ul> <p>18 <a href="http://talybontenergy.co.uk/">http://talybontenergy.co.uk/</a></p> <p>19 <a href="http://www.lessismore.org.uk/neighbourhoodinfo.php?sid=303230244">http://www.lessismore.org.uk/neighbourhoodinfo.php?sid=303230244</a></p> <p>20 <a href="http://www.energysavingtrust.org.uk/domestic/content/thermal-stores">http://www.energysavingtrust.org.uk/domestic/content/thermal-stores</a></p> <p>21 <a href="http://www.energysavingtrust.org.uk/domestic/improving-my-home/renewables/renewable-electricity/off-grid">http://www.energysavingtrust.org.uk/domestic/improving-my-home/renewables/renewable-electricity/off-grid</a></p> <p>22 <a href="https://londonfuelpovertyhub.wordpress.com/">https://londonfuelpovertyhub.wordpress.com/</a></p>
<b>24</b>	<p><b>Neath Port Talbot CBC</b></p> <p>It is clear that to move towards a more sustainable way of working and living will require significant technological development. Innovation will be an essential component in the delivery and attainment of energy and carbon reduction targets.</p> <p>Opportunities for innovation to help remove barriers to improving Wales’ energy efficiency:</p> <ul style="list-style-type: none"> <li>• The new Swansea Bay University Campus could develop as a hub or ‘catapult centre’ for innovation in this field (Potential linkage to Swansea Bay Tidal Lagoon).</li> <li>• ‘Innovate UK’ SME innovation grants could be publicised more</li> </ul>

	<p>effectively to encourage SMEs to innovate in energy efficiency.</p> <ul style="list-style-type: none"> <li>• Potential demonstration projects: <ul style="list-style-type: none"> <li>a) Swansea Bay Tidal Lagoon</li> <li>b) Low carbon heat network (Port Talbot District Heating Scheme)</li> <li>c) Provision of energy/carbon advice/visitor centre demonstrating a smart way of living/working transitional</li> <li>d) Construct a smart/low carbon demonstration project (First fully functional smart/intelligent building)</li> </ul> </li> </ul>
<b>25</b>	<p><b>Climate Change Commission</b></p> <p>There will be significant potential through European funding that should be explored to support energy efficiency action. Also there may be an opportunity for organisations and communities in Wales to consider innovative funding mechanisms which could be accessed to scale up existing schemes, whilst promoting local energy generation in parallel. There is a huge amount of expertise available across Universities (e.g. LCRI) and other expert bodies which needs to be made more accessible to communities in order to take forward a range of opportunities and practical action to address climate change.</p>
<b>26</b>	<p><b>Wrexham CBC</b></p> <p>New funding streams (WG, EU, UK) and legislation compliance (ESOS, DEC, EPC) could be an opportunity for innovation. Innovation should be encouraged at all levels – community, businesses, school and universities to build best practice clusters</p>
<b>27</b>	<p><b>Glass and Glazing Federation</b></p> <p>The GGF welcomed the publishing of the ‘Innovation Wales Strategy’ identifying low carbon energy and environment as one of the four grand challenge areas where the greatest investment in innovation will occur. It is therefore imperative that the realisation of such investment is done in such a way which not only benefits the consumer and helps reach energy efficiency targets, but is similarly beneficial for SMEs and business. In this way, the GGF believe that investment and support of small scale SMEs will not only help them develop financially, supporting local economies and communities, but through nurturing their energy efficiency products, with grants and schemes will help advertise the invaluable measures that these businesses can offer.</p>
<b>28</b>	<p><b>Citizens Advice Bureau</b></p> <p>To tackle climate change, and mitigate fuel poverty we need to urgently</p>

pursue those energy efficiency measures that are already proven to be effective, whilst also enabling innovation. This difference is important in terms of how energy efficiency measures are funded, in that we would want funds from ECO, Nest, Arbed and any successor schemes to go on proven measures.

We identify two elements of innovation in energy efficiency which will have different economic rationales, and require different reporting frameworks. We believe these two strands should be considered separately.

#### Technological innovation

The technology largely already exists that can significantly reduce energy use in homes whilst maintaining and even improving comfort levels. There are improvements to be made to these, but these tend to be incremental rather than entirely new technologies.

The only potentially significant gap is storage. We would welcome more consideration as to how storage of power and/or heat could form part of the strategy. This would include technology like electric vehicles, storage heaters and immersion heaters.

For example, the UK Energy Research Centre, in its report *The Future role of energy storage in the UK (2014)*, found that there was potential for savings by generating heat off-peak, and saving 'waste' heat for later use. The report explored the most appropriate means of storing heat in a 'real life' setting, but concluded that there was scope for more research. The Welsh Government could explore ways to support future research being undertaken in Wales.

The success of heat storage technologies requires an appropriate 'Time of Use' (ToU) tariff structure that incentivises consumers to think about when they use their power. This needs to be complemented by information and advice, such as real time data on usage provided by smart meter in-home displays (IHDs), dedicated advice on behaviour change, and consumer advice on choosing suppliers and tariffs.

Citizens Advice has also commissioned research into consumers' experiences of solar PV generation after it has been installed in their home. This will explore how behaviour changes, and whether consumers are able to save money, and reduce carbon emissions, by generating heat at cheaper times (on a Time of Use (ToU) tariff), and storing it.

#### Innovation in delivery

	<p>Innovation may not be in a product itself, but in its application. What is arguably more significant than technological progress is innovation in delivery, to give consumers the confidence they often currently lack. We would refer again to the <i>What's In It For Me? (2012)</i> report – and the need for multiple referral paths to suit the needs of different households. It also finds that there is no low cost, single channel for effectively engaging all consumers.</p> <p>Again we would hope that our forthcoming Wales-specific research with low income consumers will provide additional insight into this work.</p> <p>There is also potential for innovation in joining up key programmes such as smart meter rollout, ECO, Nest and Arbed. Citizens Advice's recent <i>Developing a Smart Meter Extra Help Scheme (2014)</i> report found that the cost of a supplier-led smart meter rollout will be £3billion higher than that estimated for a co-ordinated area-based approach, with this cost being funded by consumers through bills. So there is clear potential for innovation and cost savings by embedding installation of smart meters in area-based energy efficiency and housing stock improvement schemes, as well as providing consumers with a valuable tool to make the most of their energy efficiency measures.</p>
<p><b>29</b></p>	<p><b>Sustainable Energy Association</b></p> <p>Measures like solid wall insulation- which are relatively new to the market- often have a high capital cost for delivery. Driving the market for these measures can help to drive efficiencies which will bring down the costs of installation for new technologies. So, one opportunity for Government is to support innovative new technologies which have proven market applications through subsidy or regulation aimed at bringing down their costs of installation. Alternatively, Government could directly fund projects which leveraged new technologies, or provide R&amp;D funding which looked at bringing new products to market.</p>
<p><b>31</b></p>	<p><b>Constructing Excellence in Wales</b></p> <p>Building Information Modelling (BIM) provides an opportunity in terms of being able to demonstrate and model the energy efficiency of a building. This innovative process should be applied, as a minimum, on all public sector building projects.</p>
<p><b>32</b></p>	<p><b>British Gas</b></p> <p>Innovations by British Gas are helping to improve energy efficiency in Wales via new technology as well as through programmes highlighted elsewhere in this response.</p>

British Gas is leading the roll-out of smart meters – with our domestic and business customers already seeing the benefits that this innovation is bringing.

Across Britain, we have delivered over 1.6m smart meters to customers' homes and businesses by the end of 2014 and have a team of 1,200 specially trained Smart Energy Experts installing and offering advice to customers on their smart meters. In our Cardiff contact centre, we now have customer service advisors working specifically to answer calls from customers with smart meters.

Information passed on to the customer then enables them to see how their bill compares to similar households and highlights where savings can be made. A recent report by Oxford Economics showed that smart meters can help customers save £65 per annum.

Where a standard meter needs replacing, British Gas is offering customers a smart meter as part of a free upgrade. Customers are also able to request one sooner. Across Wales, we had fitted almost 80,000 smart meters in Wales before the end of October.

#### Case study: Hive Active Heating

Research (BEAMA 2010) shows that 71% of UK homes are missing one or more element of heating control. In addition, of those homes with central heating, 10% do not have a timer to control the system (Energy Follow-Up Survey 2011) and are therefore unable to set a heating schedule.

British Gas' Hive Active Heating product allows customers to control their heating and hot water remotely from a mobile phone. Research shows that our highest users interact with the thermostat on average 14 times per week and 60% of our customers edit their schedules. We also have anecdotal evidence that suggests this product helps customers with disability and assisted living challenges.

As heating hot water equates to 20% of people's total annual gas use, Hive Active Heating is an efficient and flexible way to manage this. Customers with these boilers benefit from only switching on their hot water when they want to, including getting an extra hour 'boost' of hot water when they need it.

Calculations suggest that on average, people waste £150 a year heating their home when they're asleep or away. The early signs are that Hive Active Heating will help people to reduce waste and save money.

As well as Hive, we are also trialling our Connected Boiler in 700 homes

	<p>across the country. The Worcester Bosch boilers connect to a home broadband and report faults to British Gas before they even breakdown. This will make boiler service and repair far easier for customers and will mean that problems can be pre-empted and resolved quickly.</p>
<b>33</b>	<p><b>Saint Gobain</b></p> <p>The solutions are already available now. If there is a stable market and policy landscape then industry will have the confidence to invest in more innovative products and solutions for energy efficiency. Long term drivers are needed to drive market transformation – for example use of Stamp Duty and Council Tax reductions for homes with higher EPC ratings.</p>
<b>34</b>	<p><b>CLA Cymru</b></p> <p>Innovation comes from private enterprise – successful private enterprise is achieved through freedom from bureaucracy – freedom from bureaucracy must be facilitated by the Government.</p>
<b>35</b>	<p><b>PLANED</b></p> <p>Innovation needs to be celebrated and yet tested widely – sharing of good practice is key to mainstream what works (as well as sharing experience of what doesn't).</p>
<b>38</b>	<p><b>Hywel Dda University Health Board</b></p> <ul style="list-style-type: none"> <li>• Energy Performance Contracts</li> </ul> <p>Innovation in technology can be a high risk action which may be taken by business but cannot be justified by individual public sector bodies. WG could pilot more projects getting business to work in partnership with the public sector – developing and the technology and project delivery on public sector premises.</p>
<b>40</b>	<p><b>Rhondda Cynon Taf County Borough Council</b></p> <p>The energy industry has to be more open, transparent and easily understandable to 'Joe Bloggs' and/or 'Mrs Jones'. It needs to be more relative to each person and their circumstances, which would probably be best achieved by focussing on the potential money saving aspect, whilst at the same time achieving energy efficiency and carbon savings.</p> <p>Welsh energy sector students also want local progression to be able to further their career prospects in Wales.</p> <p>We need more 'Energy Champions' within the principality.</p>

	<p>Perhaps add 'Health &amp; Well-Being' into the advantages/agenda for energy efficiency change.</p> <p>To get the message more forcefully across then perhaps we should employ 'shock tactics' relating to health, energy, technology, money and resultant poverty.</p> <p>IN RCT we regularly carry out direct mailings to those households claiming benefits advising them of the NEST scheme.</p>
<p><b>41</b></p>	<p><b>Community Housing Group</b></p> <p>CHC encourages innovation in developing green technologies. This includes the development of products which will make the task more secure and less disruptive. CHC feels that we should be increasing the amount of energy efficiency retrofit works as well as the amount of energy that we generate through renewable technologies. Government should keep the cost of capital for investment in low carbon technologies low. Schemes such as the feed in tariff and renewable heat incentive are good examples of innovative schemes that we need more of.</p> <p>With around a quarter of Welsh homes now considered to be in fuel poverty, the CHC Group believes that more investment from the EU structural funds is required to reduce our carbon footprint and fight fuel poverty. EU funding could be used to develop innovative solutions. It is vital that we continue to deliver meaningful regeneration outcomes for the most deprived communities in Wales. This includes finding appropriate routes into work for the long term economically inactive, as well as developing improvements in public services which drive a renewed focus on education and health in our poorest communities. The challenge of achieving long-term sustainable economic growth should be seen as an opportunity to tackle poverty and disadvantage in some of the most deprived communities in Wales. Development of local energy production and food supplies can provide employment and sustainable economic development at community level and contribute to improved GDP and GVA performance whilst challenging joblessness and economic inactivity.</p>
<p><b>43</b></p>	<p><b>Low Zero Carbon Hub</b></p> <p>There is a very real need for innovation and to move to much broader programmes than Nest and arbed have delivered to date. We require bigger scale projects which engage with the private sector and reach out beyond social housing. We need to focus on hard to treat and off-grid homes as these homes remain vulnerable to energy price increases and mean further householders become fuel poor. Any future programmes should seek to continue to work with those currently experiencing fuel poverty but also those</p>

on the periphery in order that they do not also become fuel poor within the lifetime of a programme. The intervention levels with these periphery householders may be less, for example bill literacy, energy efficiency and fuel switching advice may help household bills be better managed. UK level projects like Energy Best Deal<sup>27</sup> (lead by CAB and Ofgem) and Big Energy Saving Network<sup>28</sup> (DECC) provide such training at present but on a small scale with intervention in Wales at a lower rate than required.

There is a considerable innovation opportunity for Welsh Government with regards allowable solutions, carbon offsetting and the generation of energy “off-site but adjacent to” refurbishment projects. Integrating energy efficiency within other energy infrastructure projects would assist in increasing the delivery of energy efficiency projects. For example, communities engaged through Ynni'r Fro, who are active and interested in realising a low carbon Wales, should be encouraged and supported to ensure their own homes and community is refurbished in parallel to the installation of their renewable energy source.

We feel there remains a significant opportunity for innovation in Wales with regards the off-grid community. Estimated to be around 19% of all properties in Wales, refurbishing and providing a low carbon source of heating and power to these communities would have broad policy impacts on fuel poverty, community regeneration, cohesion and reduction in carbon emissions. We feel more could be undertaken to promote community scale energy linking investment in with energy efficiency activities, for example more collaboration between area based programmes such as arbed and community energy schemes such as Ynni'r Fro.

Energy efficiency, both the physical refurbishment of buildings and behavioural change aspects, is not a problem solely for Wales to tackle. We feel that there are examples of good work elsewhere in the world that should be reviewed by your team are:

- The Dutch Energiesprong model, which offers a whole house refurbishment, has four central elements:

- 1) An insurer backed energy performance guarantee by the contractor
- 2) 10 day delivery timetable of all work
- 3) Affordability, the investment is financed by the resulting guaranteed energy cost savings
- 4) Attractiveness, the refurbishment package must be attractive to occupants, both improving residents' quality of life and the appearance of the house

The approach has been successful in the Netherlands; it has provided the construction sector with a long term programme of work, tenants have a choice of finishes for their new kitchen combined with the clear timetable for works secures their commitment to works. We understand that the project has transferred to the private sector in the Netherlands and that delivery periods have reduced, in some cases to just one day installations. By comparison, we understand that the customer journey for Nest is indicatively 45 days, for initial surveys to be undertaken, works identified and scheduled, installation and final inspection / sign off. Given the scale of the Nest programme WLZCH believe that further efficiencies could be reached reducing this period to enable more households to benefit from the programme.

- **Utilising big data** - once again the Netherlands provides a good example, they are sending every home a document stating their A to G home energy rating. As part of the Request2Action<sup>30</sup>, a project that brings together energy agencies across Europe; working together to make best use of data to encourage energy efficiency, Dutch partners presented their new national approach to EPCs<sup>31</sup>.

Closer to home, the number of demonstration sites in Wales is growing; innovation is already taking place here, for example:

- CADW's Heritage Cottage<sup>32</sup> is typical of Wales' pre-1919 housing stock. The in-situ monitoring and appropriate refurbishment will be used as a learning resource to show how energy efficiency can be undertaken and best practice shared.
- Maes yr Onn<sup>33</sup>, whilst a new build, this home shows how off-grid homes can be viable in rural Wales. The behaviour change aspects and application of renewable technologies could be applied to energy efficiency retrofit off-grid projects. Recent RDP work identified that 96% of farm homes were off the mains gas and 77% of properties more than 100 years old and so can be classified as hard to treat. Of the participants, 58% classified themselves as experiencing fuel poverty.
- SOLCER<sup>34</sup> (Smart Operation for a Low Carbon Energy Region): The project's aims have been to provide affordable, replicable very low energy buildings which integrate technologies into the building structure rather than the traditional 'bolt on' approach, by combining: a reduced energy demand; building integrated renewable energy supply and energy storage for both thermal and electrical energy. Sourced, as far as reasonably practicable, from Welsh manufacturers and will be used as a demonstration of advanced Welsh construction technologies. The project

	<p>has undertaken fully refurbished five properties in Wales, on a range of property types: pre-1919 mid and end terraces, 1930's mid-terrace, 1970's semi detached, 2000's semi detached.</p> <p>27 <a href="http://www.citizensadvice.org.uk/fsfl_projects_energybestdeal">http://www.citizensadvice.org.uk/fsfl_projects_energybestdeal</a>  28 <a href="https://www.gov.uk/government/policies/helping-households-to-cut-their-energy-bills/supporting-pages/big-energy-saving-network">https://www.gov.uk/government/policies/helping-households-to-cut-their-energy-bills/supporting-pages/big-energy-saving-network</a>  29 <a href="http://www.ukgbc.org/opinion/keep-calm-and-learn-dutch-energiesprong-future-sustainable-homes">http://www.ukgbc.org/opinion/keep-calm-and-learn-dutch-energiesprong-future-sustainable-homes</a>  30 <a href="http://www.building-request.eu/">http://www.building-request.eu/</a>  31 <a href="http://www.energysavingtrust.org.uk/search/at%20home%20with%20energy">http://www.energysavingtrust.org.uk/search/at%20home%20with%20energy</a>  32 <a href="http://cadw.wales.gov.uk/about/partnershipsandprojects/projectsfundedcadw/Heritage-Cottage/?lang=en">http://cadw.wales.gov.uk/about/partnershipsandprojects/projectsfundedcadw/Heritage-Cottage/?lang=en</a>  33 Please view a short introductory video here: <a href="http://vimeo.com/90841806">http://vimeo.com/90841806</a>  34 <a href="http://www.solcer.org/">http://www.solcer.org/</a></p>
<p><b>45</b></p>	<p><b>Rockwool</b></p> <p>Industry will innovate to provide solutions when they have confidence in the development of the market. A clearly communicated, long term vision and strategy with specific objectives setting out what the Welsh Government wants to achieve will encourage that confidence. For example, waste management targets were introduced into arbed. ROCKWOOL had an existing material take back scheme which didn't meet the needs of contractors working on domestic refurbishment projects. Through collaboration between ROCKWOOL, the scheme managers, contractors and local hauliers, the take back scheme was modified to meet everyone's needs and has been very successful.</p> <p>The Welsh Government has set out in the consultation document how energy efficiency bridges numerous policy areas. In order to eradicate fuel poverty and accelerate the delivery of energy efficiency measures to existing homes, we would urge the Welsh Government to assess the technical potential for measures that are yet to be delivered in Wales and set ambitious targets on this basis. For example, setting targets to insulate solid wall properties which successive UK energy efficiency policies have failed to tackle. The prevalence of fuel poverty and cold living conditions in such properties needs to be addressed urgently. Setting strong targets will encourage the supply chain collaboration which drives down costs and improves efficiencies.</p>
<p><b>51</b></p>	<p><b>Flintshire County Council</b></p> <p>We need to be innovative in how we collect, share and use building stock data. This is the only way to have an evidence based approach and have a starting point against which to measure the impact we make.</p> <p>Innovative insulation systems and applications need to be made available so people can see that there are more options available for most types of property and produce a desired finish/effect.</p>

52	<p><b>Egnida</b></p> <p>We believe that Green Entrepreneurs offer the best catalyst to innovation as recognised by London in a recent report. However, young entrepreneurs are desperately in need of experienced mentors (not consultants and advisors!). These are in very short supply in Wales and Welsh Government may wish to at least recognise the existence of Green Entrepreneurs and encourage a network accordingly, potentially under a Xenos Business Angel type structure.</p>
53	<p><b>NEA</b></p> <p>As noted by NEA area based approaches offer the most effective and efficient delivery method based on evidence from schemes across GB. NEA's own research has demonstrated that area-based energy efficiency schemes, when delivered well, can deliver a range of economic, social and environmental outcomes to residents and the wider community in which they live and the project team developed a series of best practice recommendations to enable future schemes to maximise the opportunities to deliver these wider benefits:</p> <ul style="list-style-type: none"> <li>• Schemes should use SMEs to help ensure maximum economic benefit to local communities. Schemes should also be aligned with relevant funding streams and initiatives tackling local unemployment to ensure that the installation process generates opportunities for local jobs and skill development.</li> <li>• Local authorities and housing associations should look to energy saving schemes as a potential opportunity to generate community pride and a shared community experience of regeneration</li> <li>• Schemes benefit from the early input of urban design guidance, in order to maximise the potential aesthetic benefits in improving the quality of place.</li> <li>• To ensure that households and communities are fully equipped to reduce their environmental impact they must be backed up with the right tools and the right information. Energy efficiency measures can provide the tools, but backing this up with clear instructions about using the measures, and information on additional ways to greener living, are critical. Home energy advice packages that have a strong focus on helping residents with how to use their new installations to maximise the energy saving are critical.</li> <li>• Opportunities to develop links with local schools and colleges in order to educate and raise awareness of environmental issues should be considered a crucial aspect of area-based schemes, educating the next generation of householders in living more sustainable lifestyles.</li> </ul>

<p><b>55</b></p>	<p><b>WLGA</b></p> <p>Bridgend County Borough Council has been developing a pilot scheme looking at SMART Systems which includes not only the technology to support but also the behavioural changes required to develop the understanding of how to benefit from using the technologies. Training being as important as the technology.</p> <p>The SMART Energy GB programme being rolled out by DECC UK Government which will provide real time feedback of energy use for householders could be extended to businesses.</p> <p>There needs to be clarity and comprehensible tariffs to assist consumers in utilising the most efficient for their needs.</p>
<p><b>58</b></p>	<p><b>Pembrokeshire Coast National Park</b></p> <p>There is opportunity to provide much needed affordable housing stock by building 'Tŷ Solar' energy efficient homes which use only 12% of the energy of a similarly sized conventional equivalent. The SDF funded project built a prototype which proved it possible to construct an affordable home (&lt;£75,000) and micro generation in an integrated unit. This also shows that native welsh softwood has a structural use and demonstrated how, by using local material and labour in construction, there is also potential to ensure that jobs and supply chains are created.</p> <p>Removing barriers such as preconceived ideas about the appearance of new housing so that planning permission can be obtained and moving barriers so that the use of welsh timber for construction is recognised as possible and accepted.</p> <p>Funding such as the SDF is important to support innovative projects that carry elements of risk. Innovative SDF funded projects that are example projects at the forefront of innovation and energy efficiency include Affordable Solar Homes as mentioned above, Delta Stream Tidal Turbine Test Rig, Tomas Joinery Passive Windows and Door Manufacture expansion and the Straw baled sustainable building at Mencap Gardens in Stackpole.</p>
<p><b>61</b></p>	<p><b>Stephen Vaughan, Housing Renewal Team, Torfaen County Borough Council</b></p> <p>I think the energy companies should be made to play a part in this. They could be involved in a reward system for consumers who agree to energy saving measures-some of the schemes that have been run of late have involved tying consumers into a long term loan -over decades in some cases- and this is surely not a productive or positive innovation.</p>

	<p>The installation of solar panels and the pay back to the consumer through the sell back to the national grid is a very positive innovation. Here the consumer is rewarded-there must be a way of translating this reward system over to the installation of other measures such External / Internal Wall Insulation and Energy efficient boilers.</p> <p>The energy companies must be made to bear some responsibility for the use of fuel and not just 'cash in' on the sale of it. Only the political will will change this position.</p>
<b>62</b>	<p><b>Andy Thomas, Butler &amp; Young Wales.</b></p> <p>ARBED SOLCER LCRI Warm Wales - there are many innovators and opportunities. we need the key legislation and policies to deliver - or even force delivery to drive innovation.</p>
<b>63</b>	<p><b>Neil Evans, Carmarthenshire County Council</b></p> <p>Devolution of all the necessary levers to Welsh Government. Welsh Government is supposed to have sustainability in its DNA. Without those levers we'll never truly create a sustainable nation.</p> <p>Community energy schemes and district heating - move away from inefficient national grid for electricity distribution and create Local electricity grids and heating networks - creation of jobs and apprenticeships to create and maintain those locally owned networks.</p>
<b>64</b>	<p><b>Kate Smith, KFS Consultancy Ltd</b></p> <p>Consider incorporation of renewables on all new build  Consider "community efficiency" as well as individual premises  Use of Wales' assets - rainwater collection, hydro schemes (small scale),  Wind - small scale per community rather than large open country schemes?</p>
<b>66</b>	<p><b>Phil Powell, Gwent Energy CIC</b></p> <p>we need business to realise just how much they could save on energy with the right innovations  looking for innovations should be part of every businesses planning</p>
<b>67</b>	<p><b>Mark Greenfield, Greenfield Energy Solutions</b></p> <p>Simplify and provide a service that small businesses have been doing for centuries.</p>
<b>68</b>	<p><b>Daryl Price, DK Property Services</b></p> <p>Increased information from LABC, information dissemination via BC Depts and LPA, LPA to distinguish between barely average and energy efficient houses/dwellings.</p>

<b>71</b>	<b>Jeffrey Smith, First Phase Electrical</b>  jobs better quality of life
<b>73</b>	<b>Sian Edwards, J D Energy Services</b>  Manufacture in the UK, advertise renewables, advertise the benefits, educate the public and business owners.
<b>74</b>	<b>Ian Titherington, City of Cardiff Council</b>  My scheme is the first of its kind in the UK, but only came about from a networking opportunity at a one day conference. It is not the senior managers in organisations who share these ideas, but the middle managers/engineers who work in their field. Greater collaboration between different sectors also needs to be more actively encouraged.
<b>75</b>	<b>Bex Gingell, Taff Housing Association</b>  We had a free consultant come in and do some work with us - this led to some great changes as we had a free expert giving advice and guidance
<b>78</b>	<b>Samir Hussien, site services</b>  changing habit to more energy efficiency practices. some incentive to show the benefits of energy efficiency. use education ( using different languages spoken locally) approach every body across the society to commit and share and practise in energy efficiency.
<b>81</b>	<b>Peter Draper, Rounded Developments Enterprises Ltd</b>  Development of a wood fibre insulation industry by Gov recognising the needs of solid walled buildings (34% of total)  Development of BIM based product selection tool (one in development by RDE)  Stop using rdSAP to make decisions  Ensure that moisture is an integral element of decision making for improvements
<b>83</b>	<b>Sylvia Peat, Grwp Cynefin</b>  We have Water for Hydro and wind for Wind Farms, Education at an early age about using renewable energy.

