



Llywodraeth Cymru
Welsh Government

www.gov.wales

Energy Efficiency in Wales

A strategy for the next 10 years 2016–2026

Contents

Chapter 1	
Introduction	4
Chapter 2	
The vision	7
Chapter 3	
The need	9
Chapter 4	
The opportunity	22
Chapter 5	
Prioritising action	32
5.1: Overcoming barriers	33
5.2: Supply chain development	41
5.3: Skills and education	45
5.4: Innovation	50
5.5: Finance	54
Conclusion	58

Ministerial Foreword



This Energy Efficiency Strategy has a vital contribution to make to the well-being of future generations in Wales. It will drive actions to deliver against the goals set out in our new and historic Well-being of Future Generations (Wales) Act: tackling poverty and the global threat of climate change, building resilience for our communities, boosting green growth in the economy and addressing the health inequalities caused by poor energy efficiency.

Besides addressing the energy “trilemma” of affordability, security of energy supply and the need for decarbonisation, the strategy is designed to play a major role in driving economic growth – supporting the growth of green jobs and skills throughout Wales and increasing the competitiveness of our businesses.

To protect the long term well-being of our citizens, we need to take action now to improve the energy efficiency of our homes, our businesses and our public sector. The energy system in Wales is on the threshold of considerable change with new energy, technology and low carbon transition opportunities. Ensuring that our buildings are energy efficient will be the bedrock of this transition.

Wales’ homes and places of work include some of the oldest, traditionally constructed buildings in Europe. We have a high number of solid wall, hard to treat and off-gas properties.

We also have high levels of fuel poverty, and investment in energy efficiency is the most effective way to tackle fuel poverty within the powers that we have. Through the Welsh Government Warm Homes programme, which includes Nest and Arbed, we are providing energy efficiency improvements to thousands of low income households and those living in deprived communities.

As I emphasised in the public sector decarbonisation programme that I recently

committed to, bringing our public sector buildings up to the energy efficiency standards of today is a strong priority for the Welsh Government. This is essential not only to meet our climate change targets, but to ensure that our public services can save money and better support essential front line services. It is a significant challenge, but it also offers an opportunity to innovate and to create businesses, jobs and exports, as the world tackles the same problems that we face.

But this activity will not just happen through ‘business as usual’; so we are committed to removing the barriers to investment in energy efficiency. This strategy sets out the areas of action needed to ensure continued investment to achieve our vision.

We have been taking action to promote energy efficiency within our buildings and businesses for some decades; so we start from a good base in terms of knowing some of the solutions. We are a good way along the journey of doing some of the more practical things; like filling uninsulated cavity walls, and replacing inefficient boilers with more efficient ones. We must now look to newer technologies and smarter ways of living. We must continue to exploit low carbon renewable heat sources alongside energy efficiency, especially in rural areas.

We must take the opportunity now to deliver, through this strategy, real benefits for our society, our economy and our environment. It is critical for the long term well-being of our citizens, and will confirm Wales as a beacon of best practice in sustainable development.

Carl Sargeant
Minister for Natural Resources

Chapter 1

Introduction



In this chapter we set out the purpose of this document

- » Action on energy efficiency contributes strongly across our well-being goals
- » It is a major factor in green growth, jobs, skills and supply chains
- » It is the most cost-effective means of meeting our commitments to reduce carbon emissions
- » It lowers costs for businesses and the public sector, and
- » It can directly address fuel poverty and put money back in people's pockets

The Welsh Government has had significant impact with its energy efficiency programmes to date, and by setting out long term direction in a first Wales Energy Efficiency Strategy, we have the opportunity to engage more widely in realising the opportunities and addressing barriers to uptake.

The energy market is undergoing major transformation both within Wales and further afield with a move to smarter, more connected energy systems, that integrate energy generation, storage and energy efficiency measures. Ensuring that all sectors, households, businesses and our public sector use less energy is fundamental in our ability to respond to these changes.

There are opportunities to support the development and commercialisation of new energy efficient products and services that reduce our demand for energy alongside improvements to the fabric of buildings.

Within Wales we have led the way in terms of delivering a vision for energy efficiency that focuses not only on reducing energy use and carbon emissions, but gives equal importance to job creation and tackling poverty. We have been successful in doing this through our energy efficiency action to date.

A review of more than 20 sources concluded that for every £1 million spent on energy efficiency about 23 jobs are directly supported in the energy efficiency industry¹.

Construction Skills estimate the ratio of job to capital spending for housing repair and maintenance is 32.6 direct and indirect jobs per £1million of spending.

Given the significant employment multipliers associated with energy efficiency measures, the opportunity that increased action on energy efficiency presents for economic growth across all parts of Wales is clear.

This is in addition to the role that energy efficiency plays in improving business competitiveness and achieving cost savings in the public sector.

"The opportunity that increased action on energy efficiency presents for economic growth across all parts of Wales is clear."

Wales has 1.4 million homes across a wide range of housing types with 30% of households in Wales estimated to be in fuel poverty. Energy efficiency is the most effective tool that we have within our powers to tackle fuel poverty and a warmer home can also have a positive impact on people's wellbeing and health.

¹ Janssen, R.& Staniaszek, D. (2012). 'How Many Jobs? A Survey of the Employment Effects of Investment in Energy Efficiency of Buildings', Brussels, The Energy Efficiency Industrial Forum

“Energy efficiency is the most effective tool that we have within our powers to tackle fuel poverty and a warmer home can also have a positive impact on people’s wellbeing and health.”

The promotion of energy efficiency is devolved to Wales; however, we do not have the powers to regulate on energy efficiency. We will continue to work with the UK Government in respect of their regulatory measures. We will also pressure the UK Government to frame their energy efficiency measures for the benefit of the people, economy and environment of Wales. Despite our limited powers, we are determined to realise our ambition to maximise the potential impact of energy efficiency actions, by supporting domestic, business and public sector consumers with a range of measures in order to achieve the highest standards of efficient energy use.

We have developed a new strategy that considers not just the Welsh Government’s role in driving this agenda, but also the collaboration and involvement of other organisations, of businesses and of householders.

A call for evidence was held between 16 October 2014 and 8 January 2015. 103 responses were received from a wide range of stakeholders.

A public consultation on the draft Energy Efficiency Strategy for Wales was held between 17 June and 9 September 2015. 93 responses were received, again from a wide range of stakeholders.

All responses have been considered fully in developing the strategy further and this strategy reflects the current evidence and the views of stakeholders.

We would like to thank our stakeholders for their valued contribution in shaping this strategy.

Box 1:

Understanding Energy Efficiency

“Energy Efficiency is a measure of energy used for delivering a given service. Improving energy efficiency means getting more from the energy that we use”.

There are different ways to improve energy efficiency. For example:

- » Innovation in new products and technology can lead to the same or greater output with less energy;
- » Cutting out wasted energy reduces the energy needed while maintaining output;
- » Heating technologies, such as heat pumps, can deliver greater output for less supplied energy;
- » There is potential to save energy by changing how we use it, in domestic, business and public sector settings, while maintaining the benefits delivered;

(Energy Efficiency Opportunity in the UK, DEC 2012).



Chapter 2

The vision



A vision for the future

The vision is the focal point for the strategy. This provides the direction for building an energy efficient Wales over the next ten years, in line with the Well-being of Future Generations Act.

The vision for a more energy efficient Wales by 2025 is:

We want to ensure that Wales is in the best possible position to realise its full energy efficiency potential and become a major exporter of energy efficiency technology and know-how.

This can be achieved by working in five key areas of action:

- 1 People, communities, businesses and other organisations, recognise the benefits of energy efficiency and take action.
- 2 We have the supply chain throughout 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.
- 3 We have a well-educated and skilled workforce capable of responding to the energy efficiency challenge and this is supported by the engagement and investment from employers.
- 4 We support innovation in new energy efficiency products to deliver solutions in Wales; and our businesses benefit from the opportunities presented by this global challenge.
- 5 We have clear funding mechanisms, a clear pathway to reduced carbon emissions and a stable framework that is attractive to investors and consumers.

Chapter 3

The need



Realising the multiple benefits of energy efficiency

In this chapter we set out the reasons for accelerating the delivery of a more energy efficient Wales.

In Wales the drive for energy efficiency will contribute strongly to the well-being goals by:

- » reducing greenhouse gas emissions and helping to deliver on our Climate Change Strategy and achieve our statutory emissions reduction targets;
- » reducing fuel poverty and helping to deliver our Fuel Poverty Strategy;
- » creating jobs and business opportunities by investing in Green Growth through local energy efficiency supply chains;
- » regenerating communities in Wales, both through improvement in the fabric of buildings and through the creation of jobs and business opportunities that will lead to more cohesive, sustainable communities right across Wales;
- » delivering our wider Welsh Government energy policy, helping to realise the aspirations of Energy Wales: A Low Carbon Transition and Green Growth Wales: Local Energy;
- » working towards our resource efficiency agenda and accelerating a circular economy;
- » enabling natural resource management and the implementation of the Environment Bill.

3.1

Looking at the future through our Well-being of Future Generations Act

The Well-being of Future Generations Act was granted Royal Assent in April 2015. It requires public bodies to think about and plan for the wider and long term impacts of their actions and investments, and to focus on improving, in an integrated way, the economic, social, environmental and cultural well-being of people in Wales.

The sustainable development principle that underpins the Act requires us to ensure that the needs of the present are met without compromising the ability of future generations to meet their own needs.

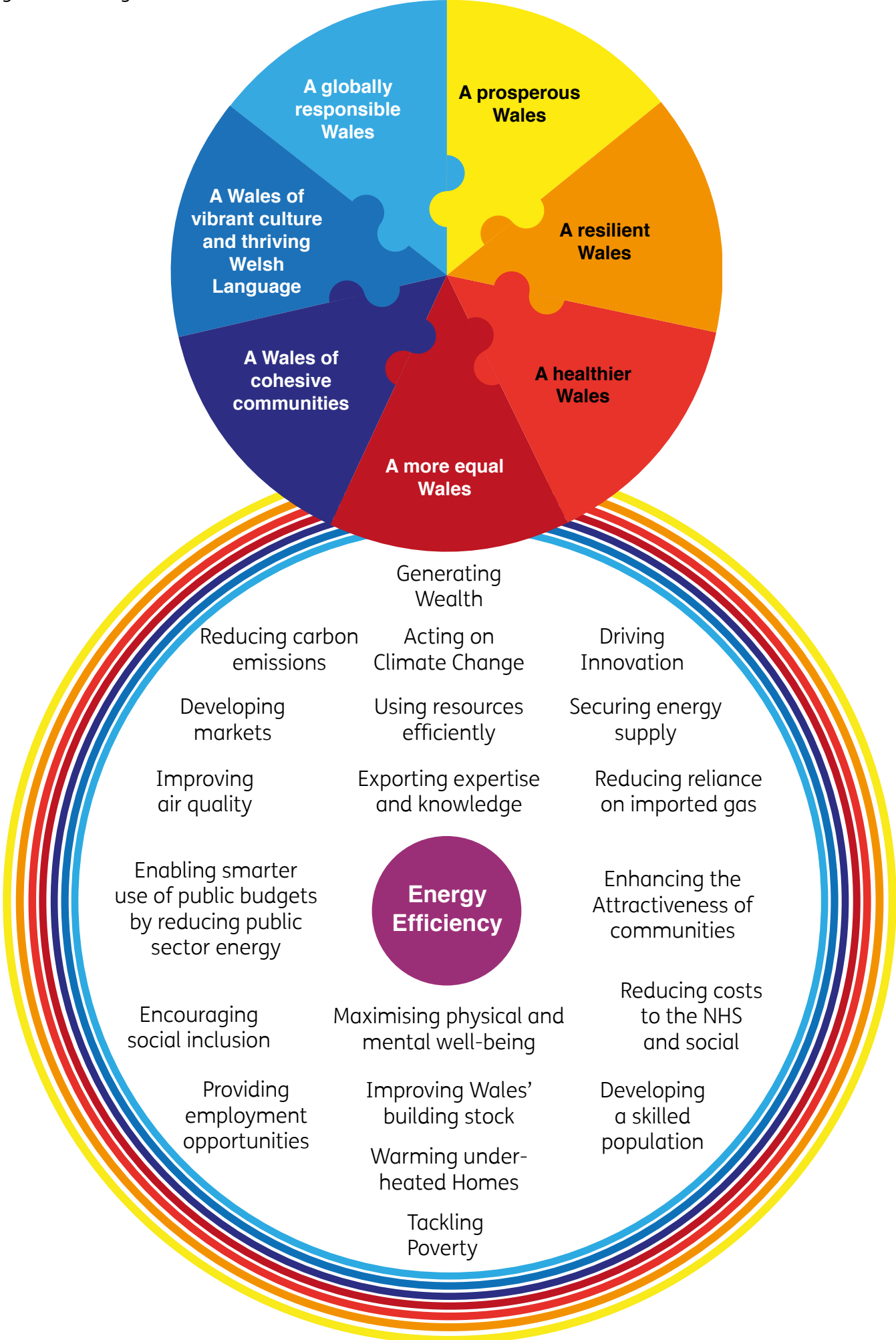
Our approach to improving energy efficiency in Wales is a demonstration of our application of the five ways of outlined in the Act. The multiple benefits of action to increase energy efficiency contribute across all of the well-being goals, delivering well integrated outcomes for the people of Wales. This strategy sets out how we will achieve those benefits through the involvement of people and through collaboration with private, public and third sector organisations. In delivering these benefits, the strategy will help to prevent long term problems such as poverty and socio-economic inequalities.

