



Llywodraeth Cynulliad Cymru
Welsh Assembly Government

MICROGENERATION ACTION PLAN FOR WALES

March 2007

MICROGENERATION ACTION PLAN

Minister's foreword

Concerns about climate change, the rise in energy costs and the security of energy supplies provide strong motivation for reducing our energy demands and for looking for alternative sources of energy. Among these alternatives is microgeneration; that is, the generation of heat and/or electricity at the domestic or community level by means that result in zero, or low, carbon emissions. This is becoming an increasingly attractive alternative to central electricity generation and to oil and gas heating.

The Welsh Assembly Government is determined to play its part in reducing carbon emissions