<b>84</b>	<b>J.Richard Davies, J.r.davies property services</b>  Cheaper solid wall insulation
<b>86</b>	<b>Graeme Harrold, 3-e Electrical Ltd</b>  Look at the housing standards for building control. Simple stipulations for planning guidelines and possibly looking for VAT breaks on renovations that pass planning on energy efficiency grounds. Dropping the current 20% on major/minor refurbishments may drive forward growth in the market and develop more energy efficient homes.
<b>88</b>	<b>Allan Smith, Energy Effective Ltd</b>  We spent the whole of 2014 promoting Nanotechnology in Wales and received zero support. It was noticeable that even though there are thousands of successful installations across Europe achieving 20% - 35% savings off their energy bills, somehow the Laws of Physics are different in Wales to the rest of the known Universe or as one of my contemporaries put it, "Not invented here syndrome".
<b>89</b>	<b>Malcolm Wilson, RCT Homes Ltd</b>  We are looking at a establishing a small energy advice company who can provide assessment and mange advice for community organisations and other business to install energy efficient lighting. We see this as an example of inno0vative solutions.  We are also examining establishing an ESCO to purchase energy for tenants to provide certainty of price and reduce pay as you use costs.
<b>91</b>	<b>Elwyn Williams, E.W.Consultancy</b>  Total re-education of the concept of the Greener Technology & the benefits associated with it.
<b>92</b>	<b>Neil Lewis, Robert Owen Community Banking Fund</b>  Tidal and retrofitting to 80% improvements.
<b>93</b>	<b>Jonathan Hyde, Bron Afon Community Housing Ltd</b>  Tidal Barriers Hydro application - communities Wind Turbines where benefits are cascaded to the local communities
<b>94</b>	<b>Clare Parsons, Brecon Beacons NPA</b>

	<p>need for innovative technologies that encourage behaviour change - ie that remind or enable people to wrap up/switch off . Affordable technology to enable better temperature regulation on a room to room timed basis springs to mind</p> <p>need social marketing approach to encourage behaviour change to go alongside technical innovation</p>
<b>95</b>	<p><b>Stewart Matthews, Torfaen County Borough Council</b></p> <p>If there are problems regarding supply of materials and companies available to supply and fix energy efficient schemes, the Welsh Government should put in place incentives to attract suppliers into wales and make funding more widely available through local authorities, together with increasing training.</p>
<b>102</b>	<p><b>Robert Vokes, Joyner</b></p> <p>There are opportunities for innovation in products to allow winter working and i am sure that one of the manufactures would like support to develop such products</p>
<b>103</b>	<p><b>Steve Martin, Caerphilly County Borough Council</b></p> <p>An innovative approach is welcome, however the industry needs to gain confidence that new products and initiatives will be taken forward without the boom and bust scenarios.</p>

	<b>Question 9 responses: Finance.</b>
	<b>Are there any particular gaps in financing to support the take up of energy efficiency? Which financing models work best to address the energy efficiency needs in Wales for different target audiences?</b>
<b>8</b>	<p><b>NSA Afan</b></p> <p>NSA Afan has noticed that since the CESP programme ended in Dec 2012 that there has been a mixed response to Green Deal and ECO and that these programmes have failed to achieve a fraction of their intended take up and that the energy companies have reduced their commitment to ECO to a significant portion of the population, mainly targeting resources to the rural areas and Hard to Treat homes. We recognise the 'Hay day' of free grants for domestic insulation have past and urge the welsh Government to continue support of NEST, Warm Wales and NEA as these organisations have a major role to play in addressing the effects of fuel poverty in the most vulnerable households. The demise of HEES the Home Energy Efficiency Scheme once a lifeline to vulnerable households received around £30 million a year to support its activities and should be re-introduced on a reduced scale in Wales as it would create much needed jobs and support for vulnerable households</p> <p>NSA Afan recommends that there is an emergency fund established to help vulnerable households during the winter months between October to March to replace faulty and obsolete boilers. This could be administered through the good services of Warm Wales and NEST although we have found NEST to be too prescriptive for some households. If the eligibility criteria could be relaxed we would see many more vulnerable households being helped during their time of need.</p> <p>The criteria for eligibility should be as broad as possible and include anyone over 65, families with children under 5, People on incapacity and disability benefits, JSA or Universal Credits. We have experienced calls and face to face contact from members of all of these types of households and at present not all can access emergency support during winter months. Some were forced to use electric fan heaters to provide warmth until they could afford to have the gas boilers repaired.</p>
<b>9</b>	<p><b>Merthyr Tydfil County Borough Council</b></p> <p>LAs require revenue funding to properly support this industry locally. Only by employing well trained and experiences staff can LAs act as strategic enablers within their county boroughs.</p>

	<p>Interest free or low interest loans – may encourage home owners to participate in schemes and pay for the measures from the savings made on energy. Green Deal simply has not worked as it is too complicated and convoluted.</p>
<b>11</b>	<p><b>Cert Sure</b></p> <p>The incentive model being currently used doesn't seem to be driving the take-up necessary to achieve existing targets that have been set. Therefore should alternatives be considered, such as fines, to push the take up of more energy efficient systems?</p> <p>Which financing models work best to address the energy efficiency needs in Wales for different target audiences?</p> <p>We don't have sufficient knowledge to suggest which finance model works best; however the experience we have from other UK Government schemes is that the consumer confidence is affected negatively when tariffs and payments change which would suggest a long term commitment to a strategy would have the potential for greater success.</p>
<b>12</b>	<p><b>Pembrokeshire County Council</b></p> <p>100% grants work best. Uptake will be vast. Finding that money is the challenge. If grants can't be made keep it simple. A zero interest loan. Complexity of various schemes – tax credits for installing energy efficiency measures, Green Deal, FIT/RHI – these are all noble schemes but all have their own rules, their own forms and people just get put off by the paperwork, monitoring and processes.</p> <p>Increasing taxation by a percentage point and investing all the money in energy efficiency as grants. Radical and unpopular unless explained properly. If explained properly this could be a good idea. The impact on many sectors will benefit the nation – e.g. lower admittances to hospitals with winter related illnesses, lower fuel bills. WG does not have tax raising powers currently. If this changed this measure should be explored.</p>
<b>13</b>	<p><b>ICE</b></p> <p>It is considered that the most important thing is educating people in the benefits of energy saving measures (see Q3). Some measures will require capital expenditure; some will simply require changed thinking (as list above).</p>
<b>14</b>	<p><b>ETI</b></p> <p>Further to the issues highlighted in our response to Question 3 above, we believe that there should be greater alignment between policy and incentive measures to ensure that targeted interventions are encouraged and</p>

supported. A proper evidence-based approach would help with this. The EnergyPath Networks area energy planning tool, which the ETI is developing, with input from a number of Local Authorities including Bridgend, is part of this evidence gathering, detailed planning and development process. Such a tool could allow the introduction of “spatial incentives” to allow incentive measures to be targeted in specific areas to facilitate uptake of the most cost-effective measures in that area. We are also working with the investment community to understand the policy and regulatory environment that will be needed to support the long term commercial financing of the transition scenarios that we envisage. Consideration is also being given to using ‘revolving’ funds to finance community energy projects to the benefit of the local community.

An evidence-based approach, including results of mass scale trials, will increase the knowledge and acceptance of alternative technologies and help ensure energy efficiency measures are seen as an investment rather than costs and payback. As part of the ETI’s Smart Systems and Heat (SSH) Programme, the ETI is carrying out a RetroFit Demonstration project. The work will identify the practical cost to retrofit five of the most energy-intensive buildings across the UK housing stock. The house archetypes include a pre-1919 Mid-Terrace and detached property, to a 1980’s Semi-detached, with a mix of insulation (internal and external wall, floor, loft) plus draught-proofing.

Preliminary work suggests that to improve the EPC rating of each house to an EPC C would cost £14,000-£30,000. It may not be economically prudent to finance such a significant sum retrofitting all properties to an EPC of say C. The ETI therefore recommends that more modelling and practical demonstration of retrofit is undertaken at a small scale across a number of house archetypes to better evaluate the costs and supply-chain opportunities involved in potentially upgrading all homes to an EPC of C (or above).

The ETI supports the principle of identifying those households in fuel poverty and providing free-of-charge energy efficiency measures to a pre-defined minimum standard. It may not be cost effective though to set an EPC rating of C for all these houses, since many of the older, solid-wall archetypes (especially those in rural areas) will be expensive to bring to that level. This problem will be exacerbated with the split-incentives in private rented tenure. For households in fuel poverty, we suggest free-of-charge measures are deployed, even for those in the private rented sector, to preclude private landlords from cascading the retrofit costs to the tenants. After deploying cost-effective energy efficiency measures, for those households that remain in fuel poverty it may be more cost-effective to either subsidise energy supply costs or deploy alternative heating approaches than continue to improve the building fabric efficiency.

<p><b>15</b></p>	<p><b>Wolseley</b></p> <p>Clearly there must be a focus on those most in need. One of the problems with current policy is that ECO is focussed on cost effectiveness in isolation and therefore the selections are based on cost of delivery rather than an understanding of the benefit. Those with the issues that are most expensive to correct will be the last in the queue. This has been particularly disadvantageous to those in rural areas with solid wall properties and non-gas heating devices.</p> <p>The concept of householder contribution has been the latest blight which has been caused by the relentless drive to lower costs. HHCRO Trades on the ECO Brokerage have been exchanged at such low prices that installations without contributions have become virtually impossible.</p> <p>We believe that obligations should come with a mandatory instruction of fully-funded installations to those in the target group of the most vulnerable.</p> <p>Access to competitive finance in the able-to-pay sector would undoubtedly stimulate demand and the forecast of 10,000 Green Deal plans for the first year of operation is indicative of the scale of ambition. Pay-as-you-save remains a sound concept although the much maligned Green Deal scheme requires major revisions to overcome the barriers of cost, complexity and burdensome administration.</p>
<p><b>16</b></p>	<p><b>Miller Research</b></p> <p>One of the biggest barriers to scaling new technology in Wales is that of second stage finance. Wales has been relatively poor at supporting finance for innovation start ups, leading to leakage of IP and GVA to SE England or overseas. Whilst grant funding is attractive in the short term, long-term repayable loans for companies committing to stay in Wales would be beneficial.</p>
<p><b>18</b></p>	<p><b>Torfaen County Borough Council</b></p> <p>Fully funded models work best as Local Authorities often do not have the resources to match fund and, due to the limited take up of the Green Deal scheme, finding additional funding is difficult. Specific Capital Grant used to fund energy efficiency works in Neighbourhood Renewal Areas has worked well in Torfaen to address energy efficiency needs.</p> <p>There is a lack of consistency with EWI funding and the levels available which make it difficult to plan energy schemes locally.</p> <p>Consideration needs to be taken regarding property construction types and</p>

	<p>the appropriateness of suitable measures that glean the greatest investment set against factors of poverty. Targeting properties in areas of poverty that are not on gas mains and whose only option is solid fuels are often more costly to improve – and needs to be considered.</p> <p>Area based approaches to energy efficiency are not always the most effective way of targeting those most at risk, with some deprived areas containing residents whose social economic status is better than those in less deprived areas.</p>
<p><b>22</b></p>	<p><b>Ofgem</b></p> <p>It is important to recognise how different funding sources can be combined to provide funding for a given project. For instance, funding through the ECO scheme is provided by the obligated energy companies and is therefore not classed as state aid. This present a number of opportunities for ECO funding to be combined with other sources of funding such as the Green Deal, the Feed-in-Tariff, the Renewable Heat Incentive, European Union funding, or Welsh government funding. Indeed Welsh government funding may be used to leverage funding from schemes such as ECO. In order to facilitate this co-funding, the Welsh government may wish to consider the eligibility criteria and guidance of the scheme in question during the development stage of its funding programmes to ensure that the schemes do not conflict with each other.</p>
<p><b>23</b></p>	<p><b>Energy Savings Trust</b></p> <p>It's clear that the Green Deal finance package is seen as a route of last resort and there remains a gap for low cost finance for energy efficiency measures to be installed. With two rounds of Green Deal Home Improvement Fund and three rounds of the Green Homes cashback scheme in Scotland<sup>25</sup>, these funding mechanisms seem to be the most successful way to ensure take up with measures installed and houses improved.</p> <p>As of 2014, there are more than 5,000 community energy groups within the UK, dedicated to raising awareness about energy saving measures, carbon emissions reductions, energy generation, and behaviour change that encourages more sustainable living.<sup>26</sup> This number may be set to grow. According to a recent DECC survey, just over half (51 per cent) of respondents stated that they would be motivated to get involved in a community energy project if it could save them money on their energy bill.<sup>27</sup></p> <p>DECC has also recently published a Community Energy Strategy, which focuses on 'what the evidence shows is needed to make community energy expand – stronger partnerships, improved skills and capacity, better access to finance, and more sharing of best practice and measuring impact.'<sup>28</sup> We</p>

feel that more should be made of the mechanism community groups provide to enable local funding to be managed, perhaps through credit unions, or the sharing of bulk-purchased PV systems and FiT payments to enable energy efficiency measures to be installed in the communities' homes. There may also be ways that community groups can secure more ECO investment for works. EST is currently finalising a report which assesses whether community energy projects represent a cost-effective way of delivering energy efficiency. When available we would be delighted to present this to the WG energy efficiency strategy team to discuss current examples and how we feel this type of empowerment could work in Wales.

In our experience of working with CERT, CESP and ECO funding it has proven consistently difficult to secure funding for energy retrofit work on large blocks of privately rented, or privately owned flats. These large blocks represent an 'easy win' in terms of energy and carbon savings but often need a coordinated approach to retrofit and require significant capital investment. As domestic properties approach high rates of installation for both loft and cavity wall insulation the need to provide a route to funding for these types of properties become more important. The nature of energy efficiency funding at present tends towards both individual homeowners and larger organisations such as housing associations, universities and hospital estates.

There are a few examples of where credit unions have been used to facilitate affordable lending for energy efficiency measures to be installed. Examples include the Dorset Energy Advice Centre's Greener Loan product<sup>29</sup> and the Rugby Credit Union's green loan scheme<sup>30</sup>.

25 <http://www.energysavingtrust.org.uk/green-homes-cashback-statistics>

26 [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/275163/20140126Community\\_Energy\\_Strategy.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/275163/20140126Community_Energy_Strategy.pdf), p. 3.

27 [http://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/279089/DECC\\_Community\\_Energy\\_Strategy\\_Survey\\_v3.pdf](http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/279089/DECC_Community_Energy_Strategy_Survey_v3.pdf) p. 4.

28 [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/275163/20140126Community\\_Energy\\_Strategy.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/275163/20140126Community_Energy_Strategy.pdf), p. 4.

29 <http://www.greenwisebusiness.co.uk/news/green-deal-firms-opt-for-credit-union-bonds-to-offer-0-energy-efficiency-finance-4150.aspx>

30 [http://www.rugby.gov.uk/info/200435/energy\\_efficiency/1720/energy\\_efficiency/6](http://www.rugby.gov.uk/info/200435/energy_efficiency/1720/energy_efficiency/6)

**24 Neath Port Talbot CBC**

One particular gap within the financial support mechanisms within Wales relates to innovation, where there needs to be a dedicated funding stream to

	<p>support the development and implementation of innovative projects.</p> <p>Another area of concern relates to domestic energy efficiency funding and the need to implement fully funded schemes which will increase the level of energy measure take up. Areas with high levels of fuel poverty located within deprived areas have householders who are unable to make contributions themselves towards energy efficient measures, therefore there is the need for to create a mechanism to address this issue.</p> <p>A targeted “strategic area approach” is the most effective way to achieve high levels of take up. It is more economical and resource efficient to undertake a blanket approach than individual property installations, residents are more likely to take up offers in numbers as they feel safer with a Local Authority approved scheme.</p> <p>It would be beneficial for Welsh Government to produce a road map to identify and publicise the various sources of funding available.</p> <p>With current economic constraints, it is going to be increasingly difficult to progress energy/carbon projects with focus prioritised on key service provision. Therefore it is essential for Welsh Government to formulate an approved financial structure that Local Authorities could set in place to ensure effective energy efficiency programmes are implemented. It is appreciated that there will regional variance but core areas of focus will be common and possibly split into two main sectors of domestic and non-domestic energy efficiency.</p>
26	<p><b>Wrexham CBC</b></p> <p>Tariff payments that are related to the renewable generation (like FIT and/or RHI) and at the levels that would encourage the uptake could be a potential financing model. Welsh Government funding streams across departments could be combined. The reliance on leveraging in private capital should be questioned – where there is market failure, then the public sector needs to step in and take the lead</p>
27	<p><b>Glass and Glazing Federation</b></p> <p>The GGF welcomes the Welsh Government’s commitment to energy efficiency by maintaining funding at a time of budget cuts. The GGF also supports the recognition of the Welsh Government’s role in increasing the level of knowledge about financing mechanisms for energy efficiency beyond pure grant funding.</p>
28	<p><b>Citizens Advice Bureau</b></p> <p>When considering an energy efficiency strategy which looks beyond fuel poor customers, it is useful to note that the <i>What’s In It For Me? (2012)</i> research</p>

	<p>found that ‘free’ schemes can be off-putting for some able-to-pay consumers – as it implies there will be eligibility criteria, or that the measures on offer are low value or poor quality. Additionally, some consumers, who are prepared to pay for measures, will place a higher priority on ensuring affordability of monthly repayments than on the long term benefits. Affordable credit for able-to-pay households was explored in Citizens Advice’s report <i>Raising Standards, Cutting Bills (2014)</i>. Whilst the report made recommendations specifically regarding the UK Government’s Green Deal finance programme, it does contain useful modelling and cost/benefit analysis of various options for government backed energy efficiency loans.</p> <p>The main barrier to low income households who stand to benefit most from energy efficiency measures is, of course, income. It therefore remains essential to maximise and prioritise the ongoing provision of measures to these households through free schemes like Nest and Arbed.</p> <p>It is also important that effective referral mechanisms are put in place to sit alongside area programmes to make sure fuel poor households outside priority areas get help. The Welsh Government has introduced a new Resource Efficient Wales telephone advice line which aims to provide a single point of contact for consumers on energy efficiency amongst other things. It will be important to monitor whether any specific consumer groups are under-represented in the user base for this service.</p> <p>Area approaches benefit the able to pay as well as the fuel poor. In fact they rely on helping both groups of households. Area programmes can sometimes mistakenly be seen as only appropriate for fuel poor households (although it is important low income areas are prioritised when area programmes are rolled out).</p>
29	<p><b>Sustainable Energy Association</b></p> <p>There is no single finance solution for improving energy efficiency take up. We would suggest that rather than a lack of individual financial incentives, the lack of an overall strategy for energy efficiency deployment (with accompanying budget) is key. Industry has called for the UK Government to promote energy efficiency as national infrastructure project, and to fund it accordingly. There is good evidence<sup>4</sup> that funding a mass energy efficiency retrofit project would more than meet the requirements for economic return as specified by Treasury Green Book principles, and would meet the threshold for spending versus benefits received by the economy as specified by the Infrastructure Strategy. We would welcome the Welsh Government taking a similar, long-term, financing approach.</p> <p>In terms of individual policy mechanisms, understanding the different market</p>

	<p>segments and building types would help the Welsh Government apply the correct incentives. It is likely that a mixture of grant, loan, and able-to-pay-finance offering would be the right approach; with a mixture of measures promoted. It is worth noting that Arbed has been relatively well received by industry, and that many of the projects funded offer useful case studies for integrating social housing with the private sector and heating or Solar PV measures with energy efficiency measures.</p> <p>We would encourage the Welsh Government to look at the Arbed projects achieved so far and look for where there would be financing gaps to extend this – we would suggest that the able to pay market might need support with, for instance, a pay as you save loan or simple grants to encourage them to install measures alongside homes and measures receiving full funding. In time, we would like to see a model which moved the Welsh Government away from subsidising energy efficiency measures in buildings towards mandating the cost-effective interventions through regulation.</p> <p>4 Energy Bill Revolution (Verco and Cambridge Econometrics), 2014</p>
<p><b>31</b></p>	<p><b>Constructing Excellence in Wales</b></p> <p>Public sector grant funding conditions could be used more extensively to stimulate further application of energy efficiency measures.</p>
<p><b>32</b></p>	<p><b>British Gas</b></p> <p>British Gas believes that raising the required funds to pay for energy efficiency programmes that target those unable to pay for measures themselves through customers’ bills is regressive. We therefore recommend that funding for these programmes should come from general taxation in order to relieve the burden of those who can least afford it.</p> <p>Programmes run by the Welsh Government can work well in tandem with other energy efficiency programmes. For example, Nest has been successful in leveraging ECO funding of nearly £4m during 2013/ 2014, enabling more Welsh homes to receive energy efficiency measures. Nest is committed to ensure that wherever possible, ECO funding is brought into the Nest scheme to help more householders in Wales.</p> <p>At present, the majority of non-domestic energy efficiency projects are funded using in-house finance provided by the organisations requiring the work<sup>7</sup>. However, the extent to which there is latent demand for energy efficiency measures is unclear. It is also not well understood whether a lack of access to finance is a material barrier to investment in energy efficiency, and we would welcome any work to build a better understanding of these barriers, and remove them wherever possible.</p>

The current non-domestic pay-as-you-save scheme – a version of the residential Green Deal – needs to be fundamentally rethought if it is to play a part in driving greater investment in energy efficiency. To date, only 63 surveys have been completed and no non-domestic Green Deal finance plans have been arranged.

We believe that an improved non-domestic pay-as-you-save scheme would allow businesses to pay for a wider range of energy efficiency investments through their energy bill. For example, Building Management Systems are not currently included in the non-domestic Green Deal, but are the one of the main ways that many businesses can save energy.

Green Deal finance is currently restricted to the building infrastructure, but for many businesses the energy-consuming assets within their buildings – such as pumps and compressors – are equally or more important. Consideration should be given to how Government could reduce the interest rates payable for finance on energy efficiency improvements to lower than could be achieved through conventional financing routes.

We also believe that the up-front energy efficiency assessments required for the current non-domestic Green Deal should be improved to provide simpler, tailored advice that acts as a call to action, and can focus on specific areas of a building where improvements are required – such as the heating system – rather than requiring an assessment of the entire site.

#### Case study: Gen Community

British Gas has come up with an innovative approach to deliver investment in solar panels to housing associations.

Through the Gen Community programme, we have installed solar PV panels at no cost for housing associations across the UK, reducing electricity costs for tenants who are struggling to pay their bills.

Gen Community has partnered with Social Finance to deliver a ‘Solar Social Bond’, to finance multiple solar installations for Local Authorities and Housing Associations. British Gas Solar will install and operate the solar PV, providing quality assurance and performance guarantees over the lifetime of the projects

The model combines community equity, and bond finance, to scale community energy, whilst retaining the surplus income stream for the benefit

	<p>of the community. Typical project sizes will be amalgamated to 5MWp and above.</p> <p>Gen Community establishes a Community Benefit Society in the locality where the solar PV is to be deployed. This is the operating vehicle, which issues the community equity share offer, in addition to the Solar Social Bond. Representative members from the community and/or the Local Authority/Housing Association will sit on the board of the Community Benefit Society.</p> <p>There is no capital outlay for the host organization, although there are opportunities to participate and invest, if desired.</p>
<b>33</b>	<p><b>Saint Gobain</b></p> <p>As per the response to question 3, the EEPB report outlines the barriers (page 7 for economic issues).</p> <p>Interest rates for Green Deal are currently too high. Low or zero interest rates are required so that finance is not a barrier to energy efficiency.</p> <p>Grants are required for those on low income. The ECO scheme does not go far enough to help those in need.</p>
<b>34</b>	<p><b>CLA Cymru</b></p> <p>CLA Cymru would firmly advocate that energy efficiency must be sustainable if we are to see long term improvements. The most problematic aspect of this is economic sustainability. The public purse is being squeezed from every direction – funding is limited and has many pressing issues it must address. The renewable energy market was created and sustained through government subsidy; such artificiality does not create a resilient business industry. If energy efficiency is to realise widespread commitment and adoption, more time and money must be invested in innovation and improving technologies.</p> <p>Grants and funding previously offered also face problems of poor publicity, restrictive entry criteria and limited options. Looking ahead, there are more fundamental problems. Proposals for the Rural Development Programme 2014 – 2020, which has previously run grants for on-farm renewable energy, include a similar scheme going forward which seeks to restrict energy production to on-farm use only. Such proposals do not align with wider Welsh Government ambitions to improve energy efficiency.</p>
<b>35</b>	<p><b>PLANED</b></p> <p>Grants and financial incentives have the quickest impacts (e.g. 100% funding</p>

	<p>for efficiency measures, FiTs) although finding the money and ensuring it stays locally / in Wales will be hard to control – e.g. large EU companies owning solar parks.</p> <p>Community Benefit models need to be made more of – potential to offer household efficiency improvements linked to larger developments rather than ‘cash lump sum’? Local roll out of initiatives (i.e. word of mouth) would very quickly improve energy efficiency but how would it be financed?</p> <p>(Low Bureaucracy) Schemes that could be taken up by community / public buildings as demonstration sites would also be worthwhile investment (particularly when linked to champions within the premises – able to quote fuel reductions etc)</p>
<p><b>38</b></p>	<p><b>Hywel Dda University Health Board</b></p> <ul style="list-style-type: none"> <li>• Salix is not always popular due to the repayment requirement. This is particularly relevant for energy schemes as rate increases and consumption creep automatically take a portion of the savings. It is difficult to track actual savings and Salix repayments are seen as a cost pressure.</li> <li>• Need an energy efficiency funding pot which accounts for lifecycle of buildings and longer scale paybacks.</li> <li>• WG need to communicate that they are open to the receipt of energy business cases and will support public sector bodies that commit the significant time and resource to develop projects that will deliver energy savings and meet the WG mandatory targets.</li> </ul>
<p><b>39</b></p>	<p><b>NHS Wales</b></p> <p>From the NHS perspective, it is important to note that the governance / constitution of Health Boards restricts their ability to borrow and therefore access some sources of funding, this excludes them from some schemes such as Salix and limits the opportunities to invest in energy efficiency other than through traditional capital funding routes.</p>
<p><b>40</b></p>	<p><b>Rhondda Cynon Taf County Borough Council</b></p> <p>Gaps - The fluctuating ECO levels and number of different initiatives require different contributions at different times. This is not consistent or sustainable when long term financial planning (especially for Local Authorities). Need more simplistic and consistent system.</p>

	<p>Works best - For RCT the Welsh Government funding has remained the only constant stream of funding, which along with the Council's continued commitment to capital investment in energy, which has enabled us to continue our valuable energy efficiency/fuel poverty work over the recent years. Local Authorities are also better placed to share out the ECO funding, targeting the most vulnerable and fuel poor rather than letting the private market randomly target their audiences, who are most often not the most in need.</p>
<p><b>41</b></p>	<p><b>Community Housing Group</b></p> <p>A lot of funding that complements RSLs investment for energy efficiency improvements and makes it go further has either been cut or reduced. This has meant that the neighbourhood approach has been more difficult to achieve. An example includes the cuts to the energy company obligation and cuts such as this make it much more difficult for the sector to install energy efficiency measures, particularly more expensive measures such as external wall insulation. Solid walls have low pay back periods and are technically complex. The result is that some tenants in most need will either have to wait longer or even miss out altogether on these much-needed improvements. The aspiration and investment of many in the sector needs to be matched by government stepping up to the plate. WG should look at future funding models for RSLs to ensure that we are able to deliver the best possible standards for housing. This may include underwriting of private sector loans, and grants that both require and enable us to ensure that whole life costing of housing is taken into full consideration. Funding energy efficiency retrofit works as well as the amount of energy that we generate through renewable technologies should be infrastructure investment priorities and infrastructure investment should be benchmarked for their environmental impact. The Wales Infrastructure Investment Plan (WIIP) provides a significant opportunity to ensure that large capital projects fulfil sustainable development criteria at every level from carbon impact to community benefit.</p> <p>The CHC Group welcomed the additional £2.3million to the Arbed programme in 2013 which provided grants to create a network of Green Deal Demonstration Homes/Schemes in Wales. This early funding allowed HAs to take advantage of ECO funding to improve and target it's hard to treat properties in Wales. The CHC Group and HAs would like Welsh Government to work closer with the sector on such initiatives when considering releasing funding under Arbed or other funding streams. Ideally, the release of funding needs to be planned, allowing HAs time to consult and develop effective energy efficiency projects.</p> <p>The changes in ECO and the UK Government's decision to reduce the solid</p>

wall insulation target in particular has impacted the sectors ability to fund properties that do not result in significant carbon savings e.g. mid terrace solid wall properties. This has had a huge impact on RSLs in Wales. As a consequence of UK Government changes, a number of energy companies withdrew their ECO funding offers which have affected RSLs ability to deliver energy efficiency housing improvement schemes. Many RSLs had spent many months preparing ECO partnerships, many of which, all the contractors and energy companies, effectively, walked away from. RSLs now have to recast projects at much lower levels of support from the energy companies. RSLs had done enabling work on properties where perhaps new windows were put into properties and properties were prepared to have external wall insulation schemes delivered, only to find that the EWI partners, because of the change in ECO, were no longer prepared to enter into contracts. There were instances where over the winter, RSLs had tenants whose homes had been prepared for installations that RSLs had to maintain watertight over the winter while RSLs were waiting to try to rebuild schemes this year. That was a real impediment and was not a good service to tenant. This in turn can damage the reputation of schemes in the wider community. That is where the Welsh Government, both in terms of its own policy (in terms of operationalising policy) and in terms of trying to influence UK policy, could have a really significant supporting role and leading role to play in trying to change the way in which schemes are implemented and changed going forward. CHC would like to see Welsh Government support available when, for example, UK government funding is either withdrawn or doesn't materialise. However, where RSLs have been able to secure ECO deals, RSLs have undertaken communication with the local community because they know that local community and have also been able to deal with local contractors when possible putting targeted recruitment and training into projects, so that schemes can take on apprentices, local people, etc. It is important that quality work is done as locally as possible.