Improving energy efficiency across Wales will improve the well-being of the people of Wales in a whole range of different ways. Figure 1 illustrates that energy efficiency is a very important element in our drive to achieve the well-being goals set out in the Act. The circular jigsaw sets out the seven well-being goals and the lower circle shows just some of the benefits to society of taking energy efficiency action.

“Improving energy efficiency across Wales will improve the well-being of the people of Wales in a whole range of different ways”.

Figure 1:

Energy efficiency is a very important element in our drive to achieve the well-being of future generations goals.



3.2

An effective energy market

Energy efficiency can support households, businesses and other organisations in Wales, by saving money, by reducing energy security risks and by supporting more sustainable lifestyles. At scale, it is the most cost-effective intervention to support the move to a low carbon energy system.

“At scale, it is the most cost-effective intervention to support the move to a low carbon energy system”.

Energy Hierarchy

The Welsh Government has an ambition to make the long-term transition to a low carbon energy system. It recognises three major challenges that make this transition urgent: the need to mitigate climate change, the impact of rising energy costs, and the future risks to energy security. Tackling these problems requires co-ordinated action at all levels in Wales, with the Welsh Government playing our part. It also requires a more interconnected UK and European energy system. We must maximise the benefits from public money spent on energy.

The energy hierarchy, shown in figure 2, shows that reducing energy demand and increasing energy efficiency are the best starting points. Energy efficiency actions reduce energy demand and enable us to use energy wisely. Maximising energy savings and energy efficiency will be essential to the feasibility of increasing reliance on low carbon sources of energy.

“Energy efficiency actions reduce energy demand and enable us to use energy wisely”.

That is because reducing our demand for energy and increasing energy efficiency at the point of use means that less energy needs to be generated; it is therefore easier to meet demand using low carbon sources of energy. This in turn lowers the need to generate energy (both electricity and heat) from fossil fuels, thereby lowering our carbon emissions.

“reducing our demand for energy and increasing energy efficiency at the point of use means that less energy needs to be generated”.

Energy Security

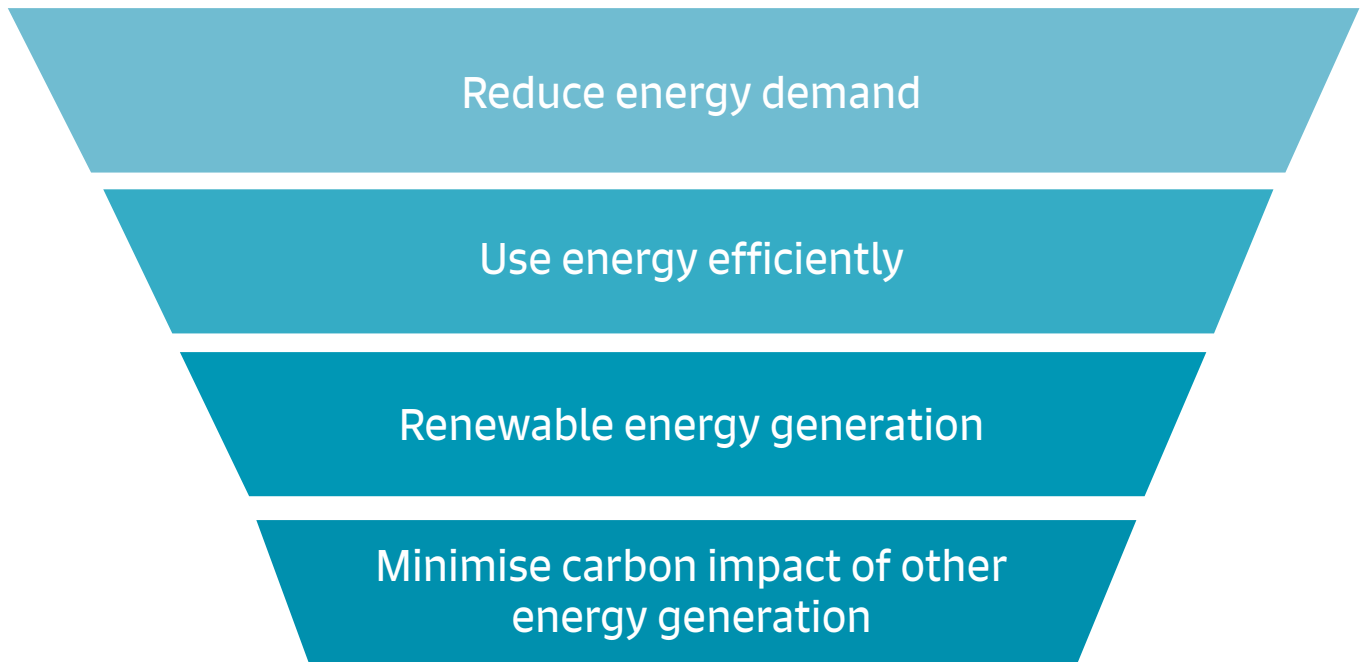
Energy efficiency reduces the absolute amount of energy that needs to be generated and transported, which, when combined with low carbon energy from the sustainable use of Wales’ natural resources, improves energy security. This is of importance to people and businesses, which are less likely to face energy supply cuts, and it has wider strategic importance for the ability of the UK as a whole to reduce the amount of energy that it has to import from outside its borders.

Energy costs

The price of energy impacts on the ability of people to heat their homes affordably, and it impacts the competitiveness of Welsh businesses in global markets. Inefficient buildings use more energy than they need to, which leads to householders and businesses paying for this waste.

Figure 2:

The Energy Hierarchy



3.3

Economic Benefits

Saving energy saves money

When energy is saved that leads to lower energy bills, which can benefit the economy. The level of benefits from the drive for energy efficiency depends on the extent to which savings are circulated back into the economy, and the extent to which investments in energy efficient technologies give impulse to local economies. Determining the impacts on the economy is a rather complex issue. To our knowledge, there is no European-wide study available investigating the macro-economic benefits of European-wide energy efficiency measures in detail. Neither is there a Wales-wide study.

Saving energy creates jobs

Due to the labour-intensive and localised nature of most energy efficiency work, it is possible to create jobs locally. Jobs will be created in local installation and in manufacturing, and will also benefit the transport, energy, and service sectors. Direct employment will be created in the manufacturing of equipment and materials

including insulation and heating systems, as well as in installation and project management. Auditing, monitoring of energy use, efficiency rating, marketing and consultancy also all offer employment opportunities.

“Due to the labour-intensive and localised nature of most energy efficiency work, it is possible to create jobs locally”.

Some of the jobs that are created to enable energy efficiency improvement and energy savings will inevitably displace existing jobs in other sectors. Determining the exact level of displacement in sectors where product and service demand is reduced, or in other words, the net jobs that are gained in an emerging sector, is again a complex issue.

Saving energy ensures Wales' long term competitiveness

The successful growth of the energy efficiency sector in Wales will lead to a skilled and highly specialised workforce in several sectors of our economy. This could have a positive, more indirect effect on our competitiveness in the manufacturing and services sectors as well as in research and development.

Reducing energy use in any industry cuts operational expenses, therefore it becomes increasingly important when competing in a global market against countries whose energy (and labour) costs are relatively low compared to those in Wales.

Additionally, people are increasingly aware of the environmental impact of their behaviours. Companies that, as part of their business strategy, can deliver low-carbon and low-energy intensive products build competitive advantage and create added value.

3.4 Fuel poverty

The Welsh Government regards a household as being in fuel poverty if, in order to maintain a satisfactory heating regime, it would be required to spend more than 10 per cent of its income (including Housing Benefit, Income Support for Mortgage Interest or council tax benefits) on all household fuel use.

There are three main factors that influence whether a household will be in fuel poverty: household income, energy prices and the energy efficiency of the home.

The Welsh Government has a statutory obligation to eradicate fuel poverty², as far as is reasonably practicable, in all households in Wales by 2018. We have limited powers to tackle low income and energy prices, making the eradication of fuel poverty a real challenge, but we can make a significant difference by improving the energy efficiency of homes in Wales. Energy efficiency is the most sustainable way to

reduce energy bills in the long term. We are doing this through our energy efficiency programme, Welsh Government Warm Homes.

"Energy efficiency is the most sustainable way to reduce energy bills in the long term".

Improving the energy efficiency of the homes of low income households is important, not just because we want to reduce household energy use and energy bills, but because living in a cold home has a detrimental impact on people's health and well being. There is evidence that cold homes can lead to increases in respiratory illnesses and the risk of heart attack and stroke, as well as contributing to excess winter deaths³. In addition, worrying about paying energy bills can increase levels of stress and mental illness. We also know that some people will cut back on food or other essentials in order to pay their energy bills. This all leads to poorer health outcomes for low income households and increases pressure on health and social care resources. We want people in Wales to be living in warmer more comfortable homes.

The negative impacts of fuel poverty and living in a cold home are wider than health and well being: they can also impact on educational attainment when children lack a quiet, warm place at home to study, or have higher levels of absence due to illness. They can increase social exclusion when people are reluctant to invite friends to their home because it's cold or damp, and there are wider impacts on the economy through increased days lost to sickness and reduced disposable household income that might otherwise be spent in the local economy.

2 Statutory targets for eradicating fuel poverty in Wales were published in 2003, in the Welsh Government's A Fuel Poverty Commitment for Wales, as required by the Warm Homes and Energy Conservation Act 2000.

3 The Health Impacts of Cold Homes. Friends of the Earth and the Marmot Review Team (2011).



3.5

Green Growth

In November 2013 Cabinet endorsed the green growth approach and accepted that it was a key part of ensuring economic growth in Wales in the long term. We set out our approach to this through Green Growth Wales: Local Energy.

Green growth in Wales is about fostering economic growth, development and social equity while ensuring that our natural assets can continue to provide the resources and environmental services on which our well-being relies. To do this it must stimulate investment and innovation, which will underpin sustained growth and give rise to new economic opportunities, develop our workforce and build skills, and fairly distribute the proceeds of growth through the provision of decent work.

The prospectus sets out how the sustainable use of our natural resources can create a new economic model that will deliver wealth creation and economic growth both today and into the future⁴.

Investing in energy efficiency is integral to our green growth ambitions. It addresses environmental sustainability by reducing carbon emissions, it is socially inclusive through tackling poverty and it helps support economic growth by delivering on sustainable employment.

“Investing in energy efficiency is integral to our green growth ambitions”.