Changes to ECO targets and the withdrawal of ECO offers from energy companies have hit HAs who were reliant on ECO funding to improve its hard to treat housing stock. Uncertainty in income arising from the recent changes to ECO has meant that HAs have been unable to plan ahead their energy efficiency and maintenance programmes to treat their hard to treat housing stock. Feedback from members ahs suggested that some ECO funders want to take control over schemes that are already being managed by the HA's. As a consequence to changes, more tenants across Wales could remain in fuel poverty and live in hard to treat homes. CHC would like to work with Welsh Government to put pressure on the UK Government to create a regional target on the number of solid wall properties an energy supplier must target in Wales, as well as work on the design on investment

programmes to help tackle the energy efficiency of housing stock. The latest Department of Energy and Climate Change (DECC) statistics published for the period to June 2014 state that out of a provisional 891,669 measures installed under ECO, six per cent were in Wales (52,252)<sup>7</sup>. ECO has taken an inordinately long time to get the deals done. Delays and policy changes have been probably the strongest characteristic for the slow uptake or slow delivery of schemes. This, in turn, causes breaks with the supply chain, it causes breaks with construction partners, and it causes starts and stops on procurements. Stop-starts between different policies does not help. Equally, the sector was caught when the feed-in tariffs were changed a couple of years ago. It caught the sector out as well as the whole construction and supply sectors. Having a more joined-up approach to individual energy management and energy efficiency policies when policy changes is needed, as well as having forward dates for policy changes rather than drop-dead dates, would also help tremendously in being able to devise and then deliver programmes. Programmes need more longevity so that we can plan better to get the economies of scale and get those works completed in far more properties. RSLs have a long-term interest in the stewardship of their communities and actually planning these programmes has been difficult in many instances in the past.

The CHC Group is supportive of the role the Welsh Government is doing to maximise ECO in Wales. The CHC Group represented the RSL sector on the Maximising ECO Core Working Group and welcomes the Welsh Government's £70m commitment to encourage energy companies to invest in energy efficiency projects and maximise ECO investment in Wales. The Welsh Government needs to ensure that a partnership approach, particularly between local authorities, RSLs, the private sector and Care & Repair Agencies is a key element in awarding funding for ARBED, the maximising ECO grants and other energy efficiency funding streams. WG should ensure that local authorities are having those discussions with their partners.

Arbed Phase 2 has seen a community focussed implementation in some of the most deprived areas in Wales. It has also seen resources concentrated on the most sustainable outcomes in relation to social, economic and environmental drivers – community benefits, investment focussed on Welsh organisations, employment & training and promoting the use of the Value Wales Community Benefit Measurement Tool in demonstrating the value of the investment to Wales, its citizens and its economy. South Wales Scheme Managers can report over 350 jobs created or sustained (which equates to around 10 jobs for each £1 million spend) 60,000+ hours of training delivered and behaviour change assistance for householders. This has been achieved through focussed and targeted implementation rather than by distributing

monies on a piecemeal basis. The Arbed 2 scheme in South and West Wales, in addition to seeing works secured by Welsh Business, has also been responsible for new jobs and business in the Green Sector. This includes new insulation companies being formed, new green and surveying companies being formed and SME's stepping up into the principle contractor role. The Arbed project takes an inclusive approach including local authorities, HA's, community groups etc. This means that it has the greatest potential to get to the most 'difficult to reach' sections of communities. Additionally, as it is 'backed' by Welsh Government and Local Authorities customers can have more confidence in the process, quality of work and outcomes they can expect to achieve. The value of money invested can be readily identified in relation to value to the Welsh Economy, the affects on fuel poverty, employment, training, community benefits etc. The ARBED Phase 2 scheme can demonstrate (through calculations and through data collected from households) that Welsh households are saving an average of £350+ per annum, with some households saving in excess of £600 per annum. The RSL movement in Wales is ideally suited to deliver such programmes.

However, at current levels, it will take decades to be able to make every home that is currently performing very poorly more efficient. Much more significant investment is needed from Welsh Government than is currently in place. Furthermore, the delivery mechanism for ARBED phase 2 i.e. being led by local authorities has meant that less HA energy inefficient properties have been supported in this ARBED phase compared to phase 1. While we recognise that ARBED is a programme which should apply cross tenure we believe that the change in the application process from Arbed phase 1 and 2 has led to a patchy approach in some areas which is too dependent on local government priorities and processes. In some areas good partnership bids have been developed, but in others, some HAs have not been involved in bids for funding. Various HAs have indicated issues with the delivery of Arbed phase 2 in particular in North and rural areas of Wales, including communication issues and using the local supply chain, which are obviously key aims of ARBED. Feedback from a member based in North Wales suggests that some local contactors have struggled to meet the criteria set out in the current Arbed2 format. An RSL based in South Wales felt that one of the main issues relating to Arbed 2 was the initial uncertainty as to where the funding was to be focused as they are an RSL working across 5 Local Authority areas, which can lead to uncertainty and difficulties in planning retrofit upgrade programmes across a diverse portfolio of stock.

It is not just about the relationship between the RSL and LA, but also about capacity issues as well within the local authority, which we anticipate are

likely to be challenged further in the future. Local Authorities are squeezed in terms of finances and resources, have complex procurement issues and at a time when they are being squeezed to deliver core services only, they are not well suited to delivering a large scale complex programme. Housing Associations have the ability and the core ethos to deliver these schemes in the most cost effective ways with the additional assurance that they are not for profit – any surplus that may be generated are ploughed back into projects and schemes that benefit communities across Wales. ARBED 2 has suffered in areas from an absence of a multitenure approach and more could have been achieved if there had been blended funding. There are a lot of skills and experience out there to make use of. RSLs benefit from knowing not just their tenants, but also their communities and RSLs are well-placed to deliver that multitenure approach. Blended funding will enable that to happen. In rural areas, while there is dispersed stock, RSLs are well-placed to target private owners as well and retrofit homes with energy efficiency technologies in those areas. Some RSL schemes have reported 100% uptake among private households when they have carried out combined schemes, working in partnership with the local authority. This approach has been very effective, both in terms of the planning bid preparation and delivery on the ground, with both the LA and RSL working to utilise the other's skills to best effect, to enable blended funding to carry out works to mixed tenure schemes. This also brings with it scale and rather than a pepper-pot effect in neighbourhoods, you have a whole street scene where every property may be done and you can look at the whole village. The anecdotal evidence of going to those neighbourhoods and talking to the tenants who live there, and to the other residents who live there, is that the difference it has made, not just to fuel poverty, but to their lives, is astronomical.

In terms of the cost of dealing with one home, you need to save money by covering as many homes as possible at once. We must help ensure that we maximize the amount of energy efficiency funding provided in Wales going forward alongside UK Government funding and alongside contributions from social landlords, so that the pot is bigger. That will enable us to create larger-scale programmes, which helps to address some of the issues around dispersement of stock. A mixed tenure scheme has a fantastic regeneration impact in terms of the vernacular and the street scene in communities because whole streets are being done at the same time.

There should be a medium-to-long-term strategy, as physical measures are worked through the stock, to start to look at other ways that we can reduce the cost of energy to our tenants. In particular, there are a number of RSLs in the sector now who are starting to look at how we support community renewable energy initiatives and the expansion of solar for example, so that

people start to get free power, rather than having to pay for it at all. The feed-in tariff schemes work very well where they have been installed, but there is a lot more to be done now around enabling communities to generate their own power and thereby have a greater control over future fuel usage and costs. We also need to challenge the status quo in terms of the amount invested in energy efficiency. If you look at the experience in France, under the 2007-2013 structural funds programming period, each French region allocated up to 4% of their Operational Programme to energy efficiency investments and greater use of renewable energy in existing housing. Looking at Germany's energy production, Germany has seen a huge increase in renewables from 6% in 2000 to 20% in 2011, with the aim of getting this to 35% by 2020. That scale of spending is happening in Wales and that is the kind of investment we should be aiming towards to get to grips with the challenges we face in Wales. For example, estimates in a Bevan reports on poverty states that it will take 78 years for Nest to reach each and every home suffering from fuel poverty in Wales.

Schemes such as the feed in tariffs and renewable heat incentives present the sector with an opportunity to take advantage of an attractive financial incentive, reduce the cost of electricity for our tenants, potentially generate income in future years and the potential for growing social enterprise around the future maintenance of installations. The schemes offer the opportunity for our members to drive this uptake in renewables with the price of oil and concern for the environment being strong drivers for our members. Social landlords can and should play a vital role in the roll out and eventual mainstreaming of renewable technologies. More incentives such as these are needed. The key objective in the first instance should be to increase the uptake and public acceptance of renewable technologies in the early days and social landlords have an important part to play in achieving this objective. Several of our members have been piloting the installation of renewable heating systems for example and several have been successful under UK Government initiatives. Significant costs have resulted in the need to engage with tenants following renewable heat installations. It can be accepted that renewable heat technologies are generally less well known and there are more hassle factors associated with their installation, which increases the barriers to installation. Therefore, bearing in mind the experience of social landlords in installing renewable heating systems, social landlords have the skills and expertise to work with the industry to accelerate this process, but only with the right incentives.

Appropriate subsidies help make a business case for replacing fossil fuel heating systems with more expensive renewable ones. With an appropriate incentive, with RSLs having large percentages of tenants in receipt of

benefits or low incomes, schemes and further incentives would enable RSLs to install renewable technologies into their properties and in communities at a faster rate due to the subsidies available in order to help reduce fuel poverty. While housing associations remain firmly committed to environmental investment, they require increased certainty and realistic timescales in order to proceed with projects, due to the fact that projects take time to get off the ground due to the need for agreements with lenders, consultations with tenants, legal agreements, board approvals and many other considerations. Certainty and long lead in time is key as well as the need for schemes to be designed to ensure administration is fairly simple. Housing associations' experience with the rapid and dramatic reductions in FITs for PV resulted in many schemes being abandoned and significant abortive costs at times. We strongly suggest attractive incentives exist for social housing providers in order to support the social housing business model and stop schemes becoming regressive in their application. Incentives should form an important part of the process and this could include financial incentives as well as other incentives. Regulatory drivers should include the need for financial incentives and disincentives introduced by Government (including forms of subsidy), stronger enforcement, council tax reductions, etc. Many projects that housing associations are planning are very costly as housing associations have the added expense of the cost of finance i.e. interest and loan arrangement fees, the cost of due diligence, operational, financial and legal, tax, both corporation and vat (and that the income is taxable without any capital allowances), costs of long term project management (costs of consent, etc) and maintenance and consultations with tenants/legal agreements.

To give an example, housing associations would usually be required to borrow in order to undertake certain schemes with the cost of capital amounting to around 6%, meaning that if social housing schemes were to receive low tariffs or no incentives at all to install renewable systems, then it would make it difficult for the scheme to cover costs. From past experience, if an association did happen to buy products at scale, then savings may be lost in the time and resources that have to be put in to staff training, tenant engagement and follow up in order to ensure that the system is correctly operated and achieving the intended goals of reduced bills and lower carbon emissions. Many of our members have commented that lenders are unlikely to consent to borrowing in light of low incentives and low tariff rates because of the increased financial risk and the lower profit margins. Therefore, it is vital that financial analysis reflects the social business model of schemes in the HA sector. The balance of responsibility for energy costs between landlord and tenant needs to be taken into account when designing appropriate incentives for RSLs. RSLs can target those most in need. There are limits on access to cheaper finance because associations are

constrained by the amount of on-balance sheet funding they can accept. Housing associations have to make the additional capital investment to fund installations without benefitting from reduced bills directly and so require support if they are to fund installations on a significant scale. One of our members reported that they have completed an option appraisal at one of their estates with failed solar thermal that was installed at the time of construction. The results of their study concluded that without any subsidy, the most financially viable scheme to proceed with was solar PV.

7 <https://www.gov.uk/government/statistics/green-deal-energy-company-obligation-eco-and-insulation-levels-in-great-britain-quarterly-report-to-june-2014>

8 <http://www.bevanfoundation.org/publications/rethinking-poverty/>

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### **Low Zero Carbon Hub**

We have outlined in our response to question three that we are keen to challenge landlords to raise the performance of their housing stock. We understand that approximately 130,000 landlords operate in Wales<sup>35</sup>. The hub would be keen for the Landlords Energy Saving Allowance<sup>36</sup> to be promoted more widely and other funding mechanisms established to encourage better portfolio management and energy efficiency works within this housing sector. From the case studies of Welsh Governments “Houses into Homes” interest free loans<sup>37</sup>, it is clear to see that there is interest and a local supply chain to support the housing refurbishment sector. It would be ideal if this programme could be strengthened to incorporate more sustainable refurbishment, so case studies demonstrate the installation of appropriate energy efficiency measures and savings too.

We feel that the Welsh Government should continue to lobby for better financial deals to be attached to the Green Deal as the current scheme has high costs for measures and unattractive interest rates. The current arrangement is a major disincentive for take up, and the whole issue of a charge against the property should the original householder move on needs to be addressed, research indicates that these are the two biggest barriers to the Green Deal.

The UK ECO funding mechanism is driven by carbon emission savings and a complex carbon market. This will remain outside of Welsh Government’s remit but any new programme which is seeking to leverage in ECO funding to Wales needs to broaden and provide a healthier built environment. By spending money to improve the Welsh housing stock we will see a dramatic reduction in hospital admissions in cold weather, producing substantial savings for the NHS in Wales and would shift focus from solely carbon emission savings.

35 <http://www.wlga.gov.uk/understanding-your-local-private-rented-sector>

36 <https://www.gov.uk/landlords-energy-saving-allowance>

	<p>37 <a href="http://wales.gov.uk/topics/housing-and-regeneration/housing-supply/empty-homes/case-studies/?lang=en">http://wales.gov.uk/topics/housing-and-regeneration/housing-supply/empty-homes/case-studies/?lang=en</a></p> <p><b>45 Rockwool</b></p> <p>A range of fiscal incentives should be considered to encourage householders to consider energy efficiency upgrades to their properties.</p> <p>We would encourage the Welsh Government to consider actions such as providing financial incentives to homeowners alongside low cost finance, and strengthening areas within building regulations which encourage more extensive energy efficiency works to be undertaken when homeowners carry out building works to extend their properties.</p> <p><b>46 SSE</b></p> <p>To ensure that energy remains affordable, SSE believes that social and environmental policies should be funded by the tax-payer, not the bill-payer. Funding policies such as the UK Government's ECO scheme through energy bills is regressive and can mean that the most vulnerable consumers pay disproportionately more than others; ultimately this could undermine the policy as it risks bringing more people into fuel poverty by adding to energy prices than it takes out through delivery of the measures to an increasingly targeted subgroup of customers. SSE wants to see these costs shifted into means-tested taxation so that those least able to pay for such schemes are sheltered from the burden, including those living in rural off-gas grid areas, who effectively pay 'twice' for schemes from which they will not necessarily benefit.<sup>2</sup></p> <p>SSE has identified the Scottish HEEPS model as a useful template for designing a future energy efficiency scheme that seeks to incentivise supplier obligation spend, fostering an attractive environment in which suppliers can discharge their ECO obligation whilst supporting local employment opportunities. Under HEEPS, local authorities identify the areas and measures of priority in addressing fuel poverty. Local authorities are well placed to know the condition and needs of the housing stock and this local knowledge makes the Scottish HEEPS model an attractive scheme from a supplier perspective. By working with local authorities in this way, suppliers should be able to deliver measures at lower costs due to the economies of scale and at a lower overall cost of carbon saved.</p> <p><small>2 Research indicates that schemes funded through electricity bills may mean that rural households living in properties not connected to the gas grid may pay disproportionately towards schemes but not receive assistance from them  tinyurl.com/cfhh2014</small></p> <p><b>51 Flintshire County Council</b></p>
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	<p>In 2012/13 Flintshire's corporate energy unit had capital budgets of £600K, this reduced to £200k in 2013/14 and is likely to fall still further for 2015/16. Hence a need to ring fence energy efficiency budgets or protect them for future years or proactive energy efficiency will cease.</p> <p>In terms of energy efficiency in homes, communities and small businesses more market research needs to be done on what types of financial packages and improvements are attractive to people. Look to examples run by Robert Owen Community Banking Fund for proof of the local economic multiplier. Yet we have seen some reluctance to take on loans, particularly where the perception is that measures should be free as they have been in previous schemes. We are testing different financial packages for different needs through this pilot. People have been more likely to consider loan funding when they are offered at least a partial grant contribution. Good value has to be seen at all stages of the process. It would be useful to see Wales-specific reports on ECO/Green Deal uptake, as well as outcomes from the Green Deal Communities funding projects to see if there are any common themes.</p>
52	<p><b>Egnida</b></p> <p>Based on our experience and track record there is no shortage of private sector investment for energy efficiency and renewable solutions. The shortage is of well structured investment opportunities that are attractive and fair and equitable for all parties. This is a specialist area of ours and we believe Welsh Government can play a role in encouraging others to explore these innovative commercial models, perhaps by progressing some on its own managed property portfolios.</p>
53	<p><b>NEA</b></p> <p>Low income and vulnerable households need to benefit from free measures and not be asked to make any capital contributions. As the current schemes can only assist a small fraction of fuel poor households in Wales it is imperative that increased resources for energy efficiency schemes are made a priority.</p> <p>NEA is concerned that in some instances loans may be offered to low income or vulnerable households as a means of funding measures. Vulnerable low income households will be debt-averse no matter how favourable the term.</p>
54	<p><b>Scottish Power</b></p> <p>Inevitably, there are significant challenges around funding for supporting the take-up of energy efficiency, given the level of ambition in this area and the constraints on public resources. Ensuring that committed funding is</p>

effectively targeted is therefore critically important. As part of this it is important to ensure that the targeting approach adopted under schemes such as ECO, Nest and Arbed is not unduly complex and is based on a workable form of identification that minimises costs and maximises effective delivery. In this context, ways of efficiently and securely using data held by central Government departments such as the Department for Work and Pensions has the potential to make this task much easier. In fact, given the fiscal constraints, ways of encouraging 'able-to-pay' households to contribute towards the funding of energy efficiency improvements is also important so as to allow for the effective targeting of limited resources to help those either in or at risk of fuel poverty. It might be expected that 'pay-as-save' schemes have a role to play here.

However, it is clear that Green Deal Finance, as it is currently designed, is not driving customer behaviour in this way at scale.

The Green Deal removes one barrier to energy efficiency which is the upfront cost, but only to the level that the Golden Rule allows. Moreover, it does not remove other barriers such as the hassle factor, and a lack of awareness of the offers and their benefits. It also involves a complicated proposition and customer journey.

We believe that there are a number of changes that could be made to Green Deal Finance that could increase uptake. These include:

- Simplifying the offer and customer journey.
- Offering alternative and simpler finance options.
- Greater promotion.
- Making it easier for new finance providers and installers to enter this market.

In particular, we consider that further steps are needed to promote finance options that are more akin to current finance options that consumers are used to and understand whether based on repayment through the energy bill or more familiar monthly repayments.

The constraint on public resources also means that incentive payments to consumers in respect of schemes such as the Green Deal need to be carefully tested to ensure good value for money. For example, the extremely fast uptake of the Solid Wall Insulation (SWI) incentive provided through DECC's Green Deal Home Improvement Fund suggests that the level of subsidy provided might have been unnecessarily high.

	<p>Finally, we would reiterate our view that effective working together between the different levels of government is vital to ensuring that the various schemes and initiatives marry up together in a coherent, efficient and cost-effective way. In this regard we welcome the Welsh Government's 'Maximising ECO' scheme which we believe will help drive further ECO funding into Wales as the ability to leverage other funding streams, allows suppliers to deliver ECO at a reduced cost. One of the key merits of this programme is the fact that local authorities have to submit detailed bids about the properties that they want to improve and what the benefits will be, providing certainty of outcome for suppliers, the local authority and the householders who are able to benefit. Scottish Power has supported a number of the bids for the latest round of funding.</p>
<b>55</b>	<p><b>WLGA</b></p> <p>The financial package associated with the Green Deal and the commitments required have not realised the perceived energy efficiency benefits.</p> <p>The current financial systems within the public sector are not conducive to longer term financial planning and realisation of benefits associated with energy efficiency measures</p>
<b>56</b>	<p><b>Carmarthenshire County Council</b></p> <p>Finance needs to have a more planned stream. Funding pots come up sporadically which makes it difficult to plan long-term for schemes. Utility funding opportunities are hit or miss depending on where the companies are with their targets. A clearer method of funding would help plan better</p>
<b>60</b>	<p><b>Alan McCarthy, Hafod Renewables</b></p> <p>Grants to improve the infrastructure of small installation companies without restrictions to IT office equipment and training. Simple apprenticeship funded schemes with direct monies for tools and vehicles.</p>
<b>61</b>	<p><b>Stephen Vaughan, Housing Renewal Team, Torfaen County Borough Council</b></p> <p>See above.</p>
<b>62</b>	<p><b>Andy Thomas, Butler &amp; Young Wales.</b></p> <p>the finance issues are mainly the landlord / tenant issue mentioned previously. There is also the education of medium or long term benefits against investment.</p>
<b>63</b>	<p><b>Neil Evans, Carmarthenshire County Council</b></p> <p><b>The SALIX model</b> <a href="http://www.salixfinance.co.uk/">http://www.salixfinance.co.uk/</a> Affordable interest free loans repaid with the energy savings produced by the</p>

	technologies being installed. Having to repay loan concentrates the mind. Conversely free grants often wont change behaviour patterns.
<b>64</b>	<b>Kate Smith, KFS Consultancy Ltd</b>  Don't know, but get the impression Green Deal in its current form is not the answer
<b>65</b>	<b>Gary Spiers, South West Insulation &amp; Extractions LTD</b>  Employment
<b>66</b>	<b>Phil Powell, Gwent Energy CIC</b>  some means of up front funding with loans repaid from savings could work for some
<b>67</b>	<b>Mark Greenfield, Greenfield Energy Solutions</b>  High interest charges involved with the green deal and the people it is meant to help need education and help with the costs.
<b>68</b>	<b>Daryl Price, DK Property Services</b>  Council Tax reduction, CIL abolish, S106 reductions for efficient dwellings.
<b>70</b>	<b>Carrie Parisella, Greendealshop.com Ltd</b>  More factoring and reduced payment terms from Energy Companies
<b>71</b>	<b>Jeffrey Smith, First Phase Electrical</b>  take money from over sea aid and start puting this solar energy in to a working module with capitol investment paid through the fuel tax or money income from the bridge crossing
<b>73</b>	<b>Sian Edwards, J D Energy Services</b>  financial packages open to domestic renewable heating users would greatly increase the market, at present it is predominantly commercial finance packages available.
<b>74</b>	<b>Ian Titherington, City of Cardiff Council</b>  In my case, the project came about by setting up a partnership between the Council, Water Authority and NRW. It then took the budgetholder with technical knowledge of the area to sit in the same room and agree a way forward. Trust built up between these individuals was crucial.
<b>75</b>	<b>Bex Gingell, Taff Housing Association</b>  free!
<b>76</b>	<b>Rob Newell, Joyner PA Cymru Ltd</b>

	Look at the way Scotland are delivering and copy it.
<b>77</b>	<b>Rachel Davies, City and County of Swansea</b>  Not sure.
<b>78</b>	<b>Samir Hussien, site services</b>  Very important to set up fund to support all energy Efficiency and recycling. workshop and education on all levels to plan for the next energy efficiency.
<b>79</b>	<b>David Powell, Vale of Glamorgan Council</b>  Run out of time
<b>80</b>	<b>Shaheena Chowdhury, energy saving direct</b>  businesses must be paid a lot quicker then it stands at the moment, especially when working with utility companies that hold the money
<b>81</b>	<b>Peter Draper, Rounded Developments Enterprises Ltd</b>  The issue of VAT reduction for approved energy efficiency products  Making Green Deal a system that is not an expensive option - interest rate of 3-4%
<b>83</b>	<b>Sylvia Peat, Grwp Cynefin</b>  Affordability make accessibility. The difference between the ability to afford is too high.
<b>84</b>	<b>J.Richard Davies, J.r.davies property services</b>  Grants are the only vehicle that will attract landlords combined with enforcement action against owners of poor grade accommodation
<b>86</b>	<b>Graeme Harrold, 3-e Electrical Ltd</b>  Councils should be able to operate rent-a-roof scheme in conjunction with householders to increase distributed solar generation. More should be done to utilise vast roofing space on commercial buildings for solar. Energy harvesting from new carpark areas in commercial developments. Wales should also hold a series of high profile exhibitions highlighting energy efficiency for the public and invite companies to showcase new and current products. Again EST and Carbon Trust should lead these events.
<b>88</b>	<b>Allan Smith, Energy Effective Ltd</b>  I could write a book on this topic. We have tried every route to raise funding and the simple fact is my colleague has sold his home and I am selling mine to keep this project alive as everyone we have met is amazed the WG has not supported us as the benefits to Wales are immense.

	<p>In the business community the majority rent / lease their work place so see no reason to invest. Those that do have their own properties need technologies that will deliver quick returns on investment and for the residential sector they also require to know pay back periods. For example spending £6,000 on a modern central heating system will only save approx £100 a year so would take 60 years to recover, this is not an incentive to invest.</p>
<b>89</b>	<p><b>Malcolm Wilson, RCT Homes Ltd</b></p> <p>GRants/Loans to mee capital cost of energy efficient measures</p>
<b>91</b>	<p><b>Elwyn Williams, E.W.Consultancy</b></p> <p>If you offer financial support to take up energy efficiency, people will ask where is the catch. Properly packaged &amp; marketed it should be self funding in the savings made.</p>
<b>92</b>	<p><b>Neil Lewis, Robert Owen Community Banking Fund</b></p> <p>ZILFs or Pay as you save. Local banks/credit unions.</p>
<b>93</b>	<p><b>Jonathan Hyde, Bron Afon Community Housing Ltd</b></p> <p>The Green Deal finance % is too high but created through the long pay back periods for certain measures undertaken. 0% or current 0.5% bank rate would encourage take up</p>
<b>95</b>	<p><b>Stewart Matthews, Torfaen County Borough Council</b></p> <p>Free replacement Gas Boilers availability to non-benefit low income single workers.</p>
<b>99</b>	<p><b>Ben Dever, adever engi cyf</b></p> <p>No</p>
<b>100</b>	<p><b>Rachael Rowlands-Jones, Glyndwr University</b></p> <p>The green deal "loan on energy bills" approach is not attractive to those how are looking to move home in the shorter term (next 10 years) as the green deal is seen as a negative when selling homes and with the distrust of EPC home buyers don't see a benefit, but an extra bill. This needs to be addressed to make more households consider improvements even if the green deal will still be on the house when they envisage moving.</p>
<b>101</b>	<p><b>Mark Wilcox, Business Step Up</b></p> <p>In my line of business would strongly recommend we agree to a meeting to discuss?</p>

<p><b>102</b></p>	<p><b>Robert Vokes, Joyner</b></p> <p>Yes, we need to provide funds to do the works on properties fully. Instead of providing little to many look at providing a full encompassing approach to the the completion of the works.</p>
<p><b>103</b></p>	<p><b>Steve Martin, Caerphilly County Borough Council</b></p> <p>The financing models that work best is when there is substantial funding available such has Arbed, NEST Welsh Government ECO funds and the Green Deal Home Improvement Fund, Renewable energy initiatives are ongoing but the long payback periods can be off putting.</p>

	<b>Question 10 responses: General.</b>
	<b>We have asked a number of specific questions. If you have any related issues that we have not specifically addressed, please use this space to report them:</b>
<b>3</b>	<p><b>Jean Margaret Davies</b></p> <p>Make a law that any future building has not only to comply with energy efficient building requirements, but also has to have some form of self energy production. P.V or U.V Failing that make it essential for all new buildings. and however possible old buildings, should be part of a consortium or co-operative producing its own power. The companies which supply power should be re-nationalized and made to use wind and water power to back up wind power when there is no wind. People who object to wind turbines should be told to go back to wood stoves and candles.</p>
<b>4</b>	<p><b>Mark Tinkerman</b></p> <p>Hi I came across request for suggestions to improve green energy production. What would cause me to become a green energy provider is for the relaxation of the rules for only MCS approved installers if one is only setting up a system for oneself. I already have 2.5 Kw of panels that I use offgrid for my business during the summer and to power 80% of my offgrid workshop. I also own a residential educational property at which I would like to install a grid linked system. I can afford the panels and equipment and feel confident to set up the system at my property all except for the final connection to the mains. At the present I have to employ an MCS approved installer for the WHOLE job and they want to charge me more for the panels and equipment than I can get them for and also for labour for installing them, which I can do better than most installers. . ( I would install steerable panels using a tripod mounting system that I have developed over the years of using them in a mobile installation)</p> <p><i>` I feel that for <b>own</b> installations a government or privately employed inspector or similar is required</i> allowing individuals to complete as much of the work as they feel confident of and then employing specialist people for such work as the grid connection</p> <p>If I were able to supply and fit my own panels and equipment for my own use then the savings I would make would make it worth while for me to install a gridlinked system for the feed in tariff. thanks Mark</p>

6

## Morgan Advanced Materials

As an employee in an energy intensive industry (with significant competition from lower energy cost countries e.g. USA and France) and a householder, access to funding and expertise is often the catalyst for investment or can be used to tip the argument or decision.

### Industrial perspective:

A lot of the obvious investment is done, the challenge now is expertise as processes have to be changed (engineering/technical resource – possible funding for taking on graduates etc.. to undertake energy related projects)) and old circa 40 year old factory (support to invest in infrastructure)

In industry payback (return on investment) on projects is often less than or equal to 2 years. Also there can be complicated authorisation processes and the topic can be difficult to sell.

Therefore as a small site in a large organisation the engagement with senior management (decision makers) is critical and these people often reside outside of Wales and is critical, therefore any strategy for t Wales, must consider how to engage those outside of Wales.

Include large organisations not just SME's, use them as hubs for SME's create a network, engage NRW as the regulator as often the cost of abatement can out way the actual benefits risk v impact. Engage the accountants as they often control the expenditure

Support energy audits to create plans, so companies have a hit list: i.e. PDCA/DMAIC etc...

Consider education in schools, employee engagement and senior management

I believe better understanding of opportunities and the whole energy issue, not just putting solar panels on the roof, needs to be considered i.e. infrastructure, energy efficiency technology, engineering resource and billing etc..

As a householder on reasonably good money and working long hours, I feel disenfranchised from all schemes, as there are so many loop holes and constraints and it takes so much time and effort – make it easy....

Thanks for the opportunity to comment, I think it is a great idea, start local

	impact global....
<b>7</b>	<p><b>Stephen Marks</b></p> <p>New Development Planning Permissions: At a micro level a policy might be introduced requiring all new developments above a minimum size (this to be determined), to have solar powered panels as part of the approval process plus higher levels of energy efficiency. At a larger commercial/industrial level all new planning approvals should be required to have both solar panels and where practicable wind power installations. For example all new industrial/commercial/retail/office parks should be required to have both solar and wind power installed plus higher levels of insulation.</p> <p>Environmental: Extended wind farm provision both on and off-shore plus greater water and wave power installation.</p> <p>Existing buildings: Further encouragement for businesses and owner occupiers to install solar and wind/or wind power apparatus plus assistance for them to achieve higher insulation. Local Government buildings should all be required to achieve higher targets for both power generation and less usage. Landlords should be encouraged to do likewise for residential plus commercial holdings. Tenants should be able to request Energy Audits to ensure that their premises are cost effective and manageable. Housing providers should also be required to have Energy Audits on all their homes. The elderly should have additional financial assistance to both improve the energy efficiency of their homes plus financial assistance towards the payment of their energy bills.</p> <p>Economic/Developmental: Establishment of local Energy Companies in each of the Welsh Local Authority/Unitary Authority areas to produce and manufacture the apparatus needed resulting from the above, these to train and employ local labour concentrating perhaps on long term and youth unemployed workers. This would boost local economies plus achieving energy efficiency goals and lift people out of poverty per se. Neighbourhood power schemes could be a constituent part of local companies which might improve their negotiating powers with existing power providers. Also they might generate surplus provision which could be re-sold to existing power providers thus helping to reduce bills.</p>
<b>8</b>	<p><b>NSA Afan</b></p> <p>NSA Afan has experience of installing solar voltaic panels of domestic properties under our PV for FREE programme. This has helped householders reduce energy bills and demonstrated that community</p>

	<p>energy programmes have a significant role to play in combating poverty.</p> <p>Good energy efficiency advice service delivered into the heart of the community has demonstrated the benefits that accrue to householder in being able to access free and subsidised energy efficiency measures. To this end we support the activities of NEA and the Energy Saving Trust and urge the Welsh Government to increase funding support for these organisations to help them continue their work in this field.</p> <p>We urge the Welsh Government to consider the re-introduction of a HEES programme in Wales and to consider the reporting procedures under the Home Energy Conservation Act (HECA)</p>
<b>9</b>	<p><b>Merthyr Tydfil County Borough Council</b></p> <p>Please can Welsh Gov take a long term view of energy policy? 5 to 10 yrs minimum. This will allow LAs to respond and make a case for revenue resources to administer schemes. All very reactive at present.</p> <p>Closer links in Welsh Gov between Energy and Poverty – more coherent policies.</p> <p>Long term indications of energy programmes – to allow suitable planning for procurement, up-skilling SMEs etc...</p>
<b>11</b>	<p><b>Cert Sure</b></p> <p>No further comments</p>
<b>12</b>	<p><b>Pembrokeshire County Council</b></p> <p>Cultural change is needed in terms of energy efficiency. Everybody needs to switch off and turn down. Campaigns/demands/persuasion for everyone not to waste energy and water. Huge savings to the nation are available if everyone made a lifestyle choice to address energy efficiency in the day to day activities. It's coming down to redundancies in some sectors so how big a motivation is that to save energy/water instead?</p>
<b>13</b>	<p><b>ICE</b></p> <p>It is considered that the related issue is the implementation of low carbon generation and making Wales an 'energy hub' for the UK. However, this is presumably not in this particular remit and is not in truth fully in the remit of the Welsh Government either.</p>
<b>14</b>	<p><b>ETI</b></p> <p>It is expected that around 80% of Wales' current housing stock will still be in existence in 2050. Notwithstanding the success of the Welsh</p>

Government's ARBED & NEST schemes, much of Wales' housing stock has low thermal efficiency. As fuel prices increase, the costs of keeping warm in their homes is becoming unsustainable for many people. This problem, combined with the transition to a low carbon economy will require substantial changes to how homes are heated. These changes will include improvements to the thermal efficiency of buildings and replacing fossil-fuel fired boilers with alternative, lower carbon heat sources such as heat networks and heat pumps. To help solve this, the ETI is developing a suite of modelling tools including 'EnergyPath Networks' which will help develop local area energy strategies.

EnergyPath Networks will be used to carry out analyses resulting in a number of potential area plans. Social, commercial and engineering aspects of the plans will also be assessed to ensure the area plan(s) presented to a local authority consider not just the technical design aspects but encompass a range of considerations. It is hoped the ETI's knowledge and information will help to support a strong and effective strategy and provide evidence and practical solutions to help Wales' *Low Carbon Transition Delivery Plan*.

District heating is part of the lowest cost solution with alternative heat supply sources (waste heat from power, marine heat pumps and biomass) and will require a community approach. Waste heat from power is likely to require some form of centralised incentive so is really neither solely a community-led nor a central solution – it will require both to come together. Providing a clear and consistent policy and regulatory framework is also key to the success of district heating projects. There is a need to assess the national resource available and relate it to the geographic match of heat demand – the ETI suggests the development of a national heat map for Wales to allow this.

The ETI supports the principle of identifying those households in fuel poverty and providing free-of-charge energy efficiency measures to a pre-defined minimum standard. It may not be cost effective though to set an EPC rating of C for all these houses, since many of the older, solid-wall archetypes (especially those in rural areas) will be expensive to bring to that level. This problem will be exacerbated with the split-incentives in private rented tenure. For households in fuel poverty, we suggest free-of-charge measures are deployed, even for those in the private rented sector, to preclude private landlords from cascading the retrofit costs to the tenants. After deploying cost-effective energy efficiency measures, for those households that remain in fuel poverty it may be more cost-effective

to either subsidise energy supply costs or deploy alternative heating approaches than continue to improve the building fabric efficiency.

It is expected that around 80% of Wales' current housing stock will still be in existence in 2050.

Notwithstanding the success of the Welsh Government's ARBED & NEST schemes, much of Wales' housing stock has low thermal efficiency. As fuel prices increase the costs of keeping warm in their homes is becoming unsustainable for many people. This problem, combined with the transition to a low carbon economy will require substantial changes to how homes are heated. These changes will include improvements to the thermal efficiency of buildings and replacing fossil-fuel fired boilers with alternative, lower carbon heat sources such as heat networks and heat pumps. To help solve this problem the ETI is working with the Welsh Government to develop a suite of modelling tools including a design tool to help develop local area energy strategies.

The EnergyPath Networks tool is designed to allow the input data to be modified to reflect local opportunities, needs and constraints and to allow different future scenarios to be assessed. Using the tool as part of strategic energy network planning should help produce a strategy for a local authority to use to transform its current energy infrastructure to a future design which meets local requirements. Modelling tools such as EnergyPath Networks will integrate and help prioritise: building fabric insulation; heat conversion at the network and building level; heat storage at the network and building level; gas, electricity, heat and other distribution network installation, upgrade, maintenance or decommissioning. However, while gas prices remain "relatively low" and with VAT at only 5% on domestic gas use, the task of replacing gas boilers becomes significantly harder.

The ETI's EnergyPath tool will be used to carry out analyses resulting in a number of potential area plans. Social, commercial and engineering aspects of the plans will also be assessed to ensure the area plan(s) presented to a local authority consider not just the technical design aspects but encompass a range of considerations. It is hoped the ETI's knowledge and information will help to support a strong and effective strategy and provide evidence and practical solutions to help Wales' *Low Carbon Transition Delivery Plan*.

As over 80% of the energy we consume in our homes is used for heating

	<p>(space and water), the importance of Government policies that support the take up of insulation measures cannot be underestimated. Home insulation can be one of the most cost-effective steps that households can take to manage their energy demand and keep the costs of their bills down.- ESME shows that fitting effective insulation is cost-effective whether the primary objective is to meet climate change targets or not. Wales has made substantial progress through programmes such as ARBED, but there remain particular challenges which need to be addressed for hard-to-treat homes in rural areas of Wales. Solutions to these challenges will be considered as part of the local area energy strategies that the ETI is developing through its EnergyPath Networks tool.</p> <p>The ETI believes that whole-house retrofits undertaken as part of wider general housing refurbishment will usually be more effective than an approach based on individual measures for efficiency only. The ETI is currently undertaking a project to assess the potential energy and cost savings from five building archetypes and final results should be available later in 2015. The task of renewing existing homes and communities should be carried out on an area-by-area basis. An example of this is the <i>Metropolitan Housing Trust</i><sup>29</sup> which developed a programme for refurbishing harder-to-treat Victorian street properties in Haringey to a standard beyond the Decent Homes standard. The measures included insulation, more efficient boilers and heating controls. The refurbished homes have typically achieved more than a 45% reduction in their CO<sub>2</sub> emissions, and residents are now better able to reduce their fuel costs.</p> <p>District heating is part of the lowest cost solution with alternative heat supply sources (waste heat from power, marine heat pumps and biomass) and will require a community approach. Waste heat from power is likely to require some form of centralised incentive so is really neither solely a community-led nor a central solution – it will require both to come together. Providing a clear and consistent policy and regulatory framework is also key to the success of district heating projects.</p>
15	<p><b>Wolseley</b></p> <p>No response.</p>
16	<p><b>Miller Research</b></p> <p>We very much welcome this consultation on energy efficiency in Wales and its contribution to wider SD goals. One general point for us is to be</p>

<sup>29</sup> From “Housing futures: our homes and communities” – Anne Power, LSE, 2010.

	<p>wary of the separation of efficiency from other energy issues, as we would like to ensure an integrated approach.</p> <p>Two key strategic areas that impact on this consultation would be:</p> <p>A) if we are serious about creating economic and energy resilience we should consider a strategic approach to energy as a whole including, critically, a vision for social ownership of our energy resources; possibly through a not for profit vehicle in line with the Glas Cymru model. We have a number of effective community scale initiatives in this area and there is scope to look at scaling up to a national model to drive real change.</p> <p>B) A linking mechanism which might slip through the net by looking at efficiency in isolation is that of energy storage. Effective storage systems can realise substantial economic and social benefits when linked to local energy supply opportunities. We have been working with Dutch colleagues at the THINK Institute in Amsterdam, with the equivalent of National Grid and a private sector partner to investigate the potential for local or regional energy integration. Progress in energy storage technology is now bringing more effective systems within reach and would sit well within a city region model, for example.</p>
18	<p><b>Torfaen County Borough Council</b></p> <p>To apply for energy funding it is necessary to identify areas that would benefit. This requires access to a range of data and intelligence including property type, which is not always available in the detail required at a local level. Assisting Local Authorities to develop a clearer understanding of their stock would increase their ability to successfully identify areas that could benefit from funding. Consideration should be given therefore to a national stock condition survey that will enable WG and LA's to identify areas where energy funding could be most appropriately targeted to meet the greatest need.</p>
19	<p><b>Cardiff University</b></p> <p>We welcome the opportunity to provide evidence to Welsh Government in their development of their Energy Efficiency Strategy. We consider the aims and ambitions of the consultation document to reflect many of the important benefits and challenges of energy efficiency; and particularly welcome the inclusion of the energy hierarchy, which stresses the importance of reducing energy demand before considering other efficiency options.</p>
21	<p><b>Ceredigion County Council</b></p>

	<p>Whilst we welcome the additional funding that has been secured by the Welsh Government for energy efficiency schemes over the past few years, an additional and continued availability of capital funding is needed to continue for the future. It is understood that additional ERDF funding is being sought, and we urge that the criteria for accessing this funding should be sensitive to rural authorities and address the barriers faced in accessing funding detailed previously in this response.</p>
<p><b>23</b></p>	<p><b>Energy Savings Trust</b></p> <p>We trust that you have found our response informative; we would be delighted to meet with the team to discuss our response in more detail. In particular we would be grateful of an opportunity to discuss:</p> <ul style="list-style-type: none"> <li>• The experience and findings of the supply chain e-survey</li> <li>• Our community energy report which assesses whether community groups could facilitate a cost-effective way of delivering energy efficiency measures</li> <li>• Opportunities to enhance the service provided by Nest and ESAS.</li> <li>• Further approaches to demonstrate energy efficiency in practice such as through a green homes network.</li> </ul>
<p><b>25</b></p>	<p><b>Climate Change Commission</b></p> <p>We welcome the opportunity to provide evidence to Welsh Government as part of their work on developing an Energy Efficiency Strategy for Wales. In the Commission's response to Welsh Government's Climate Change Policy Refresh<sup>30</sup>, July 2014, we made a number of recommendations including two specific ones on energy efficiency:</p> <p><u>1. Achieving scale in retrofit and improvements in energy efficiency</u>  This must be the single most important action [in terms of mitigating climate change] and although good progress has been made through Arbed and the work of Housing Associations, there is still the need for achieving scale through an integrated area based programme. The concept of dealing with energy efficiency as an isolated issue is intrinsically flawed and the effective introduction of the new Resource Efficiency framework will be key to addressing resource efficiency in the round.</p> <p>The industry is calling for a clear strategy and proper programme for</p>

<sup>30</sup> <http://www.cynnalcyrmru.com/news/commission-responds-welsh-government%E2%80%99s-climate-change-policy-refresh>

retrofit - a National Retrofit Plan for Wales. An “Arbed+” retrofit programme expanded across the whole of Wales, recognising the economic, social, health and environmental benefits, would cost approximately £12 billion and create 30,000 jobs (data available from EST).

Key to the development of any plan would be data. At present there is very little available data with regard to energy consumption and building performance – however this could be accessed through the big six energy companies. Also data from homes where smart meters have been installed will enable their performance to be accurately assessed - this is key to our understanding of what measures are most effective for our buildings.

Recommendation 12:

- Work with partners to access support for a national retrofit plan for housing in Wales.

2. Energy efficiency

The new arrangements for providing energy efficiency support will be critical in providing advice to households and businesses on reducing energy use. It will be very important to monitor the effectiveness of new structures as reducing emissions by end user through efficiency is a key intervention within the scope of Welsh Government’s powers.

It will also be very important to work closely with the introduction of Smart Meters to combine the capacity of the new technology with appropriate communications and behaviour change programmes.

Recommendation 13:

- Establish a clear Wales wide programme to add value to the introduction of Smart meters in partnership with the Energy Companies responsible for the roll out.

<sup>1</sup> <http://www.cynnalcyrmru.com/news/commission-responds-welsh-government%E2%80%99s-climate-change-policy-refresh>

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**Wrexham CBC**

Welsh Government funding and timing

There needs a clear framework/action plan across Wales that partners,

	<p>stakeholders and community organisations buy into. The budget would be better aligned with spending on improving housing stock (WHQS etc) and building economic prosperity (VVP etc). There needs to be a clear integration with Fuel Poverty strategy – the energy efficiency action plan should be a means of reducing fuel poverty and not a separate action plan. This should be made a reporting requirement of Public Sector Boards under the Future Generations Bill. The energy efficiency strategy needs to demonstrate how the action plan aligns with the sustainable development principles that underpin the Well Being of the Future Generations Bill. The strategy also needs to show clearly how we are identifying best practice within Wales and making best use of what works from further afield.</p>
<p><b>27</b></p>	<p><b>Glass and Glazing Federation</b></p> <p>The GGF would encourage the Welsh Government to consider further incentivising windows in its various energy efficiency schemes. Windows have been proven to be popular with consumers in various energy efficiency trials and as such, should be further incentivised in the scheme to encourage uptake. The Energy Saving Trust has estimated that as much as 23% of a home’s heat energy can be lost through inefficient windows. The installation of Energy Efficient Windows is therefore essential in order to reduce energy loss from homes as part of a “whole house approach” and the GGF believe supporting this through the allowable solutions scheme would prove more effective in promoting high energy efficiency standards.</p>
<p><b>28</b></p>	<p><b>Citizens Advice Bureau</b></p> <p>Citizens Advice Cymru is pleased to respond to the Welsh Government’s call for evidence around a new Energy Efficiency Strategy for Wales. We agree it is right to look beyond the Welsh Government’s current programmes aimed at the fuel poor, and to explore the role other organisations can play. Improving energy efficiency can hugely benefit business and able-to-pay domestic customers, as well as making a contribution to tackling climate change.</p> <p>In our evidence to the National Assembly for Wales (NAfW) Environment and Sustainability Committee’s investigation into fuel poverty energy efficiency schemes in Wales, we stated that:</p> <p>“We have concerns about the ongoing use of 2008 <i>Living in Wales</i> data as the baseline for fuel poverty projections in Wales. Using data from six years ago risks giving an increasingly out of date picture, and limits the Welsh Government’s ability to respond to any emerging trends.</p>

	<p>“England and Scotland base their fuel poverty projections on the English Housing Survey and Scottish House Condition Survey respectively. Both surveys are run on a continual basis, taking two years to compile and report data from each. Whilst this doesn’t offer an up to the minute picture, it does allow robust reporting of fuel poverty and other housing trends as detailed assessments are undertaken within each home.</p> <p>“Effective targeting requires robust and recent data from households in Wales, and a household survey would be the most preferable way to achieve this.”</p> <p>We believe that this will need to be addressed in the design any new strategy on energy efficiency. In order to effectively target, the Welsh Government will need an accurate picture of where energy inefficient homes in Wales are to be found.</p> <p>To ensure effective monitoring of the objectives of any new strategy, and to allow constructive external scrutiny, there will need to be ongoing recording of data on energy performance across Wales, including energy performance ratings for domestic and business properties and the public estate. Setting a credible baseline from which to measure progress at the inception of the strategy will also be essential.</p> <p>We would be happy to work closely with the Welsh Government, drawing on our previous work and the experience of our partner organisations, to establish a set of key objectives and related indicators for the new strategy.</p>
<b>32</b>	<p><b>British Gas</b></p> <p>No further comment at this stage. British Gas looks forward to contributing further to the new Welsh Government energy efficiency strategy as it is developed.</p>
<b>33</b>	<p><b>Saint Gobain</b></p> <p>Saint-Gobain UK strongly supports ‘Fabric First’ – namely, by prioritising investing in the fabric of a building energy savings can be made which are more secure and more beneficial to occupants. This principle needs to be reflected in the design of the strategy.</p>
<b>34</b>	<p><b>CLA Cymru</b></p> <p>CLA Cymru is extremely concerned that the sphere of energy efficiency is too easily influenced by political pressures without sound evidence and investigation into measures and technologies that are introduced. Government funds should be spent on R &amp; D; identifying the best</p>

methods of energy efficiency that are relevant and cost-effective.

The following issues have also been specifically raised by our membership:

Consenting of Hydro-electric Schemes – It has been identified that meetings between senior officers of Natural Resources Wales (NRW) and the Hydropower Association have resulted in widespread acceptance of the industry challenges of cost, speed of consent and low levels of water permitting for turbine use when compared to Scotland and England. This realisation has not filtered down to the case officer level of the organisation and there is still a failure to react to the needs of the industry. On a low head scheme on the River Alwen the consenting process has taken three years; the significant part of the delay and cost has been due to the actions of NRW; applications must be dealt with in a more timely fashion as developers now favour working in England and Scotland rather than Wales.

Enforcement Action - There is a strong belief in the industry that NRW views its primary role as enforcement of the law and turns to the law as a first action, rather than seeking to work with landowners. When a landowner resolves the legal matters only then will NRW consider the practical environmental steps necessary to enhance or rectify an environmental issue; this approach results in poor working relationships where both parties appear to view the other with suspicion. In short, whilst there is senior officer support for Welsh Government Renewable Policy, the culture of the government organisation urgently needs to be addressed if the aims of the Energy Efficiency consultation document are to be realised. For instance, a large poultry farmer in Wales was considering not using LPG to heat his poultry houses, but ground source heat using water from the river that passes through a heat exchanger and is returned to the river. The volume of water required (100% will be returned on a continual basis and will not be stored) means that an abstraction licence will be necessary. The farmer has chosen not to use this technology which would reduce his costs and carbon emissions significantly and would, for a large part of the day, be run by his solar panels, because he cannot face dealing with NRW, due to the potential time, cost and hassle. Day old chicks are due to arrive in the sheds currently under construction on 31 March 2015 and he has no confidence that NRW can deliver on time.

Funding - The Government grant funding schemes have been a disappointment, not least the Energy and Environment Growth Fund. A business creating 50 new jobs, 12 in Wales, delivering renewable heating

	<p>and insulation into 500 houses a year in Wales where the majority of the occupants are deemed to be in fuel poverty was rejected for £50,000 funding despite meeting the criteria. This seed funding would result in £8 million-worth of installations a year funded by private finance. The directors of this business will now focus their activity in England.</p> <p>In conclusion, CLA Cymru supports Welsh Government’s ambitions to increase energy efficiency, but would like to highlight that a large number of the proposals set out in the consultation are inherently dependent on culture change and, as such cannot, and should not, be artificially created by regulation.</p>
35	<p><b>PLANED</b></p> <p>Communication – clear and simple is key to the wider public discussion. ‘Community resilience’ is a current phrase, and positive messages need to be associated with real experiences e.g. communities affected by coastal storm surges beginning to make association but have very quickly moved to see this as ‘emergency response planning’ rather than thinking about prevention and / or behaviour change in the wider sense.</p> <p>Need the ‘solutions’ / changes to be available from a trusted and responsive source, and local (not those with vested interests).</p>
37	<p><b>WWF</b></p> <p><u>Summary</u></p> <p>Improving energy efficiency has long been advocated as a way to increase the productivity and sustainability of society, primarily through the delivery of energy savings. The impact of energy efficiency measures can go far beyond energy savings, and energy efficiency improvements can be an important contributor to economic growth and social development<sup>31</sup>.</p> <p>Energy efficiency programmes are therefore a win win investment which WG has the powers to implement. Alongside Stop Climate Chaos Cymru, WWF Cymru have been promoting energy efficiency as a priority investment for WG, in particular as part of its climate change emission reduction strategy.</p> <p>WWF Cymru therefore welcomes Welsh Government’s plans to develop an energy efficiency strategy. We agree that the opportunity for improving</p>

<sup>31</sup> Spreading the Net: the Multiple Benefits of Energy Efficiency: IEA [http://www.iea.org/publications/insights/ee\\_improvements.pdf](http://www.iea.org/publications/insights/ee_improvements.pdf)

energy efficiency in Wales is not only considerable but essential. We feel that developing an ambitious energy efficiency strategy for Wales, accompanied by a detailed route map and delivery plan, which includes reaching emission reduction targets, will help to deliver the visions outlined in the consultation paper.

#### Evidence based route map

As the WG consultation recognises, direct energy and electricity use in existing housing and businesses in Wales account for approximately half of the emissions in areas of devolved competence. Residential sector 24% of emission covered by the 3% target. GHG emission from housing and business make up a considerable proportion of Wales emissions. This alongside being an area over which WG has devolved powers to take action and considerable evidence on the multiple benefits of energy efficiency make it a priority area for WG to meet its emission reduction targets.

This priority given to energy efficiency is recognised by the CCCW 2013 Annual report<sup>32</sup> and again in CCCW's submission to WG's 'Refresh' which recommends scaling up energy efficiency retrofitting<sup>33</sup>. WWF Cymru recommends that the extensive evidence is used to develop a route map which includes how it will contribute to the emission reduction target set out in 2010 Climate Change Strategy.

There is considerable empirical evidence that energy savings measures often provide an effective, cost-efficient approach to reducing greenhouse gas emissions, while generating co-benefits on employment and competitiveness<sup>34</sup>. Long-term market prospects for energy-efficient products, processes and services are stable in the context of a growing global population and increasing resource demand. EU companies perform well in terms of global market share and competitiveness. Energy savings hence need to be the central backbone not just of climate change mitigation policy but as low carbon economy strategies and infrastructure

<sup>32</sup><http://www.cynnalcyrmru.com/sites/default/files/CCCW%20FINAL%20report%20ENG%20130215.pdf>

<sup>33</sup> <http://www.cynnalcyrmru.com/news/commission-responds-welsh-government%E2%80%99s-climate-change-policy-refresh>

<sup>34</sup> Review of Costs and Benefits of Energy Saving, IEEP

[http://www.ieep.eu/assets/1267/Energy\\_Savings\\_2030\\_IEEP\\_Review\\_of\\_Cost\\_and\\_Benefits\\_of\\_Energy\\_Savings\\_2013\\_published.pdf](http://www.ieep.eu/assets/1267/Energy_Savings_2030_IEEP_Review_of_Cost_and_Benefits_of_Energy_Savings_2013_published.pdf)

investments.