3.6

Climate Change

Our work on energy efficiency has demonstrated that action on climate change can drive economic growth and tackle vulnerability and inequality – win-wins that are at the heart of our Government priorities.

The European and statutory UK 2050 target set the wider context for the decarbonisation of our economy – with both committing to a reduction in overall greenhouse gas emissions by at least 80% by 2050. This means that there is now a clear roadmap in place for decarbonisation, with energy efficiency being a key driver for this, and with European interim targets for 2020 and 2030 to guide planning towards the aim of decreasing emissions by at least 80% by 2050 (below 1990 levels).

“There is now a clear roadmap in place for decarbonisation, with energy efficiency being a key driver for this”.

At the Wales level the goals and principles set by our ground breaking Well-being of Future Generations Act encompass the need to act on the causes and adapt to the consequences of climate change, as well as ensuring that Wales is globally responsible in its actions.

Wales has had a long term commitment to taking action on climate change, which is outlined in our existing Climate Change Strategy.

This is being strengthened by the Environment (Wales) Bill, which focuses on the sustainable management of Wales’ resources and includes a statutory commitment to carbon budgeting to set a clear pathway for decarbonisation. Our aim for at least an 80% target reduction by 2050 is in line with wider UK and EU obligations. Wales, along with the UK is part of a leading group of countries taking legislative action to tackle climate change.

⁴ <http://gov.wales/topics/environmentcountryside/consmanagement/green-growth-wales/?lang=en>

Greenhouse gas emissions from existing housing and businesses in Wales account for approximately half of the emissions included in the Welsh Government's target to reduce greenhouse gas emissions by three per cent per year in areas of devolved competence. Promoting energy efficiency is a critical component of achieving this target and generally encompasses many of the most cost-effective greenhouse gas reduction measures.

"Promoting energy efficiency is a critical component of achieving this target".

Our latest Climate Change Annual Report (2014) shows that the Residential sector is responsible for 24% of emissions covered by the 3% target and has reduced by 7.6% compared to the baseline, whilst the business sector accounts for 31% of emissions covered by the 3% emissions reduction target⁵, and has reduced by 16.7%.

Energy efficiency provides a key opportunity for reducing emissions across different sectors and will deliver significant savings, whilst providing green growth opportunities and reducing the inequalities that underpin poverty.

3.7

Statutory obligations

There are a number of statutory obligations relating to energy efficiency, which the Welsh Government is committed to. These are shown below in box 2.

Box 2:

Energy efficiency obligations

2020 and 2030 Energy Efficiency Target

In 2007 the European Union set an ambitious primary energy saving target of 20% by 2020, against a 2007 business-as-usual projection. This forms part of a wider package of targets – known as the “20-20-20 targets” – that make up the EU's 2020 climate and energy package, and which include binding greenhouse gas emissions and renewable energy targets. This framework has been strengthened by the EU 2030 framework, which now sets in place further targets for delivery by 2030, and encompasses an energy efficiency target for at least 27% reduction.

The EU Energy Efficiency Directive¹

This Directive (2012/27/EU) represents a major step forward for energy efficiency in the EU, establishing a common framework of measures to promote energy efficiency across different sectors of the economy throughout the EU. The Directive will play a key role in driving progress towards the EU's 2020 energy efficiency target. Central to achieving this goal is the requirement in Article 3 for Member States to set national non-binding energy saving targets.

¹ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:315:0001:0056:EN:PDF>

⁵ This excludes direct emissions from heavy industry and energy generation.

The UK's Target

The UK notified the European Commission on 30 April 2013 of its target under Article 3 of the Directive. The UK's target was set at the level of 129.2 million tonnes of oil equivalent (mtoe) for final energy consumption on a net calorific value basis. This represents an 18% reduction in final energy consumption,² relative to the 2007 business-as-usual projection, and reflects the UK's ambitious energy efficiency policy package.³ Estimates of energy consumption in 2020 can be broken down by sector based on the 2013 Energy and Emissions Projections.⁴

Welsh Government Targets

The Welsh Government currently has a commitment to reduce greenhouse gas emissions by three per cent per year in areas of devolved competence. This has been strengthened by the Environment Bill, which will put in place statutory climate change targets and carbon budgeting to help drive further action on climate change. Our aim is for at least an 80% target reduction by 2050.

The Welsh Government has a statutory obligation to eradicate fuel poverty,⁵ as far as is reasonably practicable, in all households in Wales by 2018. The most effective way that we can do this is through energy efficiency.

2 Equivalent to a 20% reduction in primary energy consumption.

3 The UK's target was taken from the UK Department of Energy and Climate Change's Updated Energy and Emissions Projections (published in October 2012).

4 <https://www.gov.uk/government/publications/updated-energy-and-emissions-projections-2013>

5 Statutory targets for eradicating fuel poverty in Wales were published in 2003, in the Welsh Government's A Fuel Poverty Commitment for Wales, as required by the Warm Homes and Energy Conservation Act 2000.



International Commitments

“What Wales is doing today the world will do tomorrow”.

Nikhil Seth, Director of Division for Sustainable Development, Department of Economic and Social Affairs, United Nations.

UN Global goals

In the same way that the Well-being of Future Generations Act sets well-being goals for Wales, world leaders have committed to 17 Global Goals to achieve 3 extraordinary things in the next 15 years.

1. End extreme poverty.
2. Fight inequality & injustice.
3. Fix climate change.

The Global Goals for sustainable development could get these things done, in all countries, for all people.

To make the world a better place, the Global Goals provide concrete actions moving toward the bigger picture. The last set of goals, agreed to in 2000, resulted in enormous improvements around the world: one billion people were lifted out of extreme poverty; the number of child deaths was cut by more than half; and 2.6 billion more people have access to improved drinking water now. That was in just 15 years.

The Global Goals for the next 15 years are so very important because they can have even greater impact.

The Welsh Government welcomes the inclusion of the energy goal: ‘Ensure access to affordable, reliable, sustainable and modern energy for all’. This recognises the fundamental role that energy and energy efficiency plays in the achievement of most of the other sustainable development goals.

The UN sustainable development goals are fully integrated with the well-being goals put in place by the Well-being of Future Generations Act.

Figure 3 shows the UN’s Global Goals for sustainable development.

COP21 Agreement

Wales played its part in the 21st Conference of the Parties to the United Nations Framework Convention on Climate Change (COP21) that took place in Paris in December 2015.

The summit resulted in an international agreement with all countries committing to act together to combat climate change and to limit global warming to below two degrees Celsius. It is therefore an historic and momentous deal that sets a clear direction to a sustainable future, demonstrating that the shift to a clean economy and low carbon society is now global, inevitable and irreversible.

Figure 3:
The UN Global Goals for sustainable development.





Chapter 4

The opportunity



Realising the multiple benefits of energy efficiency

In this chapter we outline the opportunities and challenges presented by accelerating energy efficiency in Wales.

The opportunities presented by an energy efficient Wales are manifold, not least in terms of cost savings for businesses, households and the public sector, increased resilience to economic shocks, the stimulation of innovation and the potential for job creation.

In our call for evidence, we asked our stakeholders about the potential impact in Wales of energy efficiency in terms of saving money and creating jobs and green growth. We had 74 responses to this question providing some useful and interesting information. Responses show that there is a great opportunity to be realised. There is a good deal of information to show the importance of energy efficiency and its positive impact on society. We don't have material that fully quantifies the opportunity specifically for Wales; however, we will continue to develop our knowledge in this area, as our data about the building stock in Wales improves.

Building stock and energy use

Wales has 1.4 million homes⁶ across a wide range of housing types, including a significant proportion of older buildings. New construction offers opportunities to incorporate new energy systems; and to implement much higher standards of energy efficiency. But 65-70 per cent of the dwelling stock in existence in the 2050s is likely to have been built before 2000⁷. Therefore, despite national Building Regulations being introduced in 1965, with local standards in existence since the 1930s, we have some of the oldest and least thermally-efficient building stock in Europe. The prevalence of older buildings in Wales' stock leaves a considerable legacy of non-energy efficient features.

By far the largest use of energy in buildings is in the generation of heat and hot water. Since 1970, central heating systems have become the predominant means of heating UK homes. The fuel type used in homes is dependent on location. The households in Wales that are not connected to the gas grid use other fuels that can vary depending on whether the household is in a rural or urban

setting. Off-gas rural homes will typically be in areas not reached by the gas network, while off-gas urban homes will be in buildings that have, for a variety of reasons, not been connected to the available gas network. In dense urban environments, the predominant fuel for heating non-gas fuelled homes is electricity, particularly in housing blocks where there may be limitations on the use of gas for safety reasons. In rural settings, the fuels used for heating are mainly electricity and heating oil, with solid fuels and liquefied petroleum gas (LPG) being used also, but to a lesser extent.

Outside of its use for heating, and hot water, the demand for electricity in domestic properties is spread across its use for cooking, lighting and appliances. The provision of lighting has seen a number of technological developments in the last decades, with standard incandescent light bulbs being phased out across the European Union and being replaced with more efficient Light Emitting Diode lamps (LEDs).

Non domestic buildings vary widely in their form, age and use, from small shops, to high rise commercial office buildings, hospitals and airports. As with the domestic sector, much of the 2050 environment will not have been designed or constructed with energy efficiency and decarbonisation standards in mind.

6 <https://statswales.wales.gov.uk/Catalogue/Housing/Dwelling-Stock-Estimates/DwellingStockEstimates-By-LocalAuthority-Tenure>

7 Foresight (2008) Powering our Lives: Sustainable Energy Management and the Built Environment. Government Office for Science, London.

Relatively little data exists to enable analysis on energy performance but what has been done⁸ suggests that, while this enormous diversity exists, there is some correlation between activity and built form. Energy performance varies widely even for very similar buildings, which means that there is huge potential for a wide range of energy efficiency measures.

Energy use in non domestic buildings is as much to do with their occupation, equipment, use and management; as with the buildings themselves. The diversity of building use in non-domestic has a profound effect on the levels of energy used for heating and cooling across the various sectors. Non-domestic buildings may have to deal with high levels of internal heat gains from lighting and other electrical processes such as IT, particularly in office buildings, as well as the conditioning of deep plan spaces, where natural ventilation may be difficult to achieve. In addition to high cost alterations to fabric and services, non-domestic buildings offer many opportunities for making major savings cost-effectively by avoiding waste and from minor improvements. However, with so many players involved, (including owners, agents, managers, occupiers and a range of service providers), principal/agent problems can make it difficult to retrofit energy efficiency measures.

“We are looking at ways to improve and update the data on the building stock in Wales so that we can assess the full opportunity in these premises and for Wales as a whole”.

In 2015, there were around 240,000⁹ businesses operating in Wales and most of these were micro businesses (less than 10 employees). At present many SMEs do not take action on energy efficiency and there is a need to stimulate and support demand

in this group. Smaller SMEs can benefit from similar energy efficiency improvements to domestic households but like households they may not recognise the benefits of doing so. In addition, whilst larger SMEs have taken action, there is more that can be done working through the Welsh Government’s sector teams to support action on energy efficiency.

There is a significant opportunity to invest more in public sector energy efficiency through loans and attracting private sector investment. Whilst many public sector organisations have already taken action and made use of external investment options, more can be done to scale up in this area.

Funding on the scale needed across all sectors cannot be provided by the public sector alone, therefore the success of making Wales energy efficient depends on significant mobilisation and engagement of the private sector.

8 Non-Domestic Energy Factfile, BRE, 1998

9 <http://gov.wales/docs/statistics/2015/151210-size-analysis-welsh-business-2015-en.pdf>



Economic opportunity

In 2014, the UK's energy efficiency products market accounted for turnover of almost £21 billion and employed 150,500 workers.

¹⁰In Wales, the market turned over almost £736 million. However there is a good deal more market potential. With the right market conditions in Wales we could unlock more potential for energy efficiency investment, helping to generate green growth and jobs.

A review of more than 20 sources concluded that for every £1 million spent on energy efficiency about 23 jobs are directly supported in the energy efficiency industry¹¹.

"For every £1 million spent on energy efficiency about 23 jobs are directly supported in the energy efficiency industry."