The macroeconomic benefits of a major energy efficiency programme outweigh those of almost any other kind of government investment<sup>35</sup>. We are pleased that the consultation document recognises this.

One of the most recent reports undertaken for the Energy Bill Revolution Campaign by Verco and Cambridge Econometrics found that investment in energy efficiency measures that would upgrade all UK homes to an energy rating of C by 2035 would save an average of £408 per annum on the energy bills of low income homes and an average of £416 per annum on homes classed as able to pay. The report also found that it could result in 23.6 million tonnes of CO2 saved across the UK economy and lead to 108,000 new jobs<sup>36</sup>.

WWF's recent report *The Economics of Climate Change Policy* recommends improving energy efficiency to tackle energy security and fuel poverty<sup>37</sup> as part of a package of climate measures that will have a beneficial impact on UK's economy.

WWF Cymru's *Cutting Carbon Emissions in Welsh Homes – a twin track approach*<sup>38</sup>, outlined the social, economic and environmental benefits of a large scale energy efficiency scheme in Wales. It shows that bringing 57% of Welsh homes – 728,000 households – are in the three worst performing categories when it comes to energy efficiency (bands E to G on a 7 point scale). up to a decent standard (band D) would:

- Cut fuel poverty by 40% - benefitting 132,000 households which spend more than 10% of their income on heating
- Create 14,600 jobs – 6,300 directly (such as in the building trade and supply chain) and the remainder as a knock-on effect on the economy from the increased employment and money saved on fuel.
- Cut the housing sector's current carbon emissions by a quarter - helping the Welsh Government achieve its aim of reducing all greenhouse gas emissions in Wales by 40% by 2020 compared

<sup>35</sup> <http://www.consumerfocus.org.uk/files/2012/11/Jobs-growth-and-warmer-homes-November-2012.pdf>

<sup>36</sup> <http://www.energybillrevolution.org/wp-content/uploads/2014/10/Building-the-Future-The-Economic-and-Fiscal-impacts-of-making-homes-energy-efficient.pdf>

<sup>37</sup> The Economic of Climate Change Policy in the UK  
[http://assets.wwf.org.uk/downloads/wwf\\_climate\\_economics\\_summary\\_a4\\_web.pdf](http://assets.wwf.org.uk/downloads/wwf_climate_economics_summary_a4_web.pdf)

<sup>38</sup> *Cutting Carbon Emissions in Welsh Homes – a twin track approach*  
[http://wales.wwf.org.uk/what\\_we\\_do/tackling\\_climate\\_change/cutting\\_carbon\\_emissions\\_in\\_welsh\\_homes/](http://wales.wwf.org.uk/what_we_do/tackling_climate_change/cutting_carbon_emissions_in_welsh_homes/)

with 1990

This would cost around £2.1 billion and would reduce annual energy bills by £423 million in the homes treated.

Although this report was produced in 2012 it is still demonstrations the scale of need and impact of such a programme. WWF Cymru strongly believes that the WG strategy needs to recognise the scale of the need so Wales can meet its emission reduction ambitions.

WWF Cymru highly commends WG's current energy efficiency schemes such as Arbed and NEST. However the analysis in this report demonstrates the current schemes are not at the scale required to meet WG emission reduction targets.

It has proved difficult to find a comprehensive report on the total of households supported through the WG programmes and UK Government programmes to date and the estimated impact on. From Carl Segent recent tweet that 9000+ in 2013/14 for Ared and Nest. If this is combined with 1<sup>st</sup> Arbed programme of 7500 household 2010/12 aprox 16,500 treated so far. This is against suggestion of 132,000 household in our report that is needed to meet the 40% reduction in household emissions. Although this analysis is rough estimate based on lack of publically available analysis from WG, it shows the scale of the challenge that WG need to address to move towards a low carbon society in which a large number of people in Wales are not within fuel poverty.

Of considerable concern is that emission figures for 2012 shows residential emissions have increased by 10.6% compared with 2011. The WG 2014 Climate Change Annual Report <sup>39</sup>states this is largely due to return to colder temperatures in 2012 and increase in natural gas consumption compared with 2011. Whilst this highlights the vulnerability of this sector to annual variations in weather and associated fuel consumption. It therefore highlights the importance of securing energy efficiency measures for all homes in Wales, especially the homes most vulnerable to fuel poverty. This would reduce the impact of extreme cold weather events which are more likely in the changing climate.

It also highlights the need to switch to a more permanent low carbon energy sources. Switching to renewable heat sources (see below for more details on Low Carbon Heat Systems).

To be able to properly assess the impact of WG energy efficiency

<sup>39</sup>

<http://wales.gov.uk/topics/environmentcountryside/climatechange/publications/2014-climate-change-annual-report/?lang=en>

programmes further analysis should be provided in the strategy on the current improvements in the residential sector have contributed to the emissions in Wales.

Whilst the WG 2014 Annual Report states decline in residential emissions 1% year is driven by improvements in residential energy efficiency it is important that this data and analysis is shared. Transparency in analysis is important to understand Wales' current position and impact of programmes to help partners understand and develop joint strategies.

WWF Cymru also recommend that lessons are learnt from other EU programmes. In the household/buildings sector robust evaluations are available for the KfW energy efficiency programmes in Germany and to a certain extent for the 'EnergieSchweiz' programme in Switzerland and the Home Energy Scheme in Ireland. For the industrial sector evaluations have been carried out for energy efficiency programmes in the Scandinavian countries and Ireland. It would be useful evaluation's accrued for WG schemes and other EU countries for this to be used in the development of a WG strategy.

WWF Cymru call for this analysis to form part of road map to meet WG's vision. A route map based on sound evidence of the issues at hand including an assessment of the role of energy efficiency in residential sector in delivering on emission reduction targets in WG as set out in Climate Change Strategy 2010. This is an essential starting position on which WG, along with partners, can develop a programme to fit the required emission abatement.

This would be in line with New Climate Economy Report<sup>40</sup> which states that energy efficiency is another large opportunity which effectively provides the world with an additional fuel. Improvements have cut the effective demand for energy by 40% in the last 4 decades – no other energy has contributed as much. The report say that focusing on energy efficiency as the “first fuel” has large benefits including growth potential, reducing local air pollution and greater levels of energy services and even with rebound effects it is an essential contributor to meeting energy needs. The report recommend that governments develop national roadmaps to identify and capture the potential for energy demand management measures that should include specific targets and sector-based opportunities, as well as policy measures addressing the barriers that prevent the development of energy-productive economic activity and energy-efficient end use.

Low Carbon Heat Systems

<sup>40</sup> [www.newclimateeconomy.net](http://www.newclimateeconomy.net)

The recent IPCC synthesis report highlights how reducing our energy usage needs to happen alongside switching to renewable / low carbon energy sources if we are to maintain warming to 2 degrees.

WWF's recent report *Warm Homes Not Warm Words*<sup>41</sup> outlines the importance of a low carbon heat system and how it needs to be implemented in conjunction with energy efficiency programmes. WWF Cymru recommends that WG consider this within its energy efficiency strategy.

#### Investment to develop low carbon economy

Given this evidence of energy efficiency benefits, priority needs to be given to investment to tackle the scale needed. The scale of the problem is however far greater than the investment currently being made.

WG website says that around 1bn will be invested in the next decade. Welcome this investment but as identified above this needs to be at least doubled. The status quo in terms of the amount invested in energy efficiency needs to be revaluated.

If you look at the experience in France, under the 2007-2013 structural funds programming period, each French region allocated up to 4% of their Operational Programme to energy efficiency investments and greater use of renewable energy in existing housing. That scale of spending is happening in Wales and that is the kind of investment we should be aiming towards to get to grips with the challenges we face in Wales. For example, estimates in a Bevan report<sup>42</sup> on poverty states that it will take 78 years for Nest to reach each and every home suffering from fuel poverty in Wales

Learning from other EU countries programmes should be integrated into development of Wales strategy. A recent study by Price Waterhouse Coopers on decarbonisation policies in Denmark, Germany and Sweden concluded that all countries achieved notable improvements in increasing the efficiency of end-use in households, including through increasing the stringency of building codes, labelling and financial incentives. Denmark, for example, uses 40 per cent of its environmental tax revenues to fund energy efficiency measures, by co-funding investment cost of companies. Though there is no specific information available on the economic impact

<sup>41</sup> [http://assets.wwf.org.uk/downloads/wwf\\_heat\\_report\\_summary\\_web.pdf](http://assets.wwf.org.uk/downloads/wwf_heat_report_summary_web.pdf)

<sup>42</sup> <http://www.bevanfoundation.org/publications/rethinking-poverty/>

of efficiency policies within the broader context of decarbonisation policies in Denmark these policies have led to creating an energy technology industry that by now contributes to 10 per cent of Gross Added Value generated by the total industrial sector in the country (PWC 2013).

The study also confirms more generally for all three countries that an ambitious approach to energy-savings leads to higher immediate costs which however create greater long-term opportunities, and that competitiveness impacts can be softened through intelligent policy design and consumer willingness to pay higher energy prices in exchange for better products and services and overall cost-savings.

Whilst WG has current limitations raising funds for investment there are areas where it can prioritise energy efficiency investment. For example, we recommend that the Welsh Government assess the potential of using the new borrowing powers to lever-in substantial additional funding for Arbed.

An energy efficiency programme can be defined as 'capital investment' in the National Accounts, meaning it should have the same access to infrastructure funding as other capital projects, such as roads and railways<sup>43</sup>.

Recent research by the Energy Bill Revolution (cited above) shows the significant benefits that could be achieved by making energy efficiency a national infrastructure priority. These include:

- £1.25 in tax revenues for every £1 of government investment;
- Increased employment up to 108,000 new jobs;
- £3.20 returned through increased GDP for every £1 invested by Government;
- Net benefit of £4.95 billion a year from total energy bill savings; and
- Improved health and reduced healthcare expenditure – for every £1 spent on reducing fuel poverty a return of 42 pence is expected in NHS savings.

<sup>43</sup> <http://www.foe.co.uk/sites/default/files/downloads/energy-efficiency-infrastructure-case-increased-investment-74277.pdf>

## Governance and Legislative Framework

IPCC Synthesis report<sup>44</sup> highlights the need for governance frameworks to support the way we approach decision making in the face of climate change and necessary shift to sustainable development. The Wellbeing of Future Generations Bill, Planning Bill and Environment Bill can provide this if WG get them right.

Welsh Government therefore has the opportunity to use its forthcoming legislative framework to help enable the challenges we face. For example, the forthcoming Wellbeing of Future Generations Bill could place a duty on procurement impacting on supply chains. This would help develop programs which seek lower carbon solutions. WWF Cymru and the Sustainable Development Alliance have called for clarity over the scope of duty to be clearer and ensure it covers all function of the public authorities therefore procurement and supply chain issues. Whilst we have a strong sustainable development procurement guidance (Community Benefits), the uptake of this is not at the scale needed. Having this as duty through the Wellbeing of Future Generations Bill could provided the push that is needed.

The Bill could also be the push for public authorities in Wales to direct investment into sustainable development programmes of which energy efficiency is one of the best examples. Therefore we could see more investment in this area following the Act if it is an effective piece of legislation. WWF Cymru's recent report outlines the benefits of an effective future Generations Bill in this area<sup>45</sup>.

Strong and enforceable minimum standards should be phased in over a 10 year period – these would underpin demand and generate a clear, consistent message about direction and the required radical nature of change. Integrating financial support in a clear framework that includes regulation and information would be more likely to deliver the shift in attitude to energy efficiency deployment that we need to see<sup>46</sup>. Scotland is already actively considering the introduction of such standards that have already been legislated for in California, USA<sup>47</sup>.

## WG leadership

WWF Cymru supports the overall direction and intentions of the vision, in particular the strategy's recognition of the role energy efficiency has in

<sup>44</sup> [http://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR\\_AR5\\_SPMcorr2.pdf](http://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_SPMcorr2.pdf)

<sup>45</sup> <http://www.shapingfuturewales.org/wp-content/uploads/English-Alliance-report8.pdf>

<sup>46</sup> <http://www.greenalliance.org.uk/resources/Seven%20steps%20to%20reducing%20energy%20bills.pdf>

<sup>47</sup> <http://www.scotland.gov.uk/Publications/2011/03/22093051/1>

tackling climate change. Whilst we welcome recognition that the scale of the challenge needs to be done in collaboration with other organisations, business and households, WWF Cymru believes this should run along with WG identifying its own role in a new energy efficiency strategy. This includes a detailed route map and delivery plan incorporating evidence base and assessment of emissions reduction needed to reach climate targets. A lack of clarity and detail in these areas from Government can be a major barrier. WG therefore needs a leadership and delivery role as well as an enabling and coordination role.

#### Barriers to people and communities taking action.

One of the main barriers overall is that people don't see energy efficiency measures as an important, or desirable, home improvement. In addition, they generally don't make the connection that such measures can significantly bring down their energy bills – this viewpoint is exacerbated by the fact that energy prices are rising so when people see that continuing they don't realise that energy efficiency measures will actually ensure that the impact of those rises will be less. Research undertaken by Behaviour Change for the Big Energy Vision Campaign found that people responded better to one big national story than many separate initiatives. There is a real need for a big, national scheme with a clear purpose and timeline. Previous research has highlighted that Government needs to articulate a clearer sense that energy efficiency should be a national priority.

Access to finance continues to be an issue, especially for low-income households, even with the implementation of the Green Deal programme. The Green Deal financing element has proven to be less than attractive to people at between 7% and 8% interest rates and the golden rule also minimises the level of energy efficiency that can be achieved using this financing mechanism. For low-income households 100% grants will be needed to bring the energy performance up to an acceptable level (EPC band C) while incentives will still be needed in the beginning for those households that are able to pay or take out finance. These incentives could be cashbacks, grants or stamp duty/council tax rebates. Analysis by the UK Green Building Council found that a variable stamp duty scheme could deliver between 135,000 and 270,000 additional retrofits per year and contribute £404m to £807m to GDP at zero annual direct cost to Government<sup>48</sup>. The interest rate of GD finance also needs to be set at a much more attractive level if it is to encourage households to take up the

<sup>48</sup> <http://www.ukgbc.org/resources/publication/uk-gbc-task-group-report-retrofit-incentives>

	offering.
<b>38</b>	<p><b>Hywel Dda University Health Board</b></p> <ul style="list-style-type: none"> <li>• Lack of discussion and information in the strategy regarding monitoring, verification and control. These are vital in energy management and ensuring ongoing efficiencies, which can often diminish over time if not reviewed frequently.</li> <li>• Quite often the public sector is exempt from legislation which applies to general business e.g. the need to undertake mandatory energy audits. This is counterproductive. While this best practice action is aimed for, within the public sector resources are often not committed to a project unless the requirement is a legal compliance.</li> <li>• Cannot build up a green economy if the financial support is not there to help business and (particularly) the public sector to invest.</li> <li>• WG should be running innovation programmes, for business to pitch ideas for trial or installation on public sector buildings – create a database of known challenges of public buildings we have to use for the foreseeable future (acute hospitals, council HQ are prime examples)</li> <li>• Link to climate change and how buildings need to adapt to address the challenges e.g. advise for all on how to improve cooling efficiently, which may become a priority in the future.</li> </ul>
<b>40</b>	<p><b>Rhondda Cynon Taf County Borough Council</b></p> <p>Energy sector is a moving target which is extremely difficult to hit. Fluctuating ECO rates mean that there is no consistent approach by any company, as they will all have different targets to achieve, and once achieved, they will cease to be active until the next round of ECO funding.</p> <p>No up-to-date list of available funding for Energy Advisors to refer to due to multiple funding streams and differing availability at different times.</p> <p>The new 'Resource Efficient Wales' service set up by Welsh Government should have a portal in each Local Authority, so it can be updated regularly with any energy updates or schemes happening in different areas. Alternatively set up an energy alliance or web page to include everyone involved in this consultation process being able to assist or contribute to the Resource Efficient Wales tool.</p>

It is suggested that the Warm Home Discount should be means tested to benefit those on lower incomes, and more likely to be in fuel poverty.

Winter Fuel Payments - this payment should be taken away from people who largely reside abroad throughout the winter month and especially if they have savings over £10K.

More low cost energy efficiency measures should be advised in short term, such as thermostatic radiator valves, timers, thermostats, radiator reflectors etc.

Additional assistance given to those households who qualify for NEST such as Care and Repair Handyperson Service; Home Safety Advice; Referral to Fire Service for Fire Safety Checks and smoke alarms etc.

Sporadic injections of cash into energy industry, i.e., GDHIF and Green Deal Cashback,, work on a first come, first served basis therefore not necessarily reaching those most in need. More coordinated and consistent approach to funding available required to enable long term planning in the most appropriate and needy areas.

Green Deal Finance far too expensive and complicated in its current form. Initial information giving the interest rate is off-putting and most people don't pursue any further.

As mentioned in question, more information and education is required to demonstrate the links between health and housing, for example, the link between a cold, damp and mouldy home and the potential affect this could have on someone with a respiratory illness or disease such as asthma or COPD.

More advice and information needs to be available regarding the actual energy efficiency measures, for example, what is external wall insulation (EWI), what is internal wall insulation (IWI), how does loft and cavity wall insulation work?

Our Housing Energy Officer regularly refers to the following organisations, and it is felt that all Local Authorities should be trying to provide the same service as we are, however it is appreciated that not every LA has the capacity:-

NEST, Care & Repair, Welfare Rights, Adult Duty Desk, Council Grants Dept., Public Health, Trading Standards, Citizen Advice Bureau, Age Cymru, Crossroads, Warm Wales, Utility Companies, Resource Efficient Wales.

Energy efficiency training is delivered across the following areas and has

	<p>received very positive feedback:-</p> <p>Communities First, Mailshots, Public Health and Protection, Trading Standards, Care &amp; Repair, Private Sector Housing Unit (Grants), Welfare Rights, 50+ Forums, various events and Open Days.</p> <p>Welsh Government should perhaps consider issuing some Planning guidance nationally around the application of external wall insulation on the front of houses to try and maintain street character from a heritage and conservation perspective. For example, stone fronted terrace houses should not be covered with external wall insulation. Planning rules currently are open to wide variation and interpretation with owners very often permitted to do whatever they want.</p> <p>RCT has its own Heat &amp; Save scheme with dedicated telephone number, and also has its own mascot called 'Penny the Power Saver' who attends events and is displayed on our Heat &amp; Save merchandise.</p>
41	<p><b>Community Housing Group</b></p> <p>The CHC Group welcomes Welsh Governments plans to develop an energy efficiency strategy. CHC agrees that the opportunity for improving energy efficiency in Wales is “immense” and we feel that developing a clear energy efficiency strategy for Wales, accompanied by a detailed delivery plan, will help to deliver the visions outlined in the consultation paper. CHC supports the overall direction and intentions of the vision. The strategic role of the Welsh Government (WG) is vital and CHC and members continue to work alongside WG, local government and other key stakeholders to tackle fuel poverty, climate change and promote social justice in particular.</p> <p>Improving the energy efficiency of homes is one of the key levers to tackling fuel poverty and CHC feels quite strongly that the housing association sector and Care &amp; Repair agencies are well placed to deliver energy efficiency improvements in communities to help meet the targets around fuel poverty. While low incomes and energy prices act as the main contributory factors to rising levels of fuel poor households (alongside the number of energy inefficient properties), they make the eradication of fuel poverty a real challenge. Household income is still under significant and substantial downward pressure and changes in people’s income levels are working adversely. Furthermore, energy prices continue to rise. Therefore more needs to be done to ensure vulnerable households are paying the least possible price for their home energy needs. As well as focusing on the need to create employment and jobs, we must focus on the installation of energy efficiency measures to help improve the fabric of</p>

buildings. Beyond this, we need to improve the generation of energy through renewable technologies and also focus on consumption by offering education and behavioral change training to help negate and protect against any future increases in energy prices. There is scope for expanding the role of micro-generation in tackling fuel poverty and reducing carbon consumption. It is important to build upon the 3% annual carbon reductions. Housing is responsible for a significant amount of carbon dioxide emissions and any new homes we build will add to this carbon count.

The CHC Group and RSLs in Wales were key strategic partners with the Welsh Government in the delivery of Arbed phase 1. RSLs have played a key role in the Arbed programme and have proven experience in combining investment in energy saving measures with job creation. The majority of the works in the Arbed 1 scheme were commissioned and managed by housing associations which achieved significant regeneration outcomes by the use of binding social inclusion clauses in procurement contracts. From the total investment of over £68m in the delivery of Arbed phase 1, around £20m was invested by social housing providers and local authorities. Arbed investment has enabled a number of HA properties to install energy efficiency installations and has had a significant impact on improving the HA housing stock and supporting those in fuel poverty. The RSL sector in Wales has expert knowledge, experience and awareness of fuel poverty issues affecting tenants and householders across Wales and therefore we welcome this opportunity to respond to this consultation call.

Care & Repair agencies work with older people to improve the energy efficiency of their homes and maximise income, in order to lift people out of fuel poverty. Agencies are skilled in accessing all grants, charitable funds and fuel poverty schemes at local and national UK level to support older people to live in warmer, more comfortable homes. In 2013/14, Care & Repair agencies provided over 1800 people with energy advice and assistance and over 1000 older people were supported with issues of damp and energy inefficient housing. With Care and Repair's experience of working closely with older people, they are in a strong position to identify and support older home owners, entitled to energy efficiency funding, through the process and help to lift them out of fuel poverty. Care & Repair agencies utilise the Nest Portal system, in order to refer clients directly to the scheme, whilst visiting the client in their own homes. The Nest partnership with Care & Repair helps ensure that the scheme is made accessible to vulnerable older people, living in their own homes.

Despite the CHC Group and its members continued work in raising the

quality of the energy efficiency of its housing stock through the Welsh Housing Quality Standard (WHQS), ARBED and other energy efficiency programmes, significant amounts of tenants and householders remain or have become fuel poor. Whilst the WHQS sets good minimum standards, they rely on an assessment methodology which is very broad and does not necessarily tackle the problem of increasing energy costs or CO2 emissions. According to the Wales Fuel Poverty Projection Tool released in 2013, 31 percent of social housing tenants in Wales still lived in fuel poverty in 2012, equating to 70,000 households, which is a rise of 6 per cent from 2008 indicators. In 2012, 30% of households and 33% of vulnerable households in Wales were estimated to be in fuel poverty. The latest official figures from the Department for Energy and Climate Change reveal that 29% of households in Wales are in fuel poverty compared to 25% in Scotland and 15% in England.

The rise in fuel poverty since 2008 is to some degree a result of a number of mitigating circumstances. Since 2008, tenants living in HA properties have been affected significantly by rising fuel bills, benefit changes and the bedroom tax. High energy prices in Wales are compounded by the energy inefficiency of Welsh housing and lack of access to mains gas in rural areas. Recent information from the National Housing Federation has identified that 26% of 'bedroom tax' claimants have cut back on heating to pay for the cut in housing benefit. Tenants often face the choice between heating their home or eating and obviously, heating is the one that suffers quite considerably. One of the major problems in meeting Welsh Government's targets is the assumption that once tenants/owner occupiers are lifted out of fuel poverty that they remain there. As energy costs rise faster than wage or benefit increases the number of householders in fuel poverty increases. There is no permanent way to guarantee reduction in the number of tenants in fuel poverty aside from permanent increases in pay and benefits being at a higher rate than increases in fuel prices. With fuel poverty being expressed in terms of the percentage of household income spent on fuel, the increase in fuel costs allied with the reduction in benefits has resulted in moving some tenants into fuel poverty, as well as moving some tenants back into fuel poverty despite the energy efficiency works which may have been carried out. There are areas in Wales where there are households where fuel costs exceed 20% of income and people are designated as being in 'severe fuel poverty'. Fuel poverty status is a dynamic entity, whereas the effects of energy efficiency works are permanent, albeit transferrable to new occupiers.

Fuel poverty is a significant cause of excess winter deaths and in winter

	<p>2013/14, there were 1,100 excess winter deaths in Wales and the majority (73%) were over the age of 75. We know that around 30% (a conservative estimate) of these deaths can be attributed to cold homes. Although 1,100 people is a considerable decrease from last years figures of 1,900, it remains a significant issue. Last winter was relatively mild and many older people still faced difficult decisions about whether to heat their home or eat. Tenants and older people are more vulnerable to fuel poverty as they are often on fixed income and often spend more time in their homes. The rising costs of living, such as food and fuel affect them disproportionately. According to the Office of National Statistics retired households spend a greater percentage of their income on household fuel than non retired, even after accounting for winter fuel payments. Research carried out by Age Cymru in 2014 found that energy bills were the greatest concern to older people. 57% were worried about affording gas and electricity bills and many were cutting back on other things in order to manage. Figures suggest that there are 140,000 pensioner households are in fuel poverty in Wales. The older people’s wellbeing monitor for Wales indicated that 1 in 5 households containing someone over 60 were fuel poor, twice the rate of all households.</p> <p>While CHC do not feel that the fuel poverty targets will be met, we think that we have made good strides in looking to retrofit and develop properties that are now more energy efficient. CHC feels that the Welsh Government continues to make a link between fuel poverty and energy efficiency. However, whilst CHC welcomes programmes such as ARBED and NEST, they are insufficient given the scale of the problem that needs to be addressed. Funding has been insufficient and there have been difficulties in the way that schemes have been run. We have therefore not been able to get a grip of the problem that needs to be addressed. The scale of the problem is far greater than the investment made at present.</p> <p>9 <a href="http://www.iea.org/publications/insights/ee_improvements.pdf">http://www.iea.org/publications/insights/ee_improvements.pdf</a></p> <p>10 <a href="http://www.nice.org.uk/guidance/gid-phg70/documents/excess-winter-deaths-and-illnessess-call-for-evidence">http://www.nice.org.uk/guidance/gid-phg70/documents/excess-winter-deaths-and-illnessess-call-for-evidence</a></p>
<p><b>42</b></p>	<p><b>Grwp Cynefin</b></p> <p>Grwp Cynefin welcomes the fact that Welsh Government is consulting on this vitally important field of work. The consultation document states clearly why actions are required and the over-riding reasons why they are urgently required, not least the meeting of long held targets on fuel poverty and the reduction of Carbon.</p> <p>Sadly the document fails to adequately address the fact that unless a step</p>

change in funding and priority emerges from Welsh Government then these targets will continue to be missed, and missed by a large margin. For an organisation which is supposed to have Sustainable Development at the core of its activity this is a major failure. The proposed vision is a sensible one but rhetoric on its own will not stop excess Winter mortality rates or rising sea levels. After over a decade of concerted effort by Welsh Government your own figures show around a third of households are in fuel poverty- a figure which compares badly with the rest of the UK and which may be an underestimate given the number of people we see every day who underheat their homes and whose income assessments would not show the true extent of their problems

The document is short on detail and evaluation of existing programmes and activity which must surely be the foundation for further policy formulation? Firstly the document mentions that some aspects of energy efficiency are not devolved matters – so is Welsh Government making a case to transfer them and if so which powers and by when? The debacle of programmes such as Feed in Tariff, Green Deal and ECO show that Welsh initiatives are stymied by failures in UK Government policy, and also that Westminster departments like DECC consult too little and too late with Welsh Government . Coupled to this, Welsh Government response to such initiatives has been too slow, too laboured and too unimaginative resulting in many lost opportunities. Green Deal and ECO being a case in point. One only has to look at evidence such as the work we undertook in the GAE project in 2014 (report attached) demonstrating a failure to engage at the consumer and citizen level in rural and urban communities in Gwynedd and Anglesey. The recent maximising ECO revenue grant through ARBED actually contained criteria on the number of houses which worked against sponsors drawing down of ECO by utility companies i.e the whole point of the initiative!