Using the labour to capital spending ratio estimate by Construction Skills (the Sector Skills Council for construction), the ratio of jobs to capital spending for housing repair and maintenance is 32.6 jobs per £1 million spent. This compares to 15 jobs for major infrastructure projects.

Given the employment multipliers associated with energy efficiency measures and the significant housing and fuel poverty issues that Wales faces, there are substantial economic, social, environmental and cultural benefits associated with the delivery of domestic and commercial energy efficiency measures. There are few better capital investments for Wales in terms of the multiple benefits delivered.

"There are few better capital investments for Wales in terms of the multiple benefits delivered."

Improving homes from energy efficiency ratings E, F and G to energy efficiency rating D can reduce the average annual fuel bill by £600¹². Using the figures in this report it can be estimated that improving the energy efficiency of 1,000 homes from ratings E, F and G to a D rating could lead to total annual bill savings of around £582, 000. This is an underestimation of the total benefits that could be generated over time, because this is simply an estimate for one year.

Whilst some businesses have undertaken significant investment in energy efficiency there is a need to do more across business to maintain competitiveness, counteract the impact of price rises, and reduce sector emissions. There are nearly 237,000 SMEs in Wales and a significant number of public sector organisations. On the whole this business energy efficiency is an untapped opportunity. The findings of the Parliamentary inquiry by Carbon Connect: Energy Efficiency The untapped business opportunity, established that poor energy efficiency, currently costing UK business more than £6 billion a year, needs to be tackled immediately. Despite the huge cash and carbon savings available, the private sector has yet to realise the benefits of adopting energy efficient measures.

"Business energy efficiency is an untapped opportunity."

As we currently experience significant pressure on public sector budgets, increasing the energy efficiency of the public sector would release resources that could be re-directed into front line services.

The green economy is an important element of economic growth and describes a major subset of the Welsh economy.

10 <http://www.ons.gov.uk/ons/rel/environmental/uk-environmental-accounts/low-carbon-and-renewable-economy-economy-survey--2014/rpt-low-carbon.html>

11 Janssen, R.& Staniaszek, D. (2012). 'How Many Jobs? A Survey of the Employment Effects of Investment in Energy Efficiency of Buildings', Brussels,

12 as estimated in a WWF Cymru and Energy Saving Trust Report on "Cutting Carbon Emissions in Welsh Homes".

The Office for National Statistics (ONS) estimates that businesses in the low carbon and renewable energy economy in Wales turned over almost £2 billion in 2014 and employed 9,500 people. Within this key area of the economy, energy efficiency products accounted for 37% of total turnover.

"Increasing the energy efficiency of the public sector would release resources that could be re-directed into front line services."

It is clear from these figures that Wales has a strong market in the low carbon and renewable energy economy, which covers a range of activities associated with energy efficiency. The energy efficient products group, as defined by ONS, covers the design, manufacture and installation of energy efficient lighting/products and energy monitoring, saving or control systems.

Tackling Poverty

As explained above, Wales has some of the most inefficient housing stock in Europe. Therefore, it simply takes more energy to keep our homes warm than elsewhere in Europe, and this drives up energy bills.

Modelled fuel poverty estimates for 2012 indicate that 386,000 (30 per cent) of all households in Wales were fuel poor. This is an increase of 54,000 households since 2008, when it was estimated that 332,000 (26 per cent) of all households in Wales were fuel poor.¹³ The increase in the number of fuel poor households since 2008 has resulted from significant increases in energy prices during the period, along with falling or flat lining incomes.

While the overall number of households in fuel poverty has increased, the modelling identifies that a further 36,000 households would have been in fuel poverty without the impact of energy efficiency improvements.

"A further 36,000 households would have been in fuel poverty without the impact of energy efficiency improvements."

We want to build a stronger evidence base on the health impacts of our home energy efficiency improvements and are investing jointly with the Economic and Social Research Council (ESRC) in a project to link data on energy efficiency improvements with health outcome data. The project will run for three years and aims to provide conclusive evidence of health impacts to inform future policies and programmes.

We want to understand more about which low income individuals or households are most at risk from the effects of living in a cold home, and therefore most in need of the support provided through home energy efficiency improvements. To help inform future policies and programmes, we have commissioned research on the characteristics of individuals and households who are most in need. The research will be completed 2016.

We want to update the estimates for fuel poverty levels in Wales in the short term and have commissioned research to model existing data to produce estimates of the level and distribution of fuel poverty. This work will also help inform the targeting of future fuel poverty schemes. The research will be completed in 2016.

Decarbonisation opportunities

The analysis of decarbonisation opportunities is presented in relation to the direct and indirect emissions from the residential and business sectors in Wales. The Environment (Wales) Bill introduces the concept of the Net Welsh Emissions Account, which will be defined by future regulations and may differ from the analysis presented here. However, the Bill's aim for at least an 80% target reduction in Welsh emissions (Net Welsh Emissions Account) by 2050, will be delivered, in part, by the decarbonisation opportunities explored below.

Residential:

The residential sector accounted for 8.4% of total Welsh emissions in 2013. 97% of these emissions are from direct fuel consumption in the sector (dominated by heating and cooking).

On an end-user consumption basis the residential sector emissions are considerably higher; due to the additional emissions allocated from the upstream energy process sectors to deliver the refined fuels (63%) and electricity (37%) that are consumed in the sector. This increases the overall significance of the sector on the end-use consumption basis to 16.8% of Wales' total, compared with 8.4% for direct emissions. Therefore, the residential sector has an important influence on demand driven emissions across the energy sector in Wales. This highlights the importance of energy efficiency policy implementation in the residential sector, if we are to achieve emission reductions and deliver on our targets.

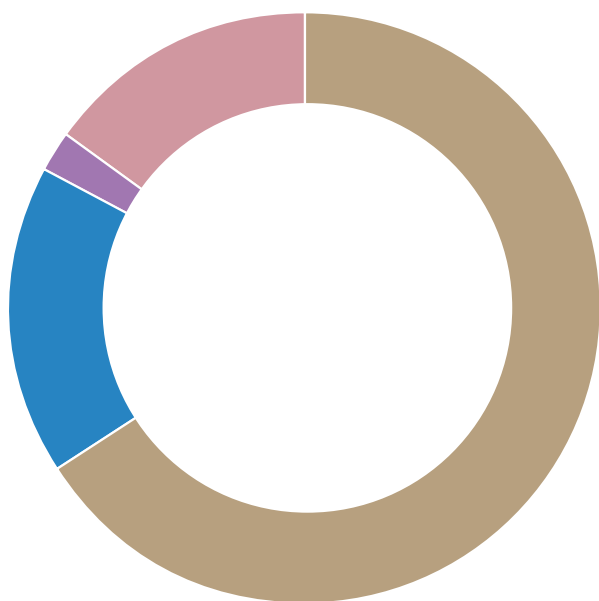
"The residential sector has an important influence on demand driven emissions across the energy sector in Wales. This highlights the importance of energy efficiency policy implementation in the residential sector, if we are to achieve emission reductions and deliver on our targets."

The Welsh Governments current 3% target combines the direct residential sector emissions with the end-use electricity consumption estimates. For this target the residential sector accounts for 23% of total emissions in 2013 and emission have reduced by 10.5% since the baseline.

At the UK level (in 2013) 66 per cent of total domestic consumption was for space heating¹⁴. Water heating (17%), lighting, and appliances (15%) and cooking (3%) make-up the remainder of energy consumption in the domestic sector. Heating energy is the dominant component of Britain's household energy use and therefore the greatest gains in the residential sector are likely to be achieved from emission reduction policies that tackle domestic heating energy demand. Decarbonisation policies may include improving energy efficiency and the consequent reduction in total energy consumption, and reducing the carbon intensity of the fuel mix consumed by householders. Indirectly the residential sector is a large consumer of electricity and reducing the carbon intensity of electricity production will help reduce the reported 3% target emissions for the sector.

14 Energy Consumption in the UK (2013) Chapter 3.
Available at: <https://www.gov.uk/government/statistics/energy-consumption-in-the-uk>

"The greatest gains in the residential sector are likely to be achieved from emission reduction policies that tackle domestic heating energy demand."



● Space Heating ● Water Heating
● Lighting & Appliances ● Cooking

To achieve effective decarbonisation energy efficiency policies will rely on parallel reductions in the carbon intensity of energy consumption mix in Wales' residential sector. Additionally, to achieve overall emission reductions residential consumption declines need to continue to outpace any increase in housing growth to achieve net emissions reductions.

Business:

The business sector accounted for 66.2% of total Welsh emissions in 2013. 63% of these emissions are from the energy supply sector, of which 48% are direct emissions from public electricity and heat production.¹⁵ As highlighted previously targeting reductions in electricity and heat consumption in Wales has potential to influence the dominant source of emissions in this sector.

On an end-user consumption basis the business sector emissions are around half that of the direct emissions because of the re-allocation of the dominant energy supply emissions from the business sector to the end-user sectors consuming that energy.

The direct levers available to Welsh Ministers to address the dominant business sector emission sources in Wales are limited, as the key levers rest within UK or European policies. The 3% target recognises this and focusses on emissions within devolved competence.

Under the 3% target the business sector accounts for 31% of total emissions in 2013 and emissions have reduced by 20.1% since the baseline. 45% of these emissions were from direct fuel consumption in the sector (largely dominated by production emissions) and 55% are from end-use consumption of electricity.

"Emissions have reduced by 20.1% since the baseline"

The business sector is a large consumer of electricity (61% of electricity consumption emissions in Wales), which is used for heating, lighting and operating equipment.

This evidence demonstrates that targeting energy efficiency measures in the devolved business sector, alongside the residential sector, would contribute strongly to the devolved emission reduction goals in Wales.

"Targeting energy efficiency measures in the devolved business sector, alongside the residential sector, would contribute strongly to the devolved emission reduction goals in Wales."

In terms of direct fuel consumption emissions within the devolved business sector (i.e. those businesses in Wales not covered by the EU-ETS¹⁶) emission sources were dominated in 2013 by smaller scale industrial fuel combustion (29%), including through small-scale on-site electricity generation (autogenerators), industrial machinery, and the combustion associated largely with the production of glass, bricks and ceramics.

The Business Sector can reduce both by-source and end-use emissions, as these components make almost equal contributions to the 3% target emissions. To reduce end-use emissions, policies that focus on reducing energy consumption (increasing efficiency) in areas such as heating, lighting and operating machinery will have the greatest impact on the 3% target. End-use electricity consumption emissions are also strongly influenced by the carbon intensity of electricity production at the UK level, and this can offset or complement efficiency improvements in consumption within Wales.

“Focus on reducing energy consumption (increasing efficiency) in areas such as heating, lighting and operating machinery will have the greatest impact on the 3% target.”

The direct by-source emissions of the devolved business sector can be influenced by policies that increase efficiencies in production and reduce the overall sector energy consumption.

Appropriate actions will need to be taken in a period of increased production as Wales moves out of recession, making the achievement of emissions reduction action in this area still more challenging.

Alongside the carbon reductions delivered by energy efficiency, improvements in our energy security through reduction in

demand for imported energy, warmer homes and lower resulting energy bills mean that action on energy efficiency is win-win-win. Greater energy efficiency may also support improvements in wider resource efficiency. We must, and will, make it happen in Wales.

This strategy sets out action by the Welsh Government and others, over a ten year period, to address the barriers we have identified, and to deliver against the opportunities. Whilst it is therefore not possible to quantify the precise impact of this strategy on carbon emissions, the Welsh Government is committed to undertaking a full assessment of the carbon reduction impact of any action that we take forward to deliver on the strategy.

“Alongside the carbon reductions delivered by energy efficiency, improvements in our energy security through reduction in demand for imported energy, warmer homes and lower resulting energy bills mean that action on energy efficiency is win-win-win.”





Chapter 5

Prioritising action



Growing a more efficient Wales

In this chapter we set out the five key areas of action to deliver the vision: overcoming barriers; developing the supply chain; skills and education; innovation; and finance.

In each area, this strategy identifies the priorities for achieving greater energy efficiency. Action is already being taken, but if we rigorously pursue these priorities we will be able to develop a strong, self sustaining energy efficiency market and consumers across all sectors will be able to see a return, which will create positive reinforcement of the potential of energy efficiency.

5.1 Overcoming Barriers

“People, communities businesses and other organisations, recognise the benefits of energy efficiency”

We have set out the need for increased investment in energy efficiency and the considerable opportunities and benefits.

However, we are only going to realise the potential for Wales if all sectors seize this opportunity. This is not a new challenge, and the evidence that we have received indicates that there are many inter-related barriers preventing the level of investment that we need to achieve. It is a complex challenge and we have to recognise that if achieving action at scale was easy, it would already be happening, at pace, across all sectors.

“It is a complex challenge and we have to recognise that if achieving action at scale was easy, it would already be happening, at pace, across all sectors.”

There is no one single barrier that once addressed will accelerate progress, the needs of different sectors, and the different customers within those sectors, are wide and varied.

Each building is different and every person behaves differently within their home or workplace. The diversity of building stock in terms of age, use, materials, build type and quality, thermal mass, location, orientation and occupancy means that solutions need to be specifically tailored to the building or group of buildings in question.

There is also the added complication that even if appropriate interventions can be identified, it is a mistake to assume that measures will perform according to expectations. Their performance may be affected by issues intrinsic to the measures themselves or by issues relating to installation and process. Performance predictions in general tend to be based upon an assumption of ideal behaviour of materials and products under standard conditions, combined with perfect installation and proper use. In reality performance may not match expectations.

“There is no one single barrier that once addressed will accelerate progress.”

At a basic level there is a need to raise awareness of the value of energy efficiency compared with other investment to improve the quality of information provision and to build trust in it. It is also important to ensure that financial incentives exist where appropriate and that bad practice and the lack of trust that it cause, are robustly tackled.

We cannot tackle the barriers on our own; we will need to make better use of our wider network of partners and influencers across all sectors. Often, the Welsh Government is identified as being the prime mover, but in many cases we do not carry the influence that others do, particularly when it comes to unlocking the demand from higher income households and businesses.

The Welsh Government can and will provide leadership. We are in the best position to take an all Wales, all sector view. We are convinced of the tremendous potential this area has and a key part of our role is to convince others.

Resources are a major issue both for ourselves and our partners. That makes it even more important that the resources there are are utilised in areas such as this that can so clearly demonstrate significant economic, social and environmental returns.

We will need to consider how we can take a more targeted approach with our own limited resources in order to deliver effective change.

We will also consider wider action to drive energy efficiency. For example we will examine how energy efficiency might be driven through processes such as applications for Welsh Government grants.

Keeping our approach under review will be essential, and we must be able to adapt more quickly to changes in the market to tackle any new barriers and use our resource wisely to achieve maximum effect. We should learn more from successful approaches in other regions, but our approach will need to reflect the particular challenges that we face in Wales.

Overcoming barriers for householders and communities

Achieving energy efficiency refurbishments at scale will be impossible without buy-in from all households. Whether they are fuel poor, have low incomes or are relatively well-off, people need to understand, in clear and simple terms, the benefits to them of taking action. The evidence that we

received showed that there remains a lack of knowledge and understanding about the benefits of energy efficiency. Respondents to the call for evidence also identified complexity, lack of trust and insufficient financial incentives as key barriers.

“Achieving energy efficiency refurbishments at scale will be impossible without buy-in from all households.”

For householders, the whole house approach, covering energy efficiency and new technologies around storage and smart control, could be an effective way forward.

From the evidence we have identified eleven priority areas in addition to those highlighted in other sections of the strategy:

Area of action 1.1 – Improved information on the value of energy efficiency, the relative benefits of different measures and the support available.

The Welsh Government, working closely with local authorities, has a key role to provide trusted and impartial advice. Improved information on the latest support available will help to overcome the confusion and complexity that exists for householders and will showcase the support available. It will also address the lack of confidence and trust generated by cold callers and rogue installers.

Area of action 1.2 – Working through others with influence to encourage action on energy efficiency.

Collectively we need to do more to promote the wider range of benefits that come with improving the energy efficiency of the home. These include increased comfort, maintenance reductions, improved safety and aesthetics as well as significant health benefits and community regeneration for those living in the worst properties and poorest areas.

We will work with partners to develop targeted campaigns to raise awareness of

the value of energy efficiency, for example, the link between the energy efficiency rating of a property and its value.¹⁷

The role of energy bill modelling in mortgage affordability calculations has also been investigated recently.¹⁸ Eventually, this could lead to a much closer relationship between properties' energy efficiency and their value, which would act as a major driver for retrofit of the UK's homes.

Area of action 1.3 – Building on the work being done by Smart Energy GB.

Smart meters offer the potential, particularly for higher energy users, to better monitor and manage their consumption. However, the introduction of smart meters is unlikely to provide the same level of benefit for fuel poor households, many of whom are under heating their homes.

For fuel poor households who are under heating their homes, the primary objective is not to reduce their consumption further but rather to ensure they are, first and foremost, able to adequately heat their home.

In addition, as more households take up the smart technologies that are introduced alongside the smart meter roll out, there is a danger that levels of switching, which are already low in Wales, will reduce. Households will become familiar with, and attached to, a particular product aligned to an individual energy company. We will work with Smart Energy GB and Ofgem to ensure that the needs of Welsh consumers are considered in the roll out of smart meters. We believe the roll out of smart meters will address many of the barriers around prepayment meters.

Area of action 1.4 – Providing guidance and support for low income households.

We will look at how low income households, not eligible for grant funded support, can be encouraged and enabled to take action building on the support available through Resource Efficient Wales under the Welsh Government Warm Homes programme.

¹⁷ <https://www.gov.uk/government/publications/an-investigation-of-the-effect-of-epc-ratings-on-house-prices>

¹⁸ <http://www.ukgbc.org/resources/publication/role-energy-bill-modelling-mortgage-affordability-calculations>

Area of action 1.5 – Continuing to provide advice and support for those households on the lowest incomes and living in the most energy inefficient properties.

The Welsh Government has recently published a revised Child Poverty Strategy for Wales. This includes a new objective on supporting families living in poverty to increase household income through debt and financial advice, action to address the “poverty premium” (where households pay disproportionately more for goods and services) and action to mitigate the impacts of welfare reform. Work being taken forward to provide advice and support for those households on the lowest income and living in the most energy inefficient properties, through Welsh Government Warm Homes – Nest, will make an important contribution to delivering this key objective.

Area of action 1.6 – Making energy efficiency easy for those households who are able to pay but who are put off by the complexity and lack of trust in the sector.

Working with our Construction Sector Panel we will undertake research into the feasibility and potential impact of establishing a paid for service that facilitates the assessment and installation of energy efficiency improvements for middle and higher income households. We will consider the potential for this to include businesses.

Area of action 1.7 – Ensuring that the private rented sector take action to meet the obligations placed on them by the UK Energy Act (2011).

Early compliance by landlords will drive improvement in the energy efficiency of privately rented properties. The Act has the following requirements:

- » From April 2016, residential private landlords will not be able to unreasonably refuse consent to a tenant's request for energy efficiency improvements where finance or subsidies are available to pay for them.
- » From April 2018, private domestic and non-domestic landlords will need to ensure that their properties reach at least

an E EPC rating, or have installed those improvements that could be funded using available finance or subsidies available to pay for them, before granting a tenancy to new or existing tenants.

- » These requirements will apply to all private rented properties – including occupied properties – from April 2020 in the domestic sector (and from April 2023 in the non-domestic sector).

Investing in their properties will benefit landlords as they will own more energy efficient properties that are warmer and more attractive to tenants.

“Wales is leading the way on driving up standards in the private rented sector, following the launch of Rent Smart Wales.”

Wales is leading the way in driving up standards in the private rented sector, following the launch of Rent Smart Wales.

The new registration and licensing scheme will prevent rogue landlords and agents from letting and managing properties in Wales. It will also raise awareness by landlords, agents and tenants of their responsibilities and legal obligations, and raising the reputation of the sector as a whole. This will help to protect tenants in the private rented sector – including students, lone parents and young families.

The Rent Smart Wales scheme will, for the first time, allow local councils to fully identify all of the private rented properties within their local area, making it easier for them to work closely with landlords on ensuring high rental standards are being met, such as energy efficiency.

Area of action 1.8 – Review of Part L of the Building Regulations in 2016.

Although Wales does not have powers to regulate on energy efficiency we will look at the potential to encourage action through the powers that we do have and any future powers that are devolved to Wales.

One important upcoming opportunity is the review of Part L of the Wales Building Regulations in 2016. Building regulations run from A to P, building regulations part L refer to the requirements with regards to conservation of fuel and power. We will look for opportunities to build on the improvements made in the 2014 changes in relation to existing buildings and extensions.

Area of action 1.9 – Drive achievement of the Welsh Housing Quality Standard.

All 220,000 social homes have to achieve the Welsh Housing Quality Standard by 2020 and we are investing £108million every year to support this. This will ensure that these homes are properly insulated e.g. achieving at least SAP 65 (EPC rating D on a scale of A-G).

WHQS achievement is monitored through published annual statistical returns, visits, and annual submission of 30 year business plans. There are measures in the Housing (Wales) Act 2014 to take action against landlords who choose not to meet the standard.

Area of action 1.10 – Aligning community based activity to our wider community based action. Communities, be they geographical or communities of interest, provide a route for raising awareness of energy efficiency and for delivering bespoke support. We will ensure that Welsh Government energy efficiency action targeting communities is well integrated in wider programmes of activity such as Communities First and Flying Start, and in actions under the Rural Development Plan, in order to achieve maximum reach and impact.

Area of action 1.11 – Facilitating renewable and low carbon energy development through the planning system.

We are working with local planning authorities to ensure that they plan positively for renewable and low carbon developments with appropriate spatial policies in their local development plans. To assist local planning authorities, we recently published guidance on how to produce renewable energy assessments and develop

policies in their local development plans. We will work with local authorities to help improve local development plans, ensuring that they include positive and proactive policies for energy.

In line with our commitments outlined in Green Growth Wales- Local Energy we will undertake the following work in relation to facilitating renewable and low carbon energy development:

- » review the scope to further extend Permitted Development Rights for non-domestic solar renewable energy development in Wales;
- » review the scope to reduce the need for Environmental Impact Assessments for smaller scale wind energy developments; and
- » consider the options available to us to help local authorities adopt a more consistent approach to landscape sensitivity assessments.

Overcoming barriers for businesses

The key barriers for business are lack of time, limited access to finance and a lack of awareness around energy efficiency actions. We have provided support over many years to businesses and there is an opportunity to build on this support and expand the take up of help with energy efficiency across a wider range of businesses.

For some businesses, holistic solutions encompassing energy efficiency and new storage and smart control technologies will be the most effective way forward.

There remains a significant ongoing opportunity to support all sizes of businesses. Although smaller SMEs do not individually account for high emissions,

in aggregate they represent an untapped market and could benefit from similar energy efficiency measures to those used in households. We should ensure that they receive information regarding the value and benefits of energy efficiency.

We need to make it easy for SMEs, who are focused on the day to day challenges of running a business, to access information and support that enables them to invest well in energy efficiency. Consumer Focus' Under the Microscope (2012) report ²⁰ found that a majority of SMEs do not have a gas supply. Solutions will therefore also need to maximise the use of micro generation.

From the evidence we have identified six priority areas for business in addition to those outlined in other sections.

Area of action 1.12 – Access to information, advice and support on energy efficiency.

Through Resource Efficient Wales, Business Wales and Farming Connect, we will provide information, advice and support to businesses, promoting the value of energy efficiency through support available to business of all sizes.

We need to more actively showcase case studies of businesses that have successfully benefited from energy efficiency. This should include those where businesses have secured the buy in of employees in reducing their energy use. We will also actively engage with The Federation of Small Businesses, the Confederation of British Industry and Wales TUC.