As active members of Community Housing Cymru we very much support the extensive points made in their submission to this consultation. Their supporting role has been very important in ensuring our sector is well informed and exchanges good practice. As they have demonstrated the role of RSLs in delivery is paramount as we bring integrated approaches which can work across tenure, using whole house and whole street approaches to bear-as well as significant pots of match funding. One only has to compare the performance of the North Wales and South Wales Project Managers of ARBED to show how RSLs add value to this process- the South Wales scheme being far more engaged with local economies and communities. As the second largest recipient of ARBED

1 funding our predecessor organisation Tai Eryri showed clearly how local supply chains and contractors could benefit from workstreams like ARBED (see attached evaluation from our KTP with Bangor University). We have yet to see evidence of how the North Wales take of ARBED 2 compares with South Wales and anecdotal evidence in Gwynedd shows poor levels of customer service and many contractors engaged from outside the operating area

The decision to channel the ARBED 2 process exclusively via local government applications does not seem to have worked, has been far too labour intensive and has resulted in much wasted effort. The ARBED team seems to have been under resourced and application processes have been characterised by too tight deadlines, late approvals and impossible timescales for delivery. Rural areas in particular have been disadvantaged as most of the resources have been targeted to urban centres. The one rural project we are aware of (Nantlle) has brought a fossil fuel supply to an off gas area- instead of providing a demonstration renewables project which could be applied to other off gas areas where connecting to the gas pipeline will never be an option. Presumably the reason for having doing this is cost but an opportunity has been lost to provide some real innovative thinking on how to address this common problem across rural Wales. If ARBED does not deal with this problem, and ECO has failed to, what hope is there to address at scale fuel poverty and Carbon reduction in these rural communities?

As members of the Gwynedd Sustainable Warmth group we also fully support the submission made to this consultation made by Gwynedd Council. We commend to you the inclusive and joined up partnership approach to producing ARBED bids in the county and also the excellent research they have undertaken on mapping out of fuel poverty in the county. Unfortunately the ARBED team has failed to recognise the importance of such work and has not awarded funding to the county in the last two rounds.

We have have seen at first hand the amount of work which has had to go into making these applications and the frustration when they do not succeed. It also seems ironic that even when applications do succeed the implementation and project management is removed from those who actually made the applications so there is real disconnect from the original vision and intention and the work on the ground of the project manager. This has led to avoidable problems on delivery and communication with

our local communities in Gwynedd

The vision outlined in the consultation is the correct one but needs to be much clearer about the most cost effective and efficient way of doing the work of improving the housing stock. Only whole house, whole street and whole village approaches will do the job. To this end we need a “marshal plan” type approach to undertaking the work in Wales- a couple of projects per county or region per funding round is inadequate and there needs to be step change in funding . There has to be better integration with health policy not only in the way directorates work together in Welsh Government but also in the way funding packages work together. Improving the housing stock and making it more energy efficient is part of the preventative health agenda and needs to be recognised as such. Recent projects in Oldham and the Gentoo “Boiler Prescription Scheme” show how this can be done and some pilots are required in how this could be achieved in Wales. The longitudinal study undertaken by Carmarthenshire Council on health benefits of WHQS delivery also provide good evidence on why actions like these are effective and save money in the long run

The document asks rightly about the role of supply chains and businesses to support the work which needs to be done. We feel these are still fragile and patchy across Wales and especially so in North West Wales where relatively little funding has been spent and there have been fewer opportunities for companies to be supported. The “feast or famine” approach which energy efficiency programmes cause does not allow for strategic business planning or development- and this surely is one of the biggest contradictions of programmes like ARBED which have economic development objectives at its core. Welsh Government needs to provide leadership in this field and plan for sustainable growth as opposed to short burst projects which have no exit strategy. Again the RSL sector has shown good practice on this through our work on WHQS procurement and how long term economic growth can be achieved at local level,

The consultation also asks about the barriers to households and communities. Clearly there are many financial ones especially within the private sector. Given the demographic of an ageing populations longer term “payback” on installation of energy efficiency measures is never going to be an attractive proposition unless the package is heavily subsidised or at no cost. As mentioned previously this again is why health boards and preventative health care needs to come into the equation

	<p>A clear barrier is the lack of trusted advice on energy matters at the local level and the lack of information which percolates through to local communities. Grwp Cynefin's Energy Wardens scheme has been operating for the last three years in Holyhead, Bangor and Caernarfon training people out of work to deliver advice on energy efficiency, and to provide support on accessing schemes such as the Warm Home Discount</p>
<p><b>43</b></p>	<p><b>Low Zero Carbon Hub</b></p> <p>We trust that you have found the Wales Low Zero Carbon Hub's response informative. The WLZCH remains keen that the Welsh Government seeks to demonstrate and lead with a clear message on the direction of work packages, adequate funding and continuity of delivery to ensure confidence within the supply chain, householders and communities in Wales.</p> <p>The WLZCH would be willing to facilitate any further policy discussions you may wish to have with those working in the sector. We understand that RICS may have been unable to submit a response, but that in partnership with the WLZCH they are keen to facilitate round tables with their members in order that you can discuss directly the work underway to establish an energy efficiency strategy for Wales.</p>
<p><b>45</b></p>	<p><b>Rockwool</b></p> <p>Our key summary points are:</p> <ol style="list-style-type: none"> <li>1. Develop demanding targets to deliver energy efficiency in homes, particularly through delivery of solid wall insulation</li> </ol> <p>It will be essential to set in place targets to insulate solid wall properties which successive UK energy efficiency policies have failed to tackle. The prevalence of fuel poverty and cold living conditions in such properties needs to be addressed urgently.</p> <ol style="list-style-type: none"> <li>2. Set in place a long term strategy and a clear message to industry that the policy will remain consistent</li> </ol> <p>The transition between different phases of energy efficiency schemes need to be carefully managed to avoid boom/bust cycles which can severely damage the SME supply chain.</p> <ol style="list-style-type: none"> <li>3. Develop sustainable funding initiatives</li> </ol> <p>A range of fiscal incentives and regulatory initiatives should be used to stimulate interest and demand among the able-to-pay market.</p>

	<p>4. Set in place a sustained, widespread consumer awareness and engagement campaign</p> <p>A Welsh Government driven, widespread, high level, sustained, consumer awareness campaign will be necessary to communicate the benefits of energy efficiency and the support available to households.</p>
46	<p><b>SSE</b></p> <p>In recent years successive governments – comprising of different political parties – have pursued policies intended to make homes more energy efficient. These policies have been funded by consumers, through a charge levied through their energy bills, and delivered by mandating that energy suppliers install energy efficiency improvements at scale. As energy efficiency policies have developed, they have become administratively burdensome – for example ECO has complex eligibility criteria and onerous reporting requirements – which increases the costs of the policies, takes resources away from delivering measures to homes and can lead to customer disengagement. The rationale for putting obligations onto suppliers was that they have direct interaction with consumers. However, as policies have developed the responsibilities on energy suppliers have increased, yet this has not been accompanied by an increase in the data sharing to help suppliers target customers. Put simply, suppliers find it increasingly difficult to find the customers that need measures installed, particularly where schemes are especially prescriptive about the type of customers, properties and measures that are eligible.</p> <p><u>Energy efficiency</u></p> <p>SSE believes that governments should have an ambitious commitment to energy efficiency as a way to tackle fuel poverty and the most sustainable way to reduce bills in the long term. SSE therefore broadly agrees with the Welsh Government’s energy efficiency strategy. Energy efficiency has a crucial role to play in addressing the energy ‘trilemma’ – delivering secure, affordable energy that is low in carbon. However, whilst SSE supports efforts to improve the energy efficiency of the UK’s housing stock, this must be achieved in a way that is fair and affordable for those funding these improvements – energy customers.</p> <p>SSE also believes that the creation of a Fuel Poverty Agency would be an important step forward in delivering sustainable and effective energy efficiency policies. A single cross-departmental body would also be better able to find customers and make assessments of need than energy companies and would have a range of tools for improving people’s</p>

	<p>circumstances, far exceeding those available to energy companies. Failing that, SSE would like to see a delivery model which draws on the trusted status and better data of local authorities and other intermediaries to increase the effectiveness of targeting energy efficiency measures.</p> <p>SSE believes that there is a strong case for devolving further powers to the Welsh Government that would enable a more bespoke approach to achieving energy efficiency and tackling fuel poverty in Wales. The devolution of powers relating to energy efficiency and the Warm Home Discount would enable the Welsh Government to set and fulfil its own fuel poverty strategy, responsive to particular Welsh circumstances. The main principle underpinning this proposal is to allow devolved administrations the flexibility to pursue social policy in the most appropriate way to meet the needs of its citizens.</p> <p>In summary, SSE believes that energy efficiency is the most sustainable way to reduce bills in the long term and tackle fuel poverty. We feel that any energy efficiency policy should be cost effective, ambitious, targeted at households in need and not funded in a regressive way.</p>
47	<p><b>National Trust</b></p> <p>We would like to limit our evidence to an appeal for inclusion of measures to encourage and facilitate the retrofitting of older buildings in Wales in your new energy efficiency strategy.</p> <p>The opportunity for retrofitting in Wales is enormous. Wales has a larger proportion of pre 1919 buildings than the rest of the UK, with 36% of our buildings pre dating 1919 compared to a UK average of 25%.</p> <p>These traditional buildings are of great significance. They provide continuity and a source of identity which gives meaning and quality to places where we live, work and visit. The character and quality of place has an influence on health and social well-being, nurtures community cohesion and draws in economic investment. However, the social, cultural and economic value can only be reaped if such building stock is kept in a condition which is fit for contemporary purpose.</p> <p>The retrofitting of older buildings can contribute to many agendas, not only energy saving and tackling climate change, but the provision of warm and comfortable homes, protecting our cultural heritage and importantly creating jobs and skills through up-skilling and creation of extensive domestic supply chains.</p> <p>This relevance to multiple agendas can be seen in recent Welsh</p>

Government publications. In the recent Welsh Government response to the Baroness Andrews' report Culture and Poverty published in November 2014 we noted the recommendation;

*“Recommendation 27*

*Welsh Government, Cadw, HLF, the Prince's Regeneration Trust and other regeneration bodies in Wales to identify opportunities for joint action focussed on the potential role of historic buildings in the sustainable development and regeneration of local areas, and maximising the skills and training opportunities for young people and adults.”*

We strongly believe that one focus for any joint action should be around increasing the energy efficiency of old buildings.

Issues

Unfortunately, actions to improve the retrofit of traditional buildings are currently often ineffective and at worst damaging to our building stock.

This is due to standardised approach which has not been designed with traditional buildings in mind. There has been a lack of appreciation of the tailored and skilled approach needed to improve the carbon emissions and energy performance of traditional buildings and the ways in which their needs differ from more modern buildings.

The current categories and targets are based on arbitrary definitions undermined by increasing evidence of performance gaps and poor installation means that it is unlikely real savings will be delivered. EPC Targets wrongly give the impression that EPC bands can be achieved by an evenly stepped process into which measures can be added in to a buildings incrementally. In reality the exact opposite is the case and moving from EPC E to D or C is likely to lead to grounded measures, increased expense, disruption, and potentially discrediting underlying policy and sustainability principles. Where such categories and targets have proven not to be useful in many cases the National Trust adopts the principle that every building should be made 'as good as it can be' using current technology.

There is also a lack of understanding that simple maintenance of traditional buildings can have enormous impacts on energy efficiency before 'add-on' measures used in modern buildings need to be considered. Research by Cadw has shown that walls can be 30% less

energy efficient if damp. If a holistic diagnostic approach was taken to energy efficiency in traditional buildings then issues such as damp and other relating to maintenance and repair would be viewed as the very first energy efficiency measures. Currently however this does not happen and often we skip straight onto looking for something to fix onto a building<sup>49</sup>.

There is also a lack of skilled individuals working in the field that have the training in and experience of working with traditional buildings meaning that unsuitable methods and tools are being used even where intentions around repair, maintenance and measure installation are correct.

Understandably there is also a lack of confidence around retrofitting traditional building generally and specifically around which aspects of available UK schemes might be of relevance for them.

We see these issues as being something that the Welsh Government is well positioned to tackle through actions to be outlined in its new energy efficiency strategy.

#### Actions

Actions which we would recommend as being useful steps in encouraging increasing energy efficiency in older buildings would be;

- Strategic review of opportunities and barriers to retrofitting

Making substantial progress in an area such as retrofitting, especially given the non-devolved nature of the issue is complex. We would support, and happily participate in a review to reduce the risks of rolling out and successful delivery of energy efficiency for traditional pre 1919 buildings. This will be able to help advise the future energy reduction trajectory and help share wider energy retrofit strategy of traditional buildings.

- Increasing confidence among operatives

Knowledge of retrofit in traditional buildings is increasing rapidly, something we have observed through the Fit for the Future Network and is shown in documents such as Responsible Retrofit from the Sustainable Traditional Buildings Alliance<sup>50</sup>.

<sup>49</sup> John Edwards- <http://ntenvironmentalwork.net/2014/04/15/guest-blog-energy-efficiency-its-not-just-retrofit/>

<sup>50</sup> <http://www.spab.org.uk/downloads/STBA%20RESPONSIBLE-RETROFIT.pdf>

	<p>There can be a hesitancy to retrofit and we understand this, a precautionary approach is needed to avoid irreparable damage to the historic fabric of buildings. Owners of traditional buildings often do not have the benefit of technical expertise, standards and guidance.</p> <p>Welsh Government, in partnership with the wider sector could have a role in tackling this hesitancy through knowledge building, guidance production, training and sharing could be facilitated to give homeowners, landlords and Local Authorities confidence to tackle retrofit projects. The sector can support both in the developing successful and accurate guidance and appropriate safeguards to accompany that.</p> <p>The National Trust believes that there is an excellent opportunity for a positive and inspiring public campaign to raise awareness and increase understanding of the range of things that can be done to make older homes more energy efficient.</p>
48	<p><b>Gwynedd Council</b></p> <p>It's important to be able to show residents the effects of installing measures in their homes, often measures are identified without investing time with the resident to educate them about the possible options available, what are the advantages and disadvantages of systems and the resulting savings in terms of energy costs within the home.</p> <p>Research carried out by the Council shows which areas are at risk of being in fuel poverty. We believe that schemes based on the most disadvantaged areas (LSOA) according to the Welsh Index of Multiple Deprivation (WIMD) prevent a number of rural communities from receiving Welsh Government grant funding. Presently, attention is given to geographical pockets where there is a dense population of people out of work or on benefits (the obvious key message of WIMD). However, claiming benefits isn't the only factor contributing to fuel poverty. Incomes in marginal rural areas tend to be relatively low. People can be on low income and not claim benefits. We also believe that specific attention should be given to areas with relatively old, inefficient housing stock. It's likely that the reliance on expensive fuel is higher in rural areas e.g. those not on the main gas network. This also needs more marked consideration. Perhaps the biggest problem at the moment is the need to live in a specific LSOA in order to receive support through schemes, rather than individual homes being able to prove a need (e.g. they are living in fuel poverty)</p>

We believe that we need to work with the industries before introducing schemes, we have seen positives and negatives effects with schemes like Arbed in the North. On the positive side opportunities have been created, but on the negative side it has taken a lot of time to work with the companies to gain their trust and for them to plan ahead to take on work.

It is important that Wales has a long term vision for energy efficiency, unavoidably decisions in Westminster and beyond do have implications on the method we operate in Wales. It is important that we can respond to those changes and ensure what is being achieved does benefit the residents of Wales.

There is confusion with the different schemes which exist and it's difficult for people to know where to get independent advice. I trust that Resource Efficient Wales will be able to respond to this challenge. Research from the Council shows that people don't know what their options are, the report is attached below. We believe that a lack of understanding contributes for the low level take-up for schemes such as The Green Deal.

It's important that Councils and Housing Associations collaborate and it's believed that WG are central to encourage this collaboration. The arrangements for community housing grant are working well with every Council having a share of the money. This will make sure that every County will have a share of the money based on the matters that are of importance to them e.g. dealing with energy efficiency in Gwynedd is very different to dealing with energy efficiency in a Council such as Wrexham. There is also the opportunity to work closer with Housing Associations who will have contacts with local companies to encourage them to take the work on.

Work should be done with small and medium companies in order to give them the opportunity to put bids for work. A consortium method has been used to work within an Arbed area. The process has been long with a lot of discussion, by investing more at the start and collaborating, local companies will be in a better place to take part. Arbed 1 has proved that working locally can be successful.

As it's needed to work with local companies to do the work it is also

requires working with the supply chain to understand the scope and the nature of problems in Wales. Within Gwynedd there are a number of houses that are hard to treat and some solutions are unavoidable, they must be supplied from outside Wales. It's believed that there is an opportunity to work closer with the supply chain to have more local solutions which would mean more opportunities for the supply chain and local employment.

Collaborating with communities is vitally important and shows innovation with respect to identifying measurements / ways to respond to local problems. The RHI and FIT has been innovative and popular.

The changes to ECO have had an adverse effect on the opportunity to collaborate with energy companies, Housing Associations and Councils. This includes reviewing introductory targets external wall insulation. It is believed possible to have a more effective method of collaborating instead of Housing Associations and Councils discussing with energy companies individually, WG should play a more progressive / advanced role to collaborate to get plans in place. We have examples in Gwynedd of working with the Nest scheme to target specific post codes within the Council in order to target the correct people. It's obvious that the Green Deal Scheme has not worked without having substantial encouragement for residents to take-up the measurements – these results should be considered when WG are thinking of introducing the next round of Arbed. It's important to have a combination of measures funded centrally and others funded by residents through low interest borrowing.

Fuel poverty is associated with a number of factors such as health, mental well-being, money, employment opportunities as so on. We do support an Energy Warden scheme in Gwynedd which employs people who have been long term unemployed by training them to give advice and information to residents. This scheme has proved successful by ensuring that people who are eligible receive the correct benefit and guidance through the Nest and Warm Homes Discount process. The reason for the success of the scheme is because it has been implemented locally with wardens visiting people at home.

Consideration regarding the definition of fuel poverty should be looked at again after the publication of the Hills report.

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**GBSPM**

	<p>There is a huge loss of generated power through inefficiencies within the UK grid network. This is often stated by the grid as being 6%, but independent figures place it around 10%. Within Wales we have a huge opportunity to harvest the natural elements and utilise them locally. Producing Carbon free energy and distributing locally, removing this inefficiency.</p> <p>Wind power, tidal power, Hydro &amp; small Biomass plants could all be beneficial to Wales. By controlling this efficient and local energy we provide a business background with energy security in a time of worry. Take a small Biomass plant, linked to an industrial estate. All the offices / factories etc could be provided with Carbon Negative Energy, even when the grid struggles. With the huge dependence on IT this could mean a business continuing to be effective in these times of energy scarcity.</p> <p>Swansea Bay Tidal Lagoon linked to the Local grid should surely be the top of the agenda. With their own requirements for 60% locally sourced labour/ Materials and plant would be a huge step forward.</p>
50	<p><b>British Standards Institute</b></p> <p>BSI (British Standards Institution) has read with interest the Welsh Government's call for evidence on energy efficiency. We would like to provide some input that responds to question 10, giving related information about energy efficiency. The views in this response are those of BSI, which we would classify as 'Other' (National Standards Body) for the purposes of the questionnaire contact details section.</p> <p>At the foot of this letter we have provided some general background about BSI as the UK's National Standards Body and the role that voluntary standards play in the economy. BSI's standards can be used to support government policy and legislation, as is already the case for thousands of our published documents. Standards can bring self- or co-regulatory solutions to public policy challenges, setting out guidance and good practice that can be taken up by industry and thus meet policy objectives. The breadth of expertise and degree of representation in our committees ensure the legitimacy of this platform for government.</p> <p>BSI has an existing portfolio of standards in the energy efficiency area, a number of which support the UK implementation of the EU Energy Efficiency Directive. These standards could be of considerable use to the Welsh Government when it considers how to deliver its energy efficiency vision, in particular dealing with supply chain and barriers questions.</p> <p>From the broader UK perspective, BSI has been working with Department</p>

of Energy and Climate Change and its Energy Efficiency Deployment Office since 2012 to identify how standards can promote energy efficiency. The outcome of this work has been that standards such as ISO 50001 Energy Management Systems and EN 16247-1 Energy Audits both feature in their Energy Savings Opportunity Scheme guidance, the 'Guide to ESOS1' (Version 1.1, September 2014), along with a number of other relevant standards. Page 43 of the guide includes the following text:

Examples of possible approaches to selecting an audit methodology:

ISO 50002 and BS EN 16247 Energy Audits set out a good practice method for identifying energy savings opportunities. It is for in-house managers or external consultants carrying out an energy audit, or as a guideline for organisations who want to understand what a good energy audit looks like.

The EN16247 series of standards also includes more detailed standards setting out possible auditing approaches to buildings, transport and industrial processes.

There are also more technical standards, such as ISO 14414: pump system energy assessment (see below). These may be suitable to deploy for particular aspects of a participant's energy audits.

Individual auditors or energy auditing companies may also have their own in-house methodologies designed to meet the requirements of ESOS.

**Other potentially relevant standards:**

ISO 15099:2003 Thermal performance of windows, doors and shading devices -- Detailed calculations. This standard specifies detailed calculation procedures for determining the thermal and optical transmission properties (e.g., thermal transmittance, total solar energy transmittance) of window and door systems. This standard may be applicable as an auditing methodology when seeking to determine the energy saving potential associated with an organisation upgrading the windows (inc. glazing) and/or doors in its buildings.

ISO 16346:2013 Energy performance of buildings -- Assessment of overall energy performance. This standard defines the general procedures to assess the energy performance of buildings, including technical building systems. This standard may be an applicable auditing methodology for the assessment of energy saving potential from buildings.

ISO 15686-3:2002 Buildings and constructed assets, Service life planning, Part 3: Performance audits and reviews. The standard outlines the approach and procedures to be applied to planning, briefing, design, construction and, where required, the life care management and disposal of buildings and constructed assets. This standard may be applicable as an auditing methodology when seeking to determine the whole-life energy saving potential related to the replacement or retrofitting of a building and its likely performance over time.

ISO 11011:2013 Compressed air -- Energy efficiency – Assessment. This standard sets out requirements for conducting and reporting the results of a compressed air system assessment from the energy input through the work performed by the compressed air system. This standard may be applicable as an auditing methodology when seeking to determine the energy saving potential associated with an upgrade/change to a compressed air system as part of an industrial process.

ISO/DIS 14414 - Pump system energy assessment. This standard sets the requirements for conducting and reporting the results of a pumping system assessment. This standard may be applicable as an auditing methodology when seeking to determine the energy saving potential associated with an upgrade/change to a pump system as part of an industrial process.

Using a standard such as ISO 50001 helps organizations to create a management system that allows continuous energy improvement over time. The following case studies provide some examples of how it has been used for this:

<http://www.bsigroup.co.uk/en-GB/iso-50001-energy-management/case-studies/>

Using a standard such as EN 16247-1 allows organizations to identify energy inefficiencies and recommend improvement. The case studies that can be accessed through this link demonstrate how this has been done:

<http://shop.bsigroup.com/en/ProductDetail/?pid=00000000030219029>

1

[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/351158/ESOS\\_Guide\\_FINAL.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/351158/ESOS_Guide_FINAL.pdf)

52

**Egnida**

Success of the above initiatives requires joined up thinking and policy

	<p>consistency between most of the Welsh Government Minister portfolios and that is challenging, particularly due to the lack of a consistent owner for the environmental portfolio over the last year or so. This has resulted in mixed messages to the business community and erodes investment confidence. It would be useful to be able to demonstrate ownership and cross party/portfolio support for the Energy Efficiency Strategy to ensure successful and timely outcomes. We would welcome the opportunity to meet to discuss any of the above points if that would be helpful as we are very supportive of the initiative and would be happy to help make it work.</p>
<p><b>53</b></p>	<p><b>NEA</b></p> <p>Between 2015-2020 the mass rollout of smart meters will take place, offering smart meters to every home and business across Wales as well as the rest of the UK. It is essential that low income and vulnerable consumers don't miss out on the potential benefits of smart meters which they will be helping to fund through their energy bills.</p> <p>Industry and Government agree a degree of coordination during the rollout can deliver value for money and an improved customer experience. Installing smart meters to vulnerable households through area-based energy efficiency schemes represents an opportunity to realise such coordination.</p> <p>The Welsh Government should consider working with suppliers to pilot the delivery of a smart meter to households receiving energy efficiency measures under the Nest and Arbed schemes. This should assess the costs and benefits associated with integrating smart metering into the whole-house package of measures already offered under the programmes.</p> <p><u>Collective Switching</u></p> <p>In early 2013 the Welsh Government funded National Energy Action to deliver collective switching events to local authorities and registered social landlords. As a result, NEA Cymru became a strategic partner in the "Cyd Cymru/Wales Together" collective switching project run by Cardiff and the Vale of Glamorgan councils, which helped people to save between £87 and £239 in switch one. Whilst the benefits provide households with savings on their energy bills and encourages households to shop around for an energy deal, it can also provide an opportunity to further support households to become more energy efficient and the scheme should be expanded upon.</p>
<p><b>54</b></p>	<p><b>Scottish Power</b></p>

	<p>We recently gave evidence to the Welsh Environment and Sustainability Committee as part of their inquiry into Fuel Poverty and Energy Efficiency in Wales. We made the following recommendations:</p> <ul style="list-style-type: none"> <li>• To reinstate the Fuel Poverty Advisory Group in Wales to assist in the formulation of policy.</li> <li>• To review the challenging nature of the current target of eradicating fuel poverty by 2018, particularly given the higher levels of fuel poverty in Wales as a result of the number of off-gas grid households, poorer housing stock and lower income levels. (The fuel poverty target in England has been refined in light of the Hills review in a way that we consider to be more realistic and helpful in targeting support to reach those most in need. We believe, therefore, that it would be useful to consider whether the ‘Low Income, High Cost’ (LIHC) definition of fuel poverty now being used in England would have benefits for facilitating effective delivery in Wales.)</li> <li>• To review the Welsh housing stock to identify the level of need and consider whether the barriers presented by data protection restrictions could be addressed, thereby allowing assistance to be directed where it is needed most.</li> </ul> <p>We would also ask that the Welsh Government continue to work with DECC, and other UK Government Departments (such as DWP/HMRC), to promote ways of better facilitating effective and secure data-sharing with delivery agents where eligibility requires evidence of the householder being in receipt of income related benefits.</p>
<p><b>56</b></p>	<p><b>Carmarthenshire County Council</b></p> <p>The only additional comments from Carmarthenshire’s Fuel Poverty Forum are:</p> <p>There has not been a clear vision of what the energy efficiency agenda is trying to deliver. Many people can’t afford to heat their homes even after measures have been installed. 1100 excess winter deaths were recorded in Wales last year. So, are we saving the environment or saving individual lives?</p> <p>Possible solutions could include appointing a single, central body for all things related to energy efficiency and a put in place a clear system. This information would need to be widely publicised and the system properly resourced. If then someone wished to avail themselves of advice or funding, they go through a single, standard route. Energy companies,</p>

	<p>Local Authorities, insulation installers, NEST etc etc would need to sign up the system. It would need to be clear and understandable to the public. Eligibility for grant funding should also be simplified and made clear to the public and not necessarily be based on receipt of benefits .</p>
<p><b>57</b></p>	<p><b>Friends of the Earth</b></p> <p>Energy efficiency is rightly highlighted by the Welsh Government as providing multiple benefits to Wales: environmentally, economically and socially.</p> <p>A high degree of ambition will be needed in order for the Welsh Government to meet its own target of cutting Wales’ greenhouse gas emissions by 40% by 2020.</p> <p>For example, one third of the current housing stock, or 400,000 houses, will need to be refurbished in the next five years to a level that cuts their carbon emissions by more than 60%<sup>51</sup>.</p> <p>If the Welsh Government is serious about making substantial gains from energy efficiency, it needs to set out clearly how it will move its interventions up the energy hierarchy<sup>52</sup>.</p> <p>In particular, that means removing implicit support for non-renewable energy generation, and changing planning policy so that there is a presumption against these forms of energy generation.</p> <p>In tandem, it needs to strongly ramp up its support for renewable energy generation.</p> <p>These interventions will demonstrate that the Welsh Government is serious about meeting the challenge of energy inefficiency.</p> <p>The Welsh Government will find much inspiration from the DECC 2050 Pathways Analysis – with a particular focus on the “Level 3” and “Level 4” interventions – if it is serious about making major energy efficiency gains<sup>53</sup>.</p>

<sup>51</sup> <http://stopclimatechaoscymru.org/wp-content/uploads/2013/07/SCC+-+Cutting+Carbon+Report+final1.pdf>

<sup>52</sup> <http://wales.gov.uk/docs/desh/consultation/141024energy-efficiency-consultation-en.pdf> p3

<sup>53</sup> [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/42562/216-2050-pathways-analysis-report.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/42562/216-2050-pathways-analysis-report.pdf)

### Action – refurbishment of existing housing

The average household energy bill nearly doubled between 2004 and 2012, largely due to the rising price of gas. Millions of households are struggling to pay their fuel bills; a family in a typical uninsulated 3-bedroom home wastes around £653 per year on heating, money which is almost literally leaking out of our roofs, walls, and windows<sup>54</sup>.