Area of action 1.13 – Integrate energy efficiency support within wider business support.

Businesses in Wales benefit from a broad, established business support service. Energy efficiency should be driven through all existing programmes.

"There remains a significant ongoing opportunity to support all sizes of businesses."

Area of action 1.14 – Work with large businesses to use energy more efficiently. As highlighted in Chapter 4 on the opportunity, the greatest carbon reduction gains may be achieved by targeting certain industrial activities. We will continue to work with large businesses in Wales, particularly the Welsh anchor companies, to optimise the efficiency of their energy use. We acknowledge that appropriate actions will need to operate in a period of increased production as Wales moves out of recession, making the achievement of emissions reduction action in this area more challenging.

The Energy Savings Opportunity Scheme (ESOS) for larger businesses will provide cost effective recommendations for energy efficiency improvements every four years. Energy suppliers already offer major business users an energy audit service.

Area of action 1.15 – Building on the work being done by Smart Energy GB. Smart meters provide an opportunity for businesses to monitor and manage their energy use, however, there is an issue as to whether smaller companies will use this information and act upon it. To ensure smaller companies see real benefits, there will be a need to raise awareness on how smart meter data can be used to understand and drive down costs.

Area of action 1.16 – Increased investment and support through Green Growth Wales.

In addition to access to finance, Green Growth Wales provides practical support alongside Resource Efficient Wales to the public sector, with Business Wales providing support for larger businesses wishing to access skills and advice to bring projects to a stage where they are investment ready.

Area of action 1.17 – Working with landowners.

We know from the Federation of Small Businesses 2015 survey that amongst their members across the UK “the main issues preventing many small businesses becoming energy efficient are leased/rented premises (45%). We will therefore work with landowners with the aim of enabling Wales’ non-domestic properties to be upgraded.

Overcoming barriers for the Public Sector

Barriers for the public sector are mostly connected with a lack of resources to fully assess the potential of energy efficiency technologies and a lack of the capacity and skills needed to develop and manage large scale retrofit projects on public sector buildings. Innovation in energy efficiency and the move to smarter and more local energy production are increasing the need for bespoke advice and support. Respondents to the call for evidence also identified a lack of clear ownership of energy efficiency within public sector organisations and, with pressure on resources, insufficient incentives to prioritise energy efficiency over competing demands.

However, action in the public sector will now be more strongly incentivised through the requirements of the Wellbeing of Future Generations Act and an increased focus within the Welsh Government on carbon budgeting.

“Action in the public sector will now be more strongly incentivised through the requirements of the Wellbeing of Future Generations Act.”

With high up-front investment costs public sector organisations need to understand the benefit of a clear commitment to energy efficiency and the need to access advice on the financial options to secure finance that will deliver the maximum sustainable benefits for the organisation. Further detail on the financial support for the public sector is provided in the finance section of this strategy.

Given the lack of capacity within many public sector organisations and the complexity involved in larger scale projects, access to support and the showcasing of successes to learn from will be essential. The Welsh Government has made a commitment for Natural Resources Wales to become carbon neutral, providing a great public sector example.

“The Welsh Government has made a commitment for Natural Resources Wales to become carbon neutral, providing a great public sector example.”

From the evidence we have identified the following priorities for action in the public sector, in addition to those in other sections:

Area of action 1.18 – Access to advice and support.

We will continue to provide advice and support to public sector organisations to enable them to undertake energy efficiency activity. Support available through the Resource Efficient Wales Framework will underpin the drive of Green Growth Wales to support public sector organisations and develop a pipeline of projects able to attract investment

Area of action 1.19 – Showcasing successful projects.

We will showcase those projects that have been successful including those that we have supported through our Invest to Save fund and the support we have provided in the past through Salix.

Area of action 1.20 – Drive efficient use of public expenditure on resource efficiency through the use of the National Procurement Service and Value Wales.

The National Procurement Service (NPS) was launched in 2013 to help the Welsh public sector deliver cash and non cashable savings. The NPS is targeted to save a

minimum of 3% cash based on expenditure going through its contracts and frameworks and to also embed the principles of the Wales Procurement Policy Statement in all the tenders that it runs. This should create new opportunities for Welsh businesses to win public sector contracts. The NPS will reduce expenditure; eliminate duplication, develop a sustainable procurement model and increase efficiency. It will also develop local supply chains to make sure Welsh businesses benefit from the £5.5 billion that the Welsh public sector spends each year on goods and services, including energy efficiency goods and services. The NPS will ensure that taxpayers receive maximum value for this money.

The inclusion of ‘community benefits’ or ‘social requirements’ in public sector procurement is designed to ensure that wider social and economic issues are taken into account when tendering construction, service or supplies contracts. Value Wales has established the Community Benefits Project²² to work with the Welsh public sector to influence procurement activities to support delivery of social, economic, environmental and cultural benefits.

The Community Benefits Measurement Tool can be used to measure the value of the use of community benefits in public sector procurement. This tool can be used to capture the success or ‘value’ accrued from projects using the community benefits approach across the public sector in Wales.

22 <http://gov.wales/topics/improving-services/better/vfm/publications/community-benefits-2014/?lang=en>



5.2

Supply chain development

“We have the supply chain throughout 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”.

Increasing the demand for energy efficiency measures is essential to meet our climate change targets, decrease household costs, and to reduce operating costs for our businesses and the public sector in Wales. That demand must be driven by more than Welsh Government funding. The call for evidence responses identified concern from the supply chain regarding continuity of funding and demand for energy efficiency. With the exception of fuel poor households, we need to encourage more market-driven demand; that will be a sustainable solution, which will give the energy efficiency supply chain the confidence to invest in and develop their businesses.

Within Wales we are only going to reap the full rewards of an energised energy efficiency market if we have a supply chain that is qualified and flexible, and which operates effectively throughout the whole of Wales and beyond.

Wales is rare in having an energy efficiency supply chain covering all aspects from manufacturing through to installation, within its boundaries. Insulation and micro-generation technologies are made in Wales. We have a strong installer base in many parts of Wales, which we have helped to grow through the innovative delivery of our own energy efficiency programmes and through targeted energy efficiency supply chain support. However, there are weaknesses that we need to tackle.

“Wales is rare in having an energy efficiency supply chain covering all aspects from manufacturing through to installation, within its boundaries”.

Our area based energy efficiency programme has been particularly innovative and effective in supporting smaller companies to collaborate and compete with larger companies, and in sourcing materials from within Wales. Our fuel poverty scheme has also supported small businesses by ensuring that energy efficiency measures are installed by Wales-based SMEs.

Unlike many other sectors, energy efficiency has the potential to boost employment and economic growth throughout Wales (see Chapter 4). It often requires local labour and the growth of this sector provides the opportunity for existing construction companies to upskill and diversify relatively easily. The energy solutions for customers are likely to involve not just insulation or heating measures but also micro generation technologies such as solar photovoltaics, heat pumps and biomass. We have provided support to installers to become accredited and provide a wider range of technologies to customers; but there is more that needs to be done, particularly in rural and off-gas areas.

“Energy efficiency has the potential to boost employment and economic growth throughout Wales.”

The move to integrated smart energy solutions that join together all aspects of the energy system and connect assets to a smarter grid for; households, communities, businesses and the public sector, will provide new opportunities for businesses in Wales. Innovation Wales, the Welsh Government’s innovation strategy²³ identifies Smart Energy as an area where Wales can take a lead.

From the evidence we have identified six priority areas for action in relation to supply chain development:

Area of action 2.1 – Continued support for installers to diversify, achieve the necessary accreditation and identify opportunities for collaboration.

Future support needs to focus on supporting installers throughout Wales in order to overcome the limited availability of qualified installers in rural Wales, particularly given the potential for micro generation technologies to support off-gas households and businesses.

Area of action 2.2 – Strengthened support for supply chain development.

Support for the energy efficiency and renewables supply chain is provided through Business Wales, Construction Futures Wales and a number of other Welsh Government programmes including Welsh Government Warm Homes – Arbed and Nest. This support is vital to help strengthen and grow Welsh businesses and to ensure that we have the capacity to deliver on the energy efficiency challenge. We will do more to strengthen this support and ensure that it keeps pace with developments in the market.

Area of action 2.3 – Supporting supply chain development through delivery of our programmes.

Where the Welsh Government is directly funding and supporting energy efficiency activity, we will continue to provide support to businesses in the supply chain as an integral part of delivery.

Our area based and demand-led energy efficiency programmes have been effective in many parts of Wales in developing the installer base through well designed procurement and have helped smaller companies to upskill and collaborate to compete with larger contractors. We will do more to support this, particularly in rural parts of Wales.

Green Growth Wales will develop a pipeline of projects, initially in the public sector, that will increase renewable energy capacity and deliver energy efficiency savings. It aims to leverage significant levels of private

finance to support those projects and we will ensure that those projects provide new opportunities for businesses in Wales and protect and create new jobs.

Similarly Smart Living is developing innovative and novel demonstrators with the aim of achieving multiple benefits that will include supply chain development.

Energy efficiency projects funded through the Welsh Government's Invest to Save fund will also look to provide opportunities for business in Wales.

Area of action 2.4 – Action to improve trust in the industry.

As a government we are committed to improving the trustworthiness and quality standards of the industry. We will continue to work with voluntary registration scheme operators such as TrustMark and others, including trade federations and organisations to promote the benefits to both tradespeople and consumers of the use of such schemes. The supply chain itself also has a role to play in stimulating demand and ensuring an effective energy efficiency market, particularly for householders. Many responses in the call for evidence identified inappropriate cold calling and bad practice by some unscrupulous businesses as a real barrier to the take up of energy efficiency, undermining the market as a whole. The supply chain needs to recognise this and work to counteract this bad practice.

We will work with the UK Government to encourage more effective consumer protection and good practice under UK led schemes, such as ECO and the smart meter roll out, as well as through schemes in Wales.

However, the supply chain can go further than this to build confidence and promote business amongst its customers. Many householders have trusted builders and heating engineers whom they listen to and who can encourage greater use of energy efficiency measures.

As identified earlier, evidence²⁴ shows that energy efficiency measures are often best implemented when householders are already carrying out major house improvement projects, such as installing new kitchens. Local, trusted tradesmen have a real role to play in helping energy efficiency to be seen as an important home improvement rather than as a discrete activity to support climate change action.

We will consider how, working with builders and installers, we can stimulate demand and encourage householders to see energy efficiency as home improvement. We will also help the public in terms of cold calling, helping them to understand any offers that may be made, and clarifying if offers are genuinely backed by Government funding.

Area of action 2.5 – Entrepreneurship.

We will offer the energy efficiency sector in Wales, particularly the construction industry, the support that it needs to grow.

We will continue to help businesses to evaluate and benchmark current performance and will provide expert

support, to help them grow, increase productivity and competitiveness and achieve future business success.

Area of Action 2.6 – Encouraging Sustainable manufacturing.

We will continue to encourage businesses to embrace a ‘circular economy’ in which end of life products are reused, remanufactured and recycled, to save energy and embedded carbon.

Sustainable manufacturing offers opportunities to reduce costs and open up new markets. Those leading on sustainability have significantly reduced costs by reducing energy, water and other resource consumption, as well as achieving wider environmental performance improvements.

Accelerating sustainable manufacturing may also influence customers and suppliers to improve the overall supply chain performance. The ability to meet the needs of society in a sustainable way is key for manufacturing.

24 <http://www.ukerc.ac.uk/publications/understanding-homeowners-renovation-decisions-findings-of-the-verd-project.html>



5.3

Skills and education

“We have a well-educated and skilled workforce capable of responding to the energy efficiency challenge and this is supported by the engagement and investment from employers.”

Our aim is to deliver a skills system that supports our future competitiveness and helps us evolve into a highly skilled society and at the same time tackle poverty. The Policy Statement on Skills²⁵, published in January 2014, sets out the policy action we should take to enable such a change to take place. To underpin the delivery of our wider skills policy we published a Skills Implementation Plan²⁶ detailing our intended actions for delivery.

Our focus continues to be on raising productivity, reducing barriers into work and supporting people into sustainable employment. The actions we are taking forward will be of direct benefit to the energy efficiency sector given the focus on skills investment, engaging employers, developing vocational qualifications and apprenticeships, and strengthening the relationship between employers and schools.

“Our focus continues to be on raising productivity, reducing barriers into work and supporting people into sustainable employment.”

From the evidence we have identified seven priority areas for action aligned with our overarching skills and education policies:

Area of action 3.1– Skills that respond to local needs.

We are continuing to support the work of the three Regional Skills Partnerships (RSP) in North, South West and Central and South East Wales to undertake regional prioritisation of skills investment. Each RSP was asked to identify key priorities for their region through an annual Regional Employment and Skills Plan. The aim of the plans is to offer a strategic and collaborative response from stakeholders that prioritises investment in order to maximise the potential of available employment and skills support, including EU and other funding, to deliver economic benefits in the region.

Effective regional skills delivery will require RSPs to become more industry-aligned in order to strengthen their influence and impact. The Energy and Environment sector has been identified as a key economic priority by both the North Wales Economic Ambition Board and the South West and Central Regional Learning Partnership. We are encouraging sector employers to engage with those RSPs to ensure their needs are reflected in regional prioritisation and planning. We are also ensuring that RSPs work across borders, and are closely linked with City Regions and Enterprise Zones.

“The Energy and Environment sector has been identified as a key economic priority.”

We will continue to encourage energy efficiency employers to engage with the RSPs to ensure their skills requirements are factored into the regional prioritisation and planning process that is already underway.

²⁵ <http://wales.gov.uk/topics/educationandskills/skillsandtraining/policy-statement-on-skills/skills-implementation-plan/?lang=en>

²⁶ <http://gov.wales/topics/educationandskills/skillsandtraining/policy-statement-on-skills/?lang=en>

Area of action 3.2 – Skills that employers value.

To ensure our approach to skills development remains sustainable, we must position employers as active participants throughout the development and delivery of training programmes. To do this, employers must recognise the investment needed to maintain the value of skills amongst their workforce. We have published a Framework for Co-investment in Skills²⁷ setting out the priorities for government-led skills investment and how we intend to work with employers to embed a culture of co-investment. For example, we are prioritising apprenticeships to support the delivery of all-age, Higher Apprenticeships. This action will benefit employers and individuals looking to develop higher level technical and professional skills, such as those operating in the energy efficiency sector.

“We are working with employers to support their investments in skills and training.”

Where possible we are working with employers to support their investments in skills and training. This includes supporting collaboration across employers through the networks in which they operate by promoting innovation in the delivery of skills and training support.

We have also introduced the Skills Gateway to provide a single engagement, assessment and referral service for individuals and employers wishing to access skills support. This is aligned with broader government support available to employers across Wales through Business Wales.

Taking into account our policy of co-investment, and the future direction of apprenticeships in Wales, we will work with employers to support apprenticeship frameworks that equip the supply chain with the skills related to improving energy efficiency. Our intention is to explore what

opportunities exist for developing an apprenticeship framework aligned to the work being taken forward by employers on Smart Metering or similar areas with growing demand.

“We will work with employers to support apprenticeship frameworks that equip the supply chain with the skills related to improving energy efficiency.”

Area of action 3.3 – Skills that respond to employer need.

The Welsh Government supports National Occupational Standards (NOS) as the basis for Adult Vocational Qualifications and Apprenticeship Frameworks, and ensures these standards align with the skills individuals need for future employment and career progression.

The Welsh Government will continue to work with the energy efficiency sector to understand employer needs and to support the development of vocational programmes that allow their employees to access training that meets the future needs of the sector.

Under the Qualifications Wales Act 2015 responsibility for qualifications in Wales passed from Welsh Ministers to the new independent body; Qualifications Wales. The principal aims of Qualifications Wales are to:

- » Ensure that qualifications and the qualification system are effective for meeting the reasonable needs of learners in Wales; and
- » Promote public confidence in qualifications and the qualification system in Wales.

In meeting its principal aims, Qualifications Wales is obliged to pay regard to, amongst other things, the reasonable requirements of employers and the professions, including employers in the energy efficiency sector.

27 <http://gov.wales/docs/dcells/publications/141120-framework-for-co-investment-in-skills-en.pdf>

Aligned with our Framework for Co-investment in Skills, we are providing support to employers wishing to access apprenticeship provision. In 2015 we consulted on the future of apprenticeships in Wales and particularly how we could better align the apprenticeship system to the ongoing and emerging needs of the economy.

Area of action 3.4 – A curriculum for Wales: a curriculum for life.

Current Curriculum developments

Through Education for Sustainable Development and Global Citizenship (ESDGC) we teach concepts such as energy use and climate change as part of the curriculum within the Personal and Social Education Framework. Through the Science programme of study learners are currently given the opportunity to consider how humans affect the local environment at all key stages.

The revised mathematics curriculum, introduced on a statutory basis from September 2015, includes a manage money element to ensure that children and young people throughout primary and secondary settings build on their numerical and financial understanding through real world contexts. The curriculum seeks to develop well rounded individuals who are able to understand their place in the world and how their actions impact on the planet; while also being equipped with the skills and knowledge needed to make informed decisions relating to, for example, household budgeting.

A curriculum for Wales – a curriculum for life

Working with the education sector and a wide range of stakeholders, we are developing a new curriculum for Wales between now and 2018. The four purposes will be at the heart of our new curriculum so that all our children and young people will be:

- » **ambitious, capable learners, ready to learn throughout their lives;**

- » **enterprising creative contributors, ready to play a full part in life and work;**
- » **ethical informed citizens of Wales and the world; and**
- » **healthy, confident individuals ready to live fulfilling lives as valued members of society.**

The new curriculum will comprise:

- » **Six common areas of learning and experience (AoLEs) from ages 3-16. These are: - expressive arts; health and well-being; humanities; languages, literacy and communication; mathematics and numeracy; and science and technology.**
- » **Progression reference points and achievement outcomes.**
- » **Three cross curriculum responsibilities – literacy, numeracy and digital competence – for all practitioners.**

The Pioneer Schools Network will be at the forefront of designing the new broad, balanced, inclusive and challenging curriculum with expert advice and support.

Area of action 3.5 – Enhancing employer engagement with schools.

We have introduced the Enhanced Employer Engagement project ‘Business Class’ working with Business in the Community and delivered through Careers Wales to promote stronger links between employers, schools and their pupils. This builds on similar pilot projects in the Heads of the Valleys that had a strong engagement from the energy sector including employers from the energy efficiency market.

We will encourage energy efficiency employers to engage with the project to strengthen the link with local schools and to raise awareness of the employment opportunities available across the sector.

The reformed Welsh Baccalaureate qualification is comprised of 3 Challenge Briefs about Global Citizenship, Community and Enterprise & Employability.

Private, public and third sector organisations have an opportunity to engage through the development of Challenge Briefs.

Organisations are required to submit details of their Challenge Briefs to the Welsh Joint Education Committee (WJEC) for approval.

Area of action 3.6 – Capital Investment in 21st Century Schools.

We will work with local authorities to ensure that sustainable development is occurring when capital investment in education is supported by the Welsh Government. Our Grant Offer letters specify that all new schools and those requiring significant re-modelling meet appropriate standards for their build, including the Building Research Establishment Environmental Assessment Method (BREEAM) 'excellent' and an Energy Performance Certificate (EPC) rating of 'A'.

We are committed to the construction of buildings that meet specific environmental requirements.

Through the school standard we will make schools more environmentally sustainable, by reducing energy use and carbon dioxide emissions, and improving the school environment.

Area of action 3.7 – Eco Schools Programme.

The Eco-Schools programme is a high profile international voluntary initiative that aims to raise environmental awareness and instil

pro-sustainability behaviours in children and young people in over 70 participating countries. Currently in Wales, around 95% of Welsh schools, covering over 430,000 pupils, are registered in the programme - one of the highest participation rates in the world. The scheme is pupil-led and they carry out practical projects on eight topic areas, including energy, water, waste minimisation, transport, biodiversity.

Through Eco-Schools, children are encouraged to reduce the carbon footprint of their schools through simple actions such as switching-off lights and appliances, through to more substantial projects involving the installation of solar panels and wind turbines on school premises. Savings from reduced electricity bills can be reinvested by the school's Eco-Committee into other environmental projects.

By participating in energy efficiency projects, children learn about the importance of, and the benefits from, saving energy and can act as agents for change. Eco-Schools helps to engender wider community benefits with children passing on what they have learnt to their families. By promoting more sustainable behaviours and practical energy efficiency actions, the programme helps to tackle localised poverty as well as helping to secure environmental objectives.



5.4

Innovation

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

The recently published Innovation Wales Strategy identifies low carbon energy and environment as one of the four grand challenge areas where the greatest investment in innovation will occur. Specifically there are many opportunities for Wales in the field of energy, where priorities in smart living, energy resource efficiency and large scale energy generation have been identified.

The energy market is undergoing major transformation both within Wales and further afield, with a move to smarter more connected energy systems often created at a local level. We need to encourage and support all households, businesses, communities and public sector organisations to make use of new technologies and services that have the potential to transform the way that they use, as well as generate, energy.

“The energy market is undergoing major transformation both within Wales and further afield, with a move to smarter more connected energy systems often created at a local level.”

The smart meter roll out can pave the way for greater use of demand management as

a means of smarter control of energy use. In addition, development in technology for goods production will support energy demand reduction.

Whilst the focus is often on innovation in supply side measures, measures that reduce demand can be more cost effective in meeting our climate change and tackling poverty targets.

Many of the drivers for innovation will be market-led from across all sectors. However, there is a role for Government to support the demonstration of new local Smart Living integrated approaches and technologies. This must be a collaborative approach across the public and private sectors, and we will need to share good practice and encourage wider roll out when pilots prove successful.

Government also has an important role in ensuring that smaller businesses and low

“Government also has an important role in ensuring that smaller businesses and low income households are not left behind in the move to smarter energy use.”

income households are not left behind in the move to smarter energy use. This is especially the case in Wales with our high levels of fuel poverty and high percentage of micro businesses.

Through the approach set out in Innovation Wales we will work with our universities and businesses to help them to develop and commercialise new products that contribute to greater energy efficiency.

We will encourage Welsh organisations to work closely with Innovate UK and the research councils to make better use of the funding support that they can provide to develop new energy efficiency solutions, for example, Retrofit for the Future by Innovate UK.

We need to learn from others and exploit the successes of other regions, whether these be innovative delivery approaches of existing technologies or new smarter energy systems.

From the evidence we have identified six priority areas of action to support innovation.

Area of action 4.1 – Support to develop new products and services.

Through the approach set out in Innovation Wales, Welsh Government, working with partners, will provide support for businesses to develop and commercialise new energy efficiency products and services and benefit from the opportunities that the global energy efficiency challenge offers.

Area of action 4.2 – Smart meters.

For households and businesses, the roll out of smart meters across the UK is already seeing the development of new technologies that are changing how we interact with energy in our homes and workplaces. Calculations from the British Gas Hive Active Heating case study suggest that on average, people waste £150 a year in heating their home when they are asleep or away.

The innovation in products and services that smart meters will enable will result, not only in customer and system efficiency, but also in greater customer engagement as suppliers are able to offer solutions that can meet a broader range of customer needs. An example is the opportunity for customers to more actively manage and reduce their demand for energy linked to either specific appliances or the use of generation equipment. In the longer term, we would also expect to see smart meters facilitate more innovative time of use tariffs.

The development of new technologies will be market led and we will support Welsh businesses to benefit from the opportunity offered by the roll out.

The Welsh Government will also work closely with Smart Energy GB, who are leading on the consumer engagement aspects of the roll out of Smart meters, as well as with energy companies, Ofgem and Citizens

Advice to look at how all households, including those on low incomes, and businesses, can benefit from this roll out.

Area of action 4.3 – Energy efficiency innovation in the public sector.