The macroeconomic benefits of a major energy efficiency programme outweigh those of almost any other kind of government investment<sup>55</sup>.

We have long advocated an area-based approach to housing refurbishment and have strongly support the Welsh Government's Arbed scheme since its introduction. The Welsh Government is to be congratulated on taking a pro-active approach to home energy efficiency and realising the win-win situation of investing in a measure that delivers on carbon reductions, warm homes and local jobs.

However the scale of the programme and available funding are insufficient to tackle the scale and urgency of the problem. In order to meet the agreed target of cutting Wales' emissions by 40% by 2020, research shows that one third of the current housing stock, or 400,000 houses, will need to be refurbished to a level that cuts their carbon emissions by over 60%<sup>56</sup>.

This research, commissioned by Stop Climate Chaos Cymru and carried out by Cardiff Business School, assessed that improving the standard of our homes has many other benefits for local job creation, saving money for householders and bringing people out of fuel poverty. Such a project would inject £3bn to Welsh GVA over 10 years and create 20,000 jobs.

We recommend that the Welsh Government assess the potential of using the new borrowing powers to lever-in substantial additional funding for Arbed and scale up progress in order to meet the targets of 40% reductions in greenhouse gas emissions by 2020, to save money for consumers and bring them out of fuel poverty, and to create good quality

<sup>54</sup> Association for the Conservation of Energy/Energy Bill Revolution (2014) Burning Cash Day: 14th February

<sup>55</sup> <http://www.consumerfocus.org.uk/files/2012/11/Jobs-growth-and-warmer-homes-November-2012.pdf>

<sup>56</sup> <http://stopclimatechaoscymru.org/wp-content/uploads/2013/07/SCC+-+Cutting+Carbon+Report+final1.pdf>

local jobs in Wales. This would also be a far more productive use of borrowing powers – positively affecting lives right across Wales – than interventions focused solely on small geographical parts of the country.

An energy efficiency programme can be defined as ‘capital investment’ in the National Accounts, meaning it should have the same access to infrastructure funding as other capital projects, such as roads and railways<sup>57</sup>.

Other potential funding streams include the use of carbon taxes received by the UK Government, which should be used to help insulate homes and make them more energy efficient. We would encourage the Welsh Government to lobby for this change at a UK level and for Wales to get its fair share of those taxes, or for this portion of taxation to be devolved to Wales at the earliest available opportunity.

The Green Deal could also be used in conjunction with other funding streams to generate economies of scale for delivering energy efficiency measures in Wales.

There are some good examples of cooperation between Local Authorities and housing authorities in delivering energy efficiency programmes for housing. We urge the Welsh Government to discuss whether finance mechanisms available to Local Authorities could be utilised to support their own programmes and other funding streams such as the Green Deal.

We also strongly support having a specific fuel poverty scheme in Nest. However there are issues around its targeting and implementation – the first Nest annual report showed that despite it being the fuel poverty support scheme, 45% of those helped were not in fuel poverty. This suggests a problem with targeting the scheme at the appropriate, and often hard to reach, audience and the qualification criteria.

Benefits from a significant expansion of Arbed would be manifold:

- Increased energy security for the UK through reducing our reliance on gas and gas imports
- Create many thousands of jobs throughout Wales<sup>58</sup>
- Boost Wales’ GVA, and increase VAT revenue. Evaluation of the German KfW energy efficiency loan scheme suggests that for

<sup>57</sup> <http://www.foe.co.uk/sites/default/files/downloads/energy-efficiency-infrastructure-case-increased-investment-74277.pdf>

<sup>58</sup> Cambridge Economics/Verco (2012) Jobs, Growth and Warmer Homes

every €1bn of public funds invested, €3-€4bn are returned to the German treasury<sup>59</sup>

- Save the average home £300 per year on their energy bills, bringing households out of fuel poverty<sup>60</sup>
- Considerably reduce greenhouse gas emissions
- Generate substantial NHS savings – the Chief Medical Officer has stated that every £1 spent on energy efficiency could create 42p in NHS savings over the lifetime of the energy efficiency measure; this is thought to be a very conservative estimate.

#### Action - others

One obvious barrier to action for householders is the availability of appliances and products that are relatively energy inefficient (cars, wet goods, lighting etc.). To remedy this, the Welsh Government should demand that powers over product standards, safety and liability be devolved to Wales, and subsequently require products that do not meet the highest standards of energy efficiency to be clearly labelled as such.

Strong Welsh Government support for district heating, alongside a requirement for all new power plants to use excess heat (including installing heat networks at developer cost) would be of significant benefit for improved use of waste heat, thereby reducing the need for using piped gas.

A means of facilitating household and community action would be for data on average electricity and gas use per street/community to be made available, and for annual competitions to be held to highlight progress made (most improved street/community etc.)

Non-energetic (passive) solutions should be highlighted and where capital investment may be required, Welsh Government should allocate funding to it. For example, all large (public) buildings with south-facing windows should have passive solar shading to reduce or eliminate the use of air conditioning in summer.

The Welsh Government could examine the feasibility of recommending

<sup>59</sup> KfW research (2011) Impact on public budgets of KfW programmes in the field of 'energy-efficient building and rehabilitation'

<https://www.kfw.de/migration/Weiterleitung-zur-Startseite/Homepage/KfW-Group/Research/PDF-Files/Energy-efficientbuilding-and-rehabilitation.pdf>

<sup>60</sup> <http://www.bbc.co.uk/news/uk-wales-south-east-wales-14767105>

that people reduce their internal housing temperatures to 16°C, which the UK Government defines as a safe minimum level in occupied rooms for vulnerable groups<sup>61</sup>.

New Building Regulations Part L standards should be implemented as soon as possible to supplant the wholly unambitious standards announced in July 2013. In these new Regulations, all new buildings must be passivhaus standard or equivalent. More information is available on this in our consultation response to the 2012 consultation on Building Regulations

[http://www.foe.co.uk/sites/default/files/downloads/building\\_regulations\\_wales.pdf](http://www.foe.co.uk/sites/default/files/downloads/building_regulations_wales.pdf)

In tandem with this, a strong regulatory framework would include:

- A minimum energy efficiency standard for social housing of EPC C by 2020
- Progression in the minimum standard for private rented homes to EPC C by 2020
- A minimum energy efficiency standard for a home at point of sale, of EPC C, by 2030

The most effective way to achieve large gains in transport energy efficiency is through modal shift from cars to public transport and active travel (walking and cycling), and through reducing the need to travel (e.g. through improved telecommunication).

Building large new highway infrastructure is highly contradictory to efforts to increase transport energy efficiency. As such, the proposed new M4 should be discontinued.

Much greater focus needs to be placed on active travel and public transport vis a vis highways. A rebalancing of the civil service expertise in this regard would be an appropriate first step, with an initial short-term target of 50% highways: 50% remainder of transport, and an aim by 2020 for a shift to 20% highways: 80% remainder of transport.

Increased investment in high-speed broadband will facilitate reduced need for travel.

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<sup>61</sup> [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/42562/216-2050-pathways-analysis-report.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/42562/216-2050-pathways-analysis-report.pdf) p101

Welsh Government should cease the grant funding of flights. This would help reduce the perception that aeroplane flight is a desirable activity.

We recommend a programme of investment in the targeted development of a Welsh base of skilled sustainability practitioners across a range of sectors and thematic areas, with particular emphasis on green technology and wider construction and installation skills. Further information on the benefits of skills training is available in this report:

<http://stopclimatechaoscymru.org/wp-content/uploads/2013/07/SCC+-Cutting+Carbon+Report+final1.pdf>.

<b>Action</b>	<b>Actor</b>	<b>When</b>	<b>Impact</b>
Expand Arbed/retrofit scheme	Welsh Government	Immediately (2015)	Direct benefits plus supply chain/R&D
Product labelling devolved	Westminster	Next parliament (2016?)	Enables better labelling
Non-efficient products labelled	Welsh Government	Following devolution of labelling (2017?)	Improved customer awareness
District heating	Welsh Government	Immediately (2015)	Direct benefits, reduced use of gas for heating
Community energy competition	Welsh Government	Immediately (2015)	Raises awareness and drives gains
Passive solar shading	Public authorities/WG	Immediately (2015)	Direct benefits
New Building Regulations	Welsh Government	Immediately (2015)	Direct benefits, Wales becomes leader
Transport modal shift	Welsh Government	Immediately (2015)	Direct benefits
Discontinue new M4	Welsh Government	Immediately (2015)	Reduce lock-in of inefficient transport
Welsh Government transport	Welsh Government	Immediately (2015)	Change focus of policy and planning

	staffing			
	Investment in high-speed broadband	UK Government/WG	Immediately (2015)	Reduce need for transport
	Cease funding for Cardiff-Môn flights	Welsh Government	Immediately (2015)	Reduce perception of flying as normal/desirable
	Investment in sustainability skills	Welsh Government	Immediately (2016)	Direct and indirect benefits
<b>62</b>	<b>Andy Thomas, Butler &amp; Young Wales.</b>			
	We must focus on existing housing stock with initiatives, policies and incentives. this will deliver the biggest gain to all stakeholders.			
<b>66</b>	<b>Phil Powell, Gwent Energy CIC</b>			
	energy generating and energy saving often does not meet the businesses required rate of return there are issues with paying for upgrades on leased buildings			
<b>67</b>	<b>Mark Greenfield, Greenfield Energy Solutions</b>			
	Help with connecting home owners and small businesses to local providers of energy efficient services.			
<b>68</b>	<b>Daryl Price, DK Property Services</b>			
	Bad communications from WAG, yourselves, most if not all 'official' bodies, and 'quangos'. Lack of Part L improvements, discouragement of self-builders by CfSH/S106/CIL etc... Lack of information for builders who would do better if they knew how to?			
<b>77</b>	<b>Rachel Davies, City and County of Swansea</b>			
	None.			
<b>78</b>	<b>Samir Hussien, site services</b>			
	can volunteer to help in any local project with regards energy efficiency or recycling.			
<b>79</b>	<b>David Powell, Vale of Glamorgan Council</b>			
	Run out of time			
<b>81</b>	<b>Peter Draper, Rounded Developments Enterprises Ltd</b>			
	We need to really look at how we can use building regulations in a manner that is really appropriate to the Welsh building stock.			

	<p>The main area where we are REALLY poor is damp. We are making huge mistakes as we are only focusing on energy. I really fear for what we are creating with this efficiency drive - the next asbestos I think. Homes in Wales will become even less attractive if they are ruined by ECO and other schemes, we should be investing in our stock so that it is BETTER than the rest of the UK, we can only do this by being smart.</p> <p>Savings predicted by rdSAP are wildly inaccurate. Houses in Wales perform much better than predicted and most could, in reality, be improved by simple low cost solutions. We should put money into making them as efficient as they can be without damaging them.</p> <p>Lots of work from STBA highlights what can and should be done, but the industry and Gov is obsessed with rdSAP twaddle.</p>
86	<p><b>Graeme Harrold, 3-e Electrical Ltd</b></p> <p>Think Ive covered plenty above, but would welcome follow up regarding housing standards.</p>
88	<p><b>Allan Smith, Energy Effective Ltd</b></p> <p>Put me in front of decision makers and allow me to present evidence that will make them take notice. I have made two attempts at completing this questionnaire (my partner vetoed the first copy as too hard hitting) as I believe too many civil servants are not prepared to take a chance and put a new technology to the test preferring to let someone else make the first move. We can deliver a truly remarkable 20% - 35% saving on Wales heating costs (Residential and Commercial) which will save Wales millions of pounds in costs and tens of thousands of tonnes in CO2 emissions over the next decade. What it needs is a leader prepared to take a bold move to start the ball rolling from above on new technologies because once we have established credibility Wales will have an opportunity to take a lead in delivering to the rest of the UK where in the past, England has always been the instigator and Wales has followed meekly behind. Nanoparticle Technology is here to stay, it cannot be un-invented and it would break my heart if after all our efforts it ends up gaining acceptance in the rest of the UK first. Here is an opportunity for Wales, the people of Wales and importantly bodies like the Energy Saving Trust and the Welsh Government to put their trust in a Wales company and give us the support we need to deliver.</p>
93	<p><b>Jonathan Hyde, Bron Afon Community Housing Ltd</b></p> <p>No</p>

	<p>On issues is the fees that the DEA and GDA can charge which has been driven down by agencies working as intermediaries. They are not being allowed to spend the time to develop and sell the product of energy efficiency.</p> <p>Retro fit of cavities should not be undertaken in Wales due to the exposure and levels of rainfall.</p> <p>Council tax should not be a penalty for properties not suitable for retro fit and where the work are uneconomic on a life cycle.</p> <p>EWI products have been brought to the market too early and not been tested for the UK .</p> <p>Our weather is very different to Europe in terms of weather/winds and vegetation.</p> <p>Already there are issues with Phenolic Insulation breaking down so the wrong product as been specified.</p>
<b>95</b>	<b>Stewart Matthews, Torfaen County Borough Council</b>
	None
<b>99</b>	<b>Ben Dever, adever engi cyf</b>
	None
<b>101</b>	<b>Mark Wilcox, Business Step Up</b>
	In my line of business would strongly recommend we agree to a meeting to discuss?

	<b>Evidence submitted and references</b>
<b>1</b>	<p><b>Edward Grist</b></p> <p>1 The Severn Barage 2014</p> <p>2 Written evidence as published in June 2013 by the House of Commons Select Committee.</p>
<b>5</b>	<p><b>Energy Bill Revolution</b></p> <p>Building the Future: The economic and fiscal impacts of making homes energy efficient</p>  <p>Building the Future _Final report.pdf</p>
<b>11</b>	<p><b>Cert Sure</b></p> <p><a href="http://blogs.telegraph.co.uk/finance/ianmcowie/100016121/when-free-solar-panels-can-prove-an-expensive-mistake/">http://blogs.telegraph.co.uk/finance/ianmcowie/100016121/when-free-solar-panels-can-prove-an-expensive-mistake/</a></p>
<b>12</b>	<p><b>Pembrokeshire County Council</b></p> <p><a href="http://www.energylivenews.com/2014/11/10/guest-blog-npowers-wayne-mitchell-onenergy-policies-not-reflecting-the-needs-of-business/">http://www.energylivenews.com/2014/11/10/guest-blog-npowers-wayne-mitchell-onenergy-policies-not-reflecting-the-needs-of-business/</a></p>
<b>14</b>	<p><b>ETI</b></p> <p>Wilson, C., Chryssochoidis, G., and Pettifor, H. (2013) Understanding Homeowners' Renovation Decisions: Findings of the VERD Project.</p> <p>"Housing futures: our homes and communities" – Anne Power, LSE, 2010.</p>
<b>15</b>	<p><b>Wolseley</b></p> <p>Under our Plumb Center brand, we have developed a manifesto for a more energy conscious society which sets out a series of policy recommendations on energy and water efficiency and the system of training and accreditation in the plumbing and heating industry. We ask that the Welsh Government consider these recommendations (see <a href="#">here</a>), which are designed to help the</p>

	<p>UK build a low carbon economy and support consumers with energy costs, alongside our comments below.</p> <p><a href="http://www.energybillrevolution.org/wp-content/uploads/2014/10/Building-the-Future-The-Economic-and-Fiscal-impacts-of-making-homes-energy-efficient.pdf">http://www.energybillrevolution.org/wp-content/uploads/2014/10/Building-the-Future-The-Economic-and-Fiscal-impacts-of-making-homes-energy-efficient.pdf</a></p> <p><a href="http://www.wolseleysbc.co.uk/news-and-events/news/2012/nov/soab/">http://www.wolseleysbc.co.uk/news-and-events/news/2012/nov/soab/</a></p> <p><a href="https://www.gov.uk/government/uploads/system/uploads/">https://www.gov.uk/government/uploads/system/uploads/</a></p> <p><a href="http://www.nef.org.uk/themes">http://www.nef.org.uk/themes</a></p>
<p><b>16</b></p>	<p><b>Ynni Glan</b></p> <p></p> <p>Ynni_Glan_Dec_2014.pdf</p>
<p><b>17</b></p>	<p><b>Cardiff University</b></p> <p><a href="http://psych.cf.ac.uk/home2/whitmarsh/Energy%20Synthesis%20FINAL%20%2824%20Jan%29.pdf">http://psych.cf.ac.uk/home2/whitmarsh/Energy%20Synthesis%20FINAL%20%2824%20Jan%29.pdf</a></p> <p><a href="http://www.nef.org.uk/themes/site_themes/agile_records/images/uploads/National_Energy_Foundation_Public_polling_Headline_Findings_8_September_2014_AMENDED.pdf">http://www.nef.org.uk/themes/site_themes/agile_records/images/uploads/National_Energy_Foundation_Public_polling_Headline_Findings_8_September_2014_AMENDED.pdf</a></p> <p><a href="http://psych.cf.ac.uk/understandingrisk/reports/">http://psych.cf.ac.uk/understandingrisk/reports/</a></p> <p>Poortinga, W., Whitmarsh, L. &amp; Suffolk, C. (2013). The introduction of a single-use carrier bag charge in Wales: Attitude change and behavioural spillover effects. <i>Journal of Environmental Psychology</i>, 36, 240-247.</p> <p>Littleford, C., Ryley, T. &amp; Firth, S.. (2014). Context, control and the spillover of energy use behaviours between office and home settings. <i>Journal of Environmental Psychology</i>, 40, 157-166.</p> <p>Whitmarsh, L., Xenias, D., Haggard, P. &amp; Skippon, S. (2014). Promoting Eco-Driving Habits: A Randomised Controlled Trial. <i>BEHAVE Conference</i>, University of Oxford, 3rd-4th Sept.</p>

	<p>Verplanken, B., &amp; Wood, W. (2006). Interventions to break and create consumer habits. <i>Journal of Public Policy and Marketing</i>, 25, 90-103.  <a href="http://dornsife.usc.edu/assets/sites/208/docs/Verplanken.Wood.2006.pdf">http://dornsife.usc.edu/assets/sites/208/docs/Verplanken.Wood.2006.pdf</a></p> <p>Wilson, C. et al. (2013). Understanding Homeowners' Renovation Decisions: Findings of the VERD Project.  <a href="http://tyndall.ac.uk/sites/default/files/verd_summary_report_oct13.pdf">http://tyndall.ac.uk/sites/default/files/verd_summary_report_oct13.pdf</a></p>
<p><b>18</b></p>	<p><b>Ofgem</b></p> <p>Estimated impacts of energy and climate change policies on energy prices and bills  <a href="http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/384404/Prices_Bills_report_2014.pdf">www.gov.uk/government/uploads/system/uploads/attachment_data/file/384404/Prices_Bills_report_2014.pdf</a></p> <p>Off-gas consumers Information on households without mains gas heating  <a href="http://www.consumerfocus.org.uk/files/2011/10/Off-gas-consumers.pdf">http://www.consumerfocus.org.uk/files/2011/10/Off-gas-consumers.pdf</a></p> <p>Energy Companies Obligation (ECO): Measures Table  <a href="https://www.ofgem.gov.uk/publications-and-updates/energy-companies-obligation-eco-measures-tables">https://www.ofgem.gov.uk/publications-and-updates/energy-companies-obligation-eco-measures-tables</a></p> <p>A list of Green Deal Certification bodies can be found on the Green Deal Oversight and Regulation Body <a href="http://gdorb.decc.gov.uk">http://gdorb.decc.gov.uk</a></p> <p>Energy Companies Obligation (ECO): Measures Table  <a href="https://www.ofgem.gov.uk/publications-and-updates/energy-companies-obligation-eco-measures-tables">https://www.ofgem.gov.uk/publications-and-updates/energy-companies-obligation-eco-measures-tables</a></p> <p>Smart Energy GB <a href="http://www.smartenergygb.org">http://www.smartenergygb.org</a></p> <p>Energy Companies Obligation (ECO) Technical Monitoring Report – October 2014 <a href="http://www.ofgem.gov.uk/publications-and-updates/energy-companies-obligation-eco-technical-monitoring-report-%E2%80%93-october-2014">www.ofgem.gov.uk/publications-and-updates/energy-companies-obligation-eco-technical-monitoring-report-%E2%80%93-october-2014</a></p> <p>Table 6a, Data tables: Green Deal and ECO statistics  <a href="https://www.gov.uk/government/statistics/green-deal-and-energy-company-obligation-eco-monthly-statistics-december-2014">https://www.gov.uk/government/statistics/green-deal-and-energy-company-obligation-eco-monthly-statistics-december-2014</a></p>
<p><b>19</b></p>	<p><b>EST</b></p>

<http://www.iea.org/Textbase/npsum/MultipleBenefits2014SUM.pdf>

<http://www.energybillrevolution.org/wp-content/uploads/2014/10/Building-the-Future-The-Economic-and-Fiscal-impacts-of-making-homes-energy-efficient.pdf>

[http://www.energysavingtrust.org.uk/organisations/sites/default/files/Cutting\\_carbon\\_emissions\\_in\\_welsh\\_homes.pdf](http://www.energysavingtrust.org.uk/organisations/sites/default/files/Cutting_carbon_emissions_in_welsh_homes.pdf)

<http://www.cydcymru-energy.com/content.asp>

<http://www.nestwales.org.uk/publications>

<http://www.energysavingtrust.org.uk/green-homes-cashback-statistics>

[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/275163/20140126Community\\_Energy\\_Strategy.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/275163/20140126Community_Energy_Strategy.pdf) , p. 3

[http://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/279089/DECC\\_Community\\_Energy\\_Strategy\\_Survey\\_v3.pdf](http://www.gov.uk/government/uploads/system/uploads/attachment_data/file/279089/DECC_Community_Energy_Strategy_Survey_v3.pdf) p. 4.

[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/275163/20140126Community\\_Energy\\_Strategy.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/275163/20140126Community_Energy_Strategy.pdf) , p. 4.

<http://www.greenwisebusiness.co.uk/news/green-deal-firms-opt-for-credit-union-bonds-to-offer-0-energy-efficiency-finance-4150.aspx>

[http://www.rugby.gov.uk/info/200435/energy\\_efficiency/1720/energy\\_efficiency/6](http://www.rugby.gov.uk/info/200435/energy_efficiency/1720/energy_efficiency/6)

<http://talybontenergy.co.uk/>

<http://www.lessismore.org.uk/neighbourhoodinfo.php?sid=303230244>

<http://www.energysavingtrust.org.uk/domestic/content/thermal-stores>

<http://www.energysavingtrust.org.uk/domestic/improving-my-home/renewables/renewable-electricity/off-grid>

<https://londonfuelpovertyhub.wordpress.com/>

<https://nest.com/support/article/How-to-read-the-Nest-Energy-History-on-the-Web-and-Mobile-apps>

	<p><a href="https://www.hivehome.com/hive-active-heating">https://www.hivehome.com/hive-active-heating</a></p> <p><a href="http://www.best.cf.ac.uk/">http://www.best.cf.ac.uk/</a></p> <p><a href="https://www.westproject.org.uk/">https://www.westproject.org.uk/</a></p> <p><a href="https://sbed.cardiff.ac.uk/">https://sbed.cardiff.ac.uk/</a></p> <p><a href="http://www.solcer.org/">http://www.solcer.org/</a></p> <p><a href="http://www.cynnalcyrmru.com/project/supporting-sustainable-living-scheme">http://www.cynnalcyrmru.com/project/supporting-sustainable-living-scheme</a></p> <p><a href="http://www.cynnalcyrmru.com/project/supporting-sustainable-living-scheme">http://www.cynnalcyrmru.com/project/supporting-sustainable-living-scheme</a></p> <p><a href="http://www.cynnalcyrmru.com/news/climate-change-commission-wales-launches-its-2014-annual-report">http://www.cynnalcyrmru.com/news/climate-change-commission-wales-launches-its-2014-annual-report</a></p> <p><a href="http://www.energy.salford.ac.uk/cms/resources/uploads/File/Colmer%20-%20EST%20%20Triggers%20for%20Salford%20%5b26th%20Jan%202011%20-%205d.pdf">http://www.energy.salford.ac.uk/cms/resources/uploads/File/Colmer%20-%20EST%20%20Triggers%20for%20Salford%20%5b26th%20Jan%202011%20-%205d.pdf</a></p> <p><a href="http://www.energysavingtrust.org.uk/blog/tag/energy-saving/">http://www.energysavingtrust.org.uk/blog/tag/energy-saving/</a></p> <p><a href="http://www.energysavingtrust.org.uk/scotland/improving-my-home/green-homes">http://www.energysavingtrust.org.uk/scotland/improving-my-home/green-homes</a></p> <p><a href="http://www.bristolgreendoors.org/">http://www.bristolgreendoors.org/</a></p> <p><a href="http://www.nestwales.org.uk/sites/default/files/filedepot/incoming/Nest%20Annual%20Report%202013-14%20English.pdf">http://www.nestwales.org.uk/sites/default/files/filedepot/incoming/Nest%20Annual%20Report%202013-14%20English.pdf</a></p>
21	<p><b>25 Climate Change Commission</b></p> <p><a href="http://www.cynnalcyrmru.com/news/commission-responds-welsh-government%E2%80%99s-climate-change-policy-refresh">http://www.cynnalcyrmru.com/news/commission-responds-welsh-government%E2%80%99s-climate-change-policy-refresh</a></p> <p><a href="http://www.cynnalcyrmru.com/project/supporting-sustainable-living-scheme">http://www.cynnalcyrmru.com/project/supporting-sustainable-living-scheme</a></p> <p><a href="http://www.cynnalcyrmru.com/news/climate-change-commission-wales-launches-its-2014-annual-report">http://www.cynnalcyrmru.com/news/climate-change-commission-wales-launches-its-2014-annual-report</a></p>
22	<p><b>Climate Change Commission</b></p> <p><a href="http://wales.gov.uk/topics/environmentcountryside/climatechange/publication">http://wales.gov.uk/topics/environmentcountryside/climatechange/publication</a></p>