We will step up our action to maximise the considerable opportunities for greater innovation in energy efficiency within the public sector. This is essential to reduce carbon emissions, and to reduce costs, and maximise savings for investment in front line services.

Through Green Growth Wales, the Welsh Government will enable a stream of energy efficiency projects in the public sector to get off the ground. A package of project development support, including access to specialist advice through the Resource Efficient Wales public procurement framework will ensure that public sector organisations make use of the latest technologies and approaches to deliver the best energy solutions for them and to maximise the opportunities for Welsh businesses.

We have secured European funding from the ELENA (European Local Energy Assistance) facility to deliver Energy Performance Contracts to public bodies, providing specialist technical and commercial support to enable low risk and cost neutral improvements to energy efficiency.

We will also encourage the use of SBRI (Small Business Research Initiative) to help public sector organisations identify and implement solutions to energy use issues.

Area of action 4.4 – Smart Living demonstrations.

Local authorities in partnership with the Welsh Government have a key role in working with a range of stakeholders including the private sector, universities and network operators to lead the development of local and community based Smart Living energy demonstrator projects.

These will take an integrated approach, with energy efficiency and demand reduction at their core. There is no single “right” technology that we know, today,

will dominate the future energy market. Demonstrators will test a range of new technologies and approaches that together will reduce demand, generate and store energy. The move to smarter energy provides the opportunity to support the resilience and wellbeing of our communities for the long term. The Welsh Government will ensure that the needs of low income households and the opportunities for Welsh businesses are an integral consideration in the development of demonstration projects.

Area of action 4.5 – Shared learning.

In collaboration with others we will actively encourage the exchange of best practice, and will provide opportunities for organisations to learn from each other, from other regions, from Innovate UK and from academia. The public sector, in particular, has a vital role in showcasing new technologies and the benefits of energy efficiency.

Area of action 4.6 – Innovation in Welsh Government Programmes.

We will continue to innovate in the delivery of our own energy efficiency programmes.

Respondents to the call for evidence said that we should continue to use existing basic measures through our fuel poverty energy efficiency programmes. We know that improving the energy efficiency of households is the most effective way to tackle fuel poverty.

We have been successful through Welsh Government Warm Homes – Arbed in taking an innovative approach to procurement and scheme management, and this has delivered significant multiple benefits not realised in other area based energy efficiency schemes. We will continue to develop and innovate in the delivery of our programmes. We will carry out research and pilot new technologies where appropriate and roll out if effective and offering value for money.



5.5 Finance

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

Energy efficiency in Wales is currently supported by initiatives targeted at domestic customers, businesses and public sector organisations. Some of this support is funded by the Welsh Government, such as Welsh Government Warm Homes, information, advice and support through Resource Efficient Wales, support to businesses through Business Wales, energy efficiency loan funding available through the Carbon Trust, the development of Green Growth Wales and public sector loans through Salix and Invest 2 Save. In addition, Wales has access to UK wide action through initiatives such as the Energy Company Obligation.

The Welsh Government has shown our commitment to tackling fuel poverty by increasing funding to our Welsh Government Warm Homes programme at a time of budget cuts.

“The Welsh Government has shown our commitment to tackling fuel poverty by increasing funding to our Welsh Government Warm Homes programme at a time of budget cuts.”

In addition, the Welsh Government has a role to increase the level of knowledge about financing mechanisms for energy efficiency beyond pure grant funding. There is a need for smarter use of public funds accompanied by a long-term, transparent and stable framework. We should look to expand funding through access to

European and local authority co-funding, by attracting private capital, and by stimulating investment by householders. It is essential that a vigorous market for energy efficiency improvements emerge and that public funds act to lever private capital.

However, there are significant challenges around funding to support the take-up of energy efficiency, given the level of ambition in this area and the constraints of public resources. We recognise that grant funded support for those households living in the most energy inefficient properties and on the lowest incomes needs to continue, and ensuring that our own funding is effectively targeted is critically important. Our approach to increasing financial

“Ensuring that our own funding is effectively targeted is critically important.”

investment in energy efficiency starts with the people and organisations involved rather than with the financial product. From our experience, we know that different approaches are appropriate for different groups. We should ensure that a range of financial support mechanisms is available to provide resilience in a changing landscape.

“We know that different approaches are appropriate for different groups.”

Householders

Area of action 5.1 – Information on financial support for householders.

Householders need to have access to consistent and impartial information about financial support available to them. The Resource Efficient Wales service will have a key role to play in helping to increase the level of knowledge amongst householders.

Area of action 5.2 – Welsh Government investment.

In line with the Wales Infrastructure Investment Plan, we will continue to provide grant funding for those households living in deprived communities, and those in the most energy inefficient homes and on the lowest incomes. We will seek to maximise investment from the EU and from other sources, such as a future energy company obligation, alongside our own grant funding. We will continue to maximise links with other programmes, for example Vibrant and Viable Places where appropriate.

“We will continue to provide grant funding for those households living in deprived communities, and those in the most energy inefficient homes and on the lowest incomes.”

To ensure best value for public money, we will limit the capital investment per household to an appropriate maximum reflecting the needs of the Welsh housing stock.

“We will only invest in energy efficiency measures that are appropriate and cost effective and that provide value for money.”

Area of action 5.3 – Loan funding.

The call for evidence identified the need for low interest finance to ensure that lack of finance is not a barrier to energy efficiency. The Welsh Government’s Home Improvement Loans fund enables householders to take out finance to improve their homes. This scheme, delivered by local authorities in Wales, aims to ensure that people have a high quality, warm, secure and energy efficient home. It enables short

to medium term loans to be provided to owners of substandard properties providing they pass affordability criteria and who are restricted in their access to other sources of finance. Recycling of the loan repayments by the local authority will allow the fund to operate for the next 15 years.

An evaluation of the scheme will be undertaken to look at the benefits of improving properties. This includes the boost to the local construction industry, prevention of accidents caused by hazards in the home and tackling social issues.

The Welsh Government wants empty property to come back into use and its Houses into Homes fund is designed to help achieve that aim. In helping to meet housing demand in Wales, the fund also tackles social issues.

“The Welsh Government wants empty property to come back into use and its Houses into Homes fund is designed to help achieve that aim... helping to meet housing demand in Wales.”

Latest figures suggest there are around 23,000 empty properties in Wales. Some of these properties could provide homes to people who need them.

Loans are available to bring empty houses or commercial buildings back into use as homes - including splitting them into flats - for sale or rent. The improvements made using these loans will include energy efficiency improvements.

Area of action 5.4 – Leverage of other funds into Wales.

We should continue to maximise the leverage of funds into Wales and will work with the UK Government on energy efficiency initiatives that cover England and Wales. We aim to maximise the take up of such funding by householders in Wales.

Area of action 5.5 – Financial benefits of switching.

Consumers can save money on their energy bill by switching energy supplier to get the best deal. Levels of switching are low in Wales. Collectively we should work together to raise awareness and encourage consumers to regularly check the market and switch where this will provide a better deal.

Finance for businesses

One of the key barriers cited by businesses to investing in energy efficiency is their lack of access to finance. We will continue to provide access to repayable forms of finance for businesses to invest in energy efficiency.

Area of action 5.6 – Awareness of financing mechanisms.

We will increase the level of knowledge about financing mechanisms for energy efficiency in businesses beyond pure grant funding through our Resource Efficient Wales service, Business Wales and Farming Connect.

Area of action 5.7 – Support for SMEs We will continue to support businesses to grow and improve their ability to compete in their markets.

The £157.5 million Wales JEREMIE Fund has provided debt and risk finance to SMEs with support from the 2007-2013 EU structural funds programme. This fund has now been invested and planning for a new fund; The Wales Business Fund is at an advanced stage with support from the 2014-20 programme. The Wales Business Fund will provide loan, equity and mezzanine finance to SMEs in Wales with two objectives;

- » To increase the amount of finance available to SMEs for both business start up and for business expansion.
- » To address market failures in the availability of finance, in particular risk capital, for Welsh SMEs to undertake innovation and commercialise R&D.

These will cover both the West Wales and the Valleys and East Wales operational programme areas.

All investments will be in the range of £50k to £2million. Finance Wales deliver a micro loan fund, not involving structural funds covering the £5k to £50k band. Midcaps and companies applying for less than £50k will not be eligible for the Wales Business Fund.

The Carbon Trust will also continue to operate the recycled energy efficiency loan fund it established under its grant agreement with the Welsh Government, to support SMEs wishing to undertake energy efficiency activity.

Area of action 5.8 – SPG – RDP.

The Welsh Government Rural Communities – Rural Development Programme 2014-2020 is a 7 year European Agricultural Fund for Rural Development (EAFRD) Programme funded by the European Union and Welsh Government. The Sustainable Production Grant is designed to help farmers in Wales to improve the economic and environmental performance of their agricultural holdings through capital investments. Its objectives are to increase on-farm investment, to increase technical performance, increase on-farm production efficiencies and to increase on-farm resource efficiencies. Capital support of between £16,000 and £400,000 at a rate of 40% to enable farming businesses to achieve transformational change to their enterprises.

Area of action 5.9 – Green Growth Wales.

Through Green Growth Wales we are developing a suite of financial interventions that aim to leverage private investment for energy efficiency and renewable energy projects for businesses and the public sector in Wales.

Public Sector Finance

Public sector organisations across the board, from health bodies to schools, need to increase their energy efficiency significantly if we are to meet our climate change targets and focus funding on front line services. The benefits of energy efficiency are undisputed by the facilities industry. However, capital funding in the public sector tends to be limited and organisations prioritise critical projects, often linked to addressing safety issues rather than energy efficiency. Alternative sources of funding

and enabling mechanisms for infrastructure improvements are necessary to stimulate the increased investment that we need to achieve.

Area of action 5.9 – Public sector loans.

Zero interest finance is currently available to the public sector in Wales through our Invest 2 Save fund and the Salix fund. Loan repayments are recycled into further public sector energy efficiency loans. We will expand the financial offering to the public sector for energy efficiency projects through Green Growth Wales.

“Loan repayments are recycled into further public sector energy efficiency loans.”

Area of action 5.10 – Energy Performance Contracts.

We will support organisations who want to use Energy Performance Contracts (EPCs) as a way of financing their energy efficiency improvements. Working with the UK Government, we have made available a model contract and accompanying guidance notes²⁸ to reduce the amount of time involved in setting up each contract. We are also exploring options to offer further support. EPCs have been delivered across a wide range of building types and different sectors including local authorities, the NHS, schools, further education, and universities.

EPCs can potentially provide a strong business case and offer organisations a range of benefits including: guaranteed energy, attractive savings, reduction in backlog maintenance levels, maintenance costs and other running costs. Wider benefits include delivering CO2 reductions, improving the building environment and comfort for occupants through upgraded and more efficient heating and cooling systems, and investment in buildings and green technologies to help generate local jobs and improve local skills.

Area of action 5.11 – Pipeline of capital projects.

We will optimise our support for delivery of energy efficiency projects by co-ordinating a pipeline of capital projects right across the public sector. In an increasingly dynamic landscape of capital development and delivery, we will maximise the potential for these projects to come to fruition. By identifying the projects, understanding their barriers and seeking solutions to those barriers, we will ultimately make them more investable. This will provide us with a complete picture of potential projects with a funding strategy for the whole sector.

“By identifying the projects, understanding their barriers and seeking solutions to those barriers, we will ultimately make them more investable.”



Conclusion

This strategy sets out the key areas of action that the Welsh Government, in partnership with others, will deliver over the next 10 years for Wales. It is an exciting and far reaching agenda that will deliver improvements for families, communities, businesses and the public sector across Wales.

There has been extensive consultation throughout the strategy development process and we believe that this final product reflects stakeholder views and the current evidence.

The case for continuing to take action in this high priority area is that we are able to reduce energy costs, create and sustain employment. We are also able to accelerate delivery under a number of Welsh Government initiatives such as, amongst others, the Well-being of Future Generations Act, the Environment Bill, the climate change strategy, fuel poverty strategy, and Child poverty strategy.