	<p><a href="http://wales.gov.uk/topics/environmentcountryside/climatechange/publications/2014-climate-change-annual-report/?lang=en">s/2014-climate-change-annual-report/?lang=en</a></p> <p><a href="http://wales.gov.uk/topics/environmentcountryside/climatechange/publications/2014-climate-change-annual-report/?lang=en">http://wales.gov.uk/topics/environmentcountryside/climatechange/publications/2014-climate-change-annual-report/?lang=en</a></p> <p><a href="http://wales.gov.uk/docs/desh/publications/140623-green-growth-en.pdf">http://wales.gov.uk/docs/desh/publications/140623-green-growth-en.pdf</a></p>
<b>23</b>	<p><b>Glass and Glazing Federation</b></p> <p>“F &amp; G banded homes in Great Britain: Research into costs of treatment” Energy Saving Trust, July 2010</p> <p>TNO Built Environment and Geosciences – Potential impact of low-emissivity glazing on energy and CO2 savings in Europe –TNO Report 2008-D-R1240/B – November 2008.</p>
<b>24</b>	<p><b>Citizens Advice Bureau</b></p> <p>Energy UK response to the DECC consultation on The Future of the Energy Company Obligation (ECO) <a href="http://www.energy-uk.org.uk/publication.html?task=file.download&amp;id=2985">http://www.energy-uk.org.uk/publication.html?task=file.download&amp;id=2985</a></p> <p><a href="http://www.consumerfocus.org.uk/files/2012/09/Under-the-microscope.pdf">http://www.consumerfocus.org.uk/files/2012/09/Under-the-microscope.pdf</a> (page 19 para 4.2, UK figures)</p> <p><a href="http://www.consumerfutures.org.uk/files/2013/08/A-smart-business.pdf">http://www.consumerfutures.org.uk/files/2013/08/A-smart-business.pdf</a></p>
<b>25</b>	<p><b>Sustainable Energy Association</b></p> <p><a href="http://sustainableenergyassociation.com/resources/infographic-clean-energy-measures-buildings-cheaper/">http://sustainableenergyassociation.com/resources/infographic-clean-energy-measures-buildings-cheaper/</a></p> <p><a href="http://sustainableenergyassociation.com/wp-content/uploads/2014/07/ManifestoSEA.pdf">http://sustainableenergyassociation.com/wp-content/uploads/2014/07/ManifestoSEA.pdf</a></p> <p><a href="http://www.energybillrevolution.org/wp-content/uploads/2014/10/Building-the-Future-The-Economic-and-Fiscal-impacts-of-making-homes-energy-efficient.pdf">http://www.energybillrevolution.org/wp-content/uploads/2014/10/Building-the-Future-The-Economic-and-Fiscal-impacts-of-making-homes-energy-efficient.pdf</a></p>
<b>27</b>	<p><b>Royal Institute of Chartered Surveyors</b></p> <p>In response to this call for evidence <a href="http://wales.gov.uk/consultations/environmentandcountryside/energy-">http://wales.gov.uk/consultations/environmentandcountryside/energy-</a></p>

	<p><a href="http://www.rics.org/uk/knowledge/research/research-reports/efficiency-strategy-for-wales/?status=open&amp;lang=en">efficiency-strategy-for-wales/?status=open&amp;lang=en</a></p> <p>we would like to submit for consideration the attached documents and the following link to work by RICS. We would be delighted to meet and discuss them further at any point.</p> <p><a href="http://www.rics.org/us/knowledge/research/research-reports/measuring-green-value-an-international-perspective/">http://www.rics.org/us/knowledge/research/research-reports/measuring-green-value-an-international-perspective/</a></p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">         Sustainability_reside ntial_property_valuat     </div> <div style="text-align: center;">         Sustainability_and_c ommercial_property_     </div> </div>
<p><b>31</b></p>	<p><b>Constructing Excellence in Wales</b></p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">         150107 Energy Efficiency call for evic     </div> <div style="text-align: center;">         Managing Waste from WHQS Standard     </div> </div> <p><a href="http://www.cewales.org.uk/best-practice/best-practice-programmes/exemplar-programme/">http://www.cewales.org.uk/best-practice/best-practice-programmes/exemplar-programme/</a></p> <p><a href="http://www.cewales.org.uk/cew/wp-content/uploads/7072-Exemplar-GatewayToValleys-B.pdf">http://www.cewales.org.uk/cew/wp-content/uploads/7072-Exemplar-GatewayToValleys-B.pdf</a></p> <p><a href="http://www.cewales.org.uk/cew/wp-content/uploads/7007Exemplar-LlanwernHighSchool-D-.pdf">http://www.cewales.org.uk/cew/wp-content/uploads/7007Exemplar-LlanwernHighSchool-D-.pdf</a></p> <p><a href="http://www.cewales.org.uk/cew/wp-content/uploads/Llanwern-Post-Occupancy-Case-Study1.pdf">http://www.cewales.org.uk/cew/wp-content/uploads/Llanwern-Post-Occupancy-Case-Study1.pdf</a></p> <p><a href="http://www.cewales.org.uk/cew/wp-content/uploads/Penarth-Learning-Community.pdf">http://www.cewales.org.uk/cew/wp-content/uploads/Penarth-Learning-Community.pdf</a></p> <p><a href="http://www.cewales.org.uk/2014/11/integrated-design-evolving-the-design-process-to-deliver-near-zero-energybuildings-llandudno/">http://www.cewales.org.uk/2014/11/integrated-design-evolving-the-design-process-to-deliver-near-zero-energybuildings-llandudno/</a></p> <p><a href="http://www.cewales.org.uk/cew/wp-content/uploads/Llanwern-Post-Occupancy-Case-Study1.pdf">http://www.cewales.org.uk/cew/wp-content/uploads/Llanwern-Post-Occupancy-Case-Study1.pdf</a></p>
<p><b>32</b></p>	<p><b>British Gas</b></p> <p>Department of Energy and Climate Change (2014) Domestic Green Deal and Energy Company Obligation in Great Britain, Monthly report, November</p>

YouGov (March 2013)– 48% of landlords had heard of the Green Deal (Base: 1,004 England, Wales and Northern Ireland private landlords)

Energy Efficiency Trends Vol.8 (October 2014) Figure 17. Trends in expected payback periods.

Energy Efficiency Trends Vol.8 (October 2014) Figure 11. Uptake of energy efficiency technologies.

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### Saint Gobain



Loudoun Square  
Case Study.pdf

Saint-Gobain has undertaken a comprehensive study of the benefits to retrofitting a typical end of terrace solid wall property using recognised test experts and academia, which showed a resulting 63% reduction in the energy use of a notional family. The results can be found on the following link: <http://www.saint-gobain.co.uk/products-solutions/retrofitting-existing-buildings/>

The award winning Loudoun Square development in Butetown, Cardiff shows the benefits of a local energy efficiency and sustainable regeneration project in Wales:

[http://www.ccha.org.uk/News/2012/Jun/12/Loudoun\\_officially\\_open/](http://www.ccha.org.uk/News/2012/Jun/12/Loudoun_officially_open/)

(The link to the case study is not working so please see the document in the evidence section).

The Energy Bill Revolution report by Cambridge Econometrics and Verco, entitled 'Building the Future: The economic and fiscal impacts of making homes energy efficient', has been carried out to look at both the macro and fiscal impacts of an ambitious UK retrofit programme

<http://www.energybillrevolution.org/wp-content/uploads/2014/10/Building-the-Future-The-Economic-and-Fiscal-impacts-of-making-homes-energy-efficient.pdf>

See also the UKGBC report, A housing stock fit for the future: Making home energy efficiency a national infrastructure priority:

<http://www.ukgbc.org/resources/publication/housing-stock-fit-future-making-home-energy-efficiency-national-infrastructure>, benefits are: reduced carbon emissions, economic growth and job creation, improved health and wellbeing, increased energy security, reduced energy bills and fuel poverty.

	<p>More detail is available in the report.</p> <p>The most comprehensive piece on multiple benefits at EU level is the recent IEA study 'Capturing the Multiple Benefits of Energy Efficiency'. Here is the link to a presentation from Nina Campbell from the IEA:  <a href="http://www.eceee.org/events/eceee_events/Brussels-launch-of-IEA-2014-report/nina-campbell-seminar-21October">http://www.eceee.org/events/eceee_events/Brussels-launch-of-IEA-2014-report/nina-campbell-seminar-21October</a></p> <p>Please see the summary report:  <a href="http://www.nef.org.uk/themes/site_themes/agile_records/images/uploads/BreakingBarriers_SummaryReport.pdf">http://www.nef.org.uk/themes/site_themes/agile_records/images/uploads/BreakingBarriers_SummaryReport.pdf</a></p> <p>and details of the literature review/workshops:  <a href="http://www.nef.org.uk/themes/site_themes/agile_records/images/uploads/BreakingBarriers_LitReview.pdf">http://www.nef.org.uk/themes/site_themes/agile_records/images/uploads/BreakingBarriers_LitReview.pdf</a></p> <p><a href="http://www.ukgbc.org/resources/publication/uk-gbc-task-group-report-retrofit-incentives">http://www.ukgbc.org/resources/publication/uk-gbc-task-group-report-retrofit-incentives</a></p> <p><a href="https://www.saint-gobain.com/en/solutions/energy-efficiency-solutions/multi-comfort-construction">https://www.saint-gobain.com/en/solutions/energy-efficiency-solutions/multi-comfort-construction</a></p> <p><a href="http://www.constructionproducts.org.uk/publications/external-affairs/display/view/a-study-of-the-factors-underpinning-investment-in-the-constr/">http://www.constructionproducts.org.uk/publications/external-affairs/display/view/a-study-of-the-factors-underpinning-investment-in-the-constr/</a></p>
34	<p><b>Knauf Insulation</b></p> <p>The attached paper is designed to set out what we consider to be a UK response to the challenges posed in realizing an energy efficient housing stock. Mostly it applies to the UK as a whole given, as your document points out, many of the relevant powers reside in Westminster.</p> <p>The specific idea I want to raise here though relates to setting up a public – private funded 'Buildings Observatory'. The purpose would be to test / trial policy initiatives through proven methodology(s) and modern methods of big data capture. The details are in the paper (starting around p13 although I'm afraid you may have to get through all the document to get the idea!)</p> <p>The paper contains the details of how such an entity operate and begins to look at the terms of reference (although a full feasibility study on such an entity would be a next step).</p> <p>Despite many powers residing in Westminster, I believe there are several</p>

unique circumstances where the idea might fit a Wales Buildings Observatory. These being;

1. Fuel poverty rates are higher in Wales
2. There is a clear desire to 'do more' in Wales than existing Westminster policy - meaning resources may be available over and above the UK
3. There is a history in the energy efficiency team of using money to hit multiple policy objectives
4. While no big policy tools may be available, Wales has shown the appetite to do things differently and innovate as evidenced through Nest and Arbed
5. This innovation is despite a lack of resources relative to those across the border
6. Wales already has an institution in the form of the 'Public Policy Institute For Wales' (built on 'evidence based policy making' – i.e. robust trials to understand what works to inform policy) with a remit to address poverty
7. The 'Public Policy Institute for Wales', part of the 'What Works Network' may offer a natural home for a Buildings (Homes) Observatory
8. Pending a feasibility study, I have little doubt industry would have appetite to co-fund an institution, either on a project basis or core funding, that would allow evidence based argument to be provided into policy makers. At the UK Government level this has clearly been absent to date.
9. From memory, the challenge in the energy efficiency team was not a lack of willingness to trial new ideas but rather the resource required to assess them, recruit expertise etc. The Buildings Observatory approach may mean a ready resource to trial ideas exists with fewer hoops to jump through.



Knauf Insulation  
White Paper EE Policy

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WWF

Spreading the Net: the Multiple Benefits of Energy Efficiency: IEA  
[http://www.iea.org/publications/insights/ee\\_improvements.pdf](http://www.iea.org/publications/insights/ee_improvements.pdf)

<http://www.cynnalcyrmru.com/sites/default/files/CCCW%20FINAL%20report%20ENG%20130215.pdf>

<http://www.cynnalcyrmru.com/news/commission-responds-welsh->

[government%E2%80%99s-climate-change-policy-refresh](#)

Review of Costs and Benefits of Energy Saving, IEEP

[http://www.ieep.eu/assets/1267/Energy Savings 2030 IEEP Review of Cost and Benefits of Energy Savings 2013 published.pdf](http://www.ieep.eu/assets/1267/Energy_Savings_2030_IEEP_Review_of_Cost_and_Benefits_of_Energy_Savings_2013_published.pdf)

<http://www.consumerfocus.org.uk/files/2012/11/Jobs-growth-and-warmer-homes-November-2012.pdf>

<http://www.energybillrevolution.org/wp-content/uploads/2014/10/Building-the-Future-The-Economic-and-Fiscal-impacts-of-making-homes-energy-efficient.pdf>

The Economic of Climate Change Policy in the UK

[http://assets.wwf.org.uk/downloads/wwf climate economics summary a4 web.pdf](http://assets.wwf.org.uk/downloads/wwf_climate_economics_summary_a4_web.pdf)

*Cutting Carbon Emissions in Welsh Homes – a twin track approach*

[http://wales.wwf.org.uk/what we do/tackling climate change/cutting carbon emissions in welsh homes/](http://wales.wwf.org.uk/what_we_do/tackling_climate_change/cutting_carbon_emissions_in_welsh_homes/)

<http://wales.gov.uk/topics/environmentcountryside/climatechange/publications/2014-climate-change-annual-report/?lang=en>

[www.newclimateeconomy.net](http://www.newclimateeconomy.net)

[http://assets.wwf.org.uk/downloads/wwf heat report summary web.pdf](http://assets.wwf.org.uk/downloads/wwf_heat_report_summary_web.pdf)

<http://www.bevanfoundation.org/publications/rethinking-poverty/>

<http://www.foe.co.uk/sites/default/files/downloads/energy-efficiency-infrastructure-case-increased-investment-74277.pdf>

[http://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR\\_AR5\\_SPMcorr2.pdf](http://www.ipcc.ch/pdf/assessment-report/ar5/syr/SYR_AR5_SPMcorr2.pdf)

<http://www.shapingfuturewales.org/wp-content/uploads/English-Alliance-report8.pdf>

<http://www.greenalliance.org.uk/resources/Seven%20steps%20to%20reducing%20energy%20bills.pdf>

<http://www.scotland.gov.uk/Publications/2011/03/22093051/1>

	<a href="http://www.ukgbc.org/resources/publication/uk-gbc-task-group-report-retrofit-incentives">http://www.ukgbc.org/resources/publication/uk-gbc-task-group-report-retrofit-incentives</a>
38	<p><b>Hywel Dda University Health Board</b> Supporting information</p>  <p>2015.01.07 Consultation Document</p>
40	<p><b>Rhondda Cynon Taf County Borough Council</b> <i>"List of Projects carried out by RCTCBC Corporate Property Energy Team".</i></p> <p><i>Leaflet showing RCT Heat &amp; Save Scheme with mascot 'Penny the Power Saver'.</i></p>   <p>List of projects carried out by RCTCB      Energy Tariff Roll Up v 04 PENNY.pdf</p>
41	<p><b>Community Housing Group</b></p>  <p>Community Housing Cymru Group append</p> <p><a href="http://www.citizensadvice.org.uk/index/campaigns/current_campaigns/fairprepay.htm">http://www.citizensadvice.org.uk/index/campaigns/current_campaigns/fairprepay.htm</a></p> <p><a href="http://www.right2fueluk.com/downloads/NRFCsmartmeterreport.pdf">http://www.right2fueluk.com/downloads/NRFCsmartmeterreport.pdf</a></p> <p><a href="http://www.sussex.ac.uk/spru/impact/rebound">http://www.sussex.ac.uk/spru/impact/rebound</a></p> <p><a href="http://www.nef.org.uk/themes/site_themes/agile_records/images/uploads/BreakingBarriers_SummaryReport.pdf">http://www.nef.org.uk/themes/site_themes/agile_records/images/uploads/BreakingBarriers_SummaryReport.pdf</a></p> <p><a href="http://www.iea.org/publications/insights/ee_improvements.pdf">http://www.iea.org/publications/insights/ee_improvements.pdf</a></p> <p><a href="http://www.nice.org.uk/guidance/gid-phg70/documents/excess-winter-deaths-and-illnesses-call-for-evidence">http://www.nice.org.uk/guidance/gid-phg70/documents/excess-winter-deaths-and-illnesses-call-for-evidence</a></p> <p><a href="https://www.gov.uk/government/statistics/green-deal-energy-company-obligation-eco-and-insulation-levels-in-great-britain-quarterly-report-to-june-2014">https://www.gov.uk/government/statistics/green-deal-energy-company-obligation-eco-and-insulation-levels-in-great-britain-quarterly-report-to-june-2014</a></p>

	<p><a href="http://www.bevanfoundation.org/publications/rethinking-poverty/">http://www.bevanfoundation.org/publications/rethinking-poverty/</a></p> <p><a href="http://www.buildupskillsuk.org/94/BUSUKFinalReportMay2012.pdf.pdf">http://www.buildupskillsuk.org/94/BUSUKFinalReportMay2012.pdf.pdf</a></p> <p><a href="http://www.regenwales.org/en/resources/publications/">http://www.regenwales.org/en/resources/publications/</a></p> <p><a href="http://www.nef.org.uk/themes/site_themes/agile_records/images/uploads/BreakingBarriers_SummaryReport.pdf">http://www.nef.org.uk/themes/site_themes/agile_records/images/uploads/BreakingBarriers_SummaryReport.pdf</a></p>
43	<p><b>Low Zero Carbon Hub</b></p> <p><a href="http://www.energybillrevolution.org/">http://www.energybillrevolution.org/</a></p> <p><a href="http://www.energybillrevolution.org/wp-content/uploads/2014/10/Building-the-Future-The-Economic-and-Fiscal-impacts-of-making-homes-energy-efficient.pdf">http://www.energybillrevolution.org/wp-content/uploads/2014/10/Building-the-Future-The-Economic-and-Fiscal-impacts-of-making-homes-energy-efficient.pdf</a></p> <p><a href="http://www.cewales.org.uk/cew/wp-content/uploads/EPCs-Mortgages1.pdf">http://www.cewales.org.uk/cew/wp-content/uploads/EPCs-Mortgages1.pdf</a></p> <p><a href="https://www.gov.uk/government/consultations/private-rented-sector-energy-efficiency-regulations-domestic">https://www.gov.uk/government/consultations/private-rented-sector-energy-efficiency-regulations-domestic</a></p> <p><a href="http://www.estyn.gov.uk/english/docViewer/315315/esdgc-progress-in-education-for-sustainable-development-and-global-citizenship-june-2014/?navmap=30,163">http://www.estyn.gov.uk/english/docViewer/315315/esdgc-progress-in-education-for-sustainable-development-and-global-citizenship-june-2014/?navmap=30,163</a></p> <p><a href="http://sbed.cardiff.ac.uk/transpired-solar-collectors">http://sbed.cardiff.ac.uk/transpired-solar-collectors</a></p> <p><a href="http://h2wales.org.uk/">http://h2wales.org.uk/</a></p> <p><a href="https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/356954/Quarterly_Statistical_Release_GD_ECO_and_insulation_levels_in_Great_Britain_23_Sept_2014.pdf">https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/356954/Quarterly_Statistical_Release_GD_ECO_and_insulation_levels_in_Great_Britain_23_Sept_2014.pdf</a></p> <p><a href="https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/356954/Quarterly_Statistical_Release_GD_ECO_and_insulation_levels_in_Great_Britain_23_Sept_2014.pdf">https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/356954/Quarterly_Statistical_Release_GD_ECO_and_insulation_levels_in_Great_Britain_23_Sept_2014.pdf</a></p> <p><a href="http://www.energysavingtrust.org.uk/reports/home-energy">http://www.energysavingtrust.org.uk/reports/home-energy</a></p> <p><a href="http://www.consumerfocus.org.uk/publications/whats-in-it-for-me-using-the-benefits-of-energy-efficiency-to-overcome-the-barriers">http://www.consumerfocus.org.uk/publications/whats-in-it-for-me-using-the-benefits-of-energy-efficiency-to-overcome-the-barriers</a></p>

<https://dspace.lboro.ac.uk/dspace-jspui/handle/2134/9635>

<http://www.tandfonline.com/doi/abs/10.1080/09613218.2014.882738>

<http://www.cydcymru-energy.com/content.asp>

<http://www.monecoopendoors.org.uk/>

<http://cadw.wales.gov.uk/opendoors/what-is-open-doors/?lang=en>

<http://www.energysavingtrust.org.uk/scotland/improving-my-home/green-homes-network>

<https://www.gov.uk/government/consultations/private-rented-sector-energy-efficiency-regulations-domestic>

<http://www.consumerfutures.org.uk/wpfb-file/park-life-pdf>

<http://www.wlga.gov.uk/understanding-your-local-private-rented-sector>

<https://www.gov.uk/landlords-energy-saving-allowance>

<http://wales.gov.uk/topics/housing-and-regeneration/housing-supply/empty-homes/case-studies/?lang=en>

[http://www.citizensadvice.org.uk/fsfl\\_projects\\_energybestdeal](http://www.citizensadvice.org.uk/fsfl_projects_energybestdeal)

<https://www.gov.uk/government/policies/helping-households-to-cut-their-energy-bills/supporting-pages/big-energy-saving-network>

<http://www.ukgbc.org/opinion/keep-calm-and-learn-dutch-energiesprong-future-sustainable-homes>

<http://www.building-request.eu/>

<http://www.energysavingtrust.org.uk/search/at%20home%20with%20energy>

<http://cadw.wales.gov.uk/about/partnershipsandprojects/projectsfundedcadw/Heritage-Cottage/?lang=en>

<http://vimeo.com/90841806>

	<p><a href="http://www.solcer.org/">http://www.solcer.org/</a></p> <p><a href="http://www.sdfoundation.org.uk/downloads/RESPONSIBLE-RETROFIT_FINAL_20_SEPT_2012.pdf">http://www.sdfoundation.org.uk/downloads/RESPONSIBLE-RETROFIT_FINAL_20_SEPT_2012.pdf</a></p> <p><a href="http://www.cewales.org.uk/zero-low-carbon-hub/lowzero-carbon-construction/">http://www.cewales.org.uk/zero-low-carbon-hub/lowzero-carbon-construction/</a></p> <p><a href="http://www.cewales.org.uk/cew/wp-content/uploads/Performance-Gap-All-Presentations.pdf">http://www.cewales.org.uk/cew/wp-content/uploads/Performance-Gap-All-Presentations.pdf</a></p> <p><a href="http://www.zerocarbonhub.org/sites/default/files/resources/reports/Design_vs_As_Built_Performance_Gap_End_of_Term_Report_0.pdf">http://www.zerocarbonhub.org/sites/default/files/resources/reports/Design_vs_As_Built_Performance_Gap_End_of_Term_Report_0.pdf</a></p> <p><a href="http://www.zerocarbonhub.org/current-projects/tackling-overheating-buildings">http://www.zerocarbonhub.org/current-projects/tackling-overheating-buildings</a></p> <p>Arbed 1 Scheme - Evaluation of the Warm Wales Programme, August 2012, Welsh School of Architecture, Cardiff University</p> <p><a href="http://www.betterbuildingspartnership.co.uk/home/">http://www.betterbuildingspartnership.co.uk/home/</a></p>
<b>44</b>	<p><b>Age Cymru</b></p> <p>Life on a low income, Age Cymru, 2014</p> <p>ICM Opinion Poll for Age Cymru, February 2014 (sample: 1000 adults 18+ in Wales).</p> <p>Costs and benefits of tackling fuel poverty by improving energy efficiency in Wales in 2008, Energy Saving Trust, 2013</p> <p>Costs and benefits of tackling fuel poverty by improving energy efficiency in Wales in 2008, Energy Saving Trust, 2013</p>
<b>46</b>	<p><b>SSE</b></p> <p>YouGov / SSE. (2014). Putting The Customer First: How We Can Drive Real Consumer Engagement With Energy.  tinyurl.com/sseyougov</p>
<b>47</b>	<p><b>National Trust</b></p> <p>John Edwards- <a href="http://ntenvironmentalwork.net/2014/04/15/guest-blog-energy-efficiency-its-not-just-retrofit/">http://ntenvironmentalwork.net/2014/04/15/guest-blog-energy-efficiency-its-not-just-retrofit/</a></p> <p><a href="http://www.spab.org.uk/downloads/STBA%20RESPONSIBLE-RETROFIT.pdf">http://www.spab.org.uk/downloads/STBA%20RESPONSIBLE-RETROFIT.pdf</a></p>

48	<p><b>Gwynedd Council</b></p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">         Fuel Poverty in Gwynedd.pdf     </div> <div style="text-align: center;">         Prosiect GAE - Summary Report - GP     </div> </div>
50	<p><b>British Standards Institute</b></p> <p><a href="https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/351158/ESOS_Guide_FINAL.pdf">https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/351158/ESOS_Guide_FINAL.pdf</a></p>
53	<p><b>NEA</b></p> <p>Cambridge Econometrics &amp; Verco, 2012, Jobs, growth and warmer homes, Consumer Futures.</p>
57	<p><b>Friends of the Earth</b></p> <p><a href="http://stopclimatechaoscymru.org/wp-content/uploads/2013/07/SCC+-+Cutting+Carbon+Report+final1.pdf">http://stopclimatechaoscymru.org/wp-content/uploads/2013/07/SCC+-+Cutting+Carbon+Report+final1.pdf</a></p> <p><a href="http://wales.gov.uk/docs/desh/consultation/141024energy-efficiency-consultation-en.pdf">http://wales.gov.uk/docs/desh/consultation/141024energy-efficiency-consultation-en.pdf</a> p3 53</p> <p><a href="https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/42562/216-2050-pathways-analysis-report.pdf">https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/42562/216-2050-pathways-analysis-report.pdf</a></p> <p><a href="http://www.consumerfocus.org.uk/files/2012/11/Jobs-growth-and-warmer-homes-November-2012.pdf">http://www.consumerfocus.org.uk/files/2012/11/Jobs-growth-and-warmer-homes-November-2012.pdf</a></p> <p><a href="http://stopclimatechaoscymru.org/wp-content/uploads/2013/07/SCC+-+Cutting+Carbon+Report+final1.pdf">http://stopclimatechaoscymru.org/wp-content/uploads/2013/07/SCC+-+Cutting+Carbon+Report+final1.pdf</a></p> <p><a href="http://www.foe.co.uk/sites/default/files/downloads/energy-efficiency-infrastructure-case-increased-investment-74277.pdf">http://www.foe.co.uk/sites/default/files/downloads/energy-efficiency-infrastructure-case-increased-investment-74277.pdf</a></p> <p>Cambridge Economics/Verco (2012) Jobs, Growth and Warmer Homes KfW research (2011) Impact on public budgets of KfW programmes in the field of 'energy-efficient building and rehabilitation'</p> <p><a href="https://www.kfw.de/migration/Weiterleitung-zur-Startseite/Homepage/KfW-Group/Research/PDF-Files/Energy-efficientbuilding-and-rehabilitation.pdf">https://www.kfw.de/migration/Weiterleitung-zur-Startseite/Homepage/KfW-Group/Research/PDF-Files/Energy-efficientbuilding-and-rehabilitation.pdf</a></p>

	<p><a href="http://www.bbc.co.uk/news/uk-wales-south-east-wales-14767105">http://www.bbc.co.uk/news/uk-wales-south-east-wales-14767105</a>  <a href="https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/42562/216-2050-pathways-analysis-report.pdf">https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/42562/216-2050-pathways-analysis-report.pdf</a> p101</p> <p><a href="http://stopclimatechaoscymru.org/wp-content/uploads/2013/07/SCC+-+Cutting+Carbon+Report+final1.pdf">http://stopclimatechaoscymru.org/wp-content/uploads/2013/07/SCC+-+Cutting+Carbon+Report+final1.pdf</a></p>
58	<p><b>Pembrokeshire Coast National Park</b></p> <p><a href="https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/376805/Review_of_biomass_performance_standards.pdf">https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/376805/Review_of_biomass_performance_standards.pdf</a></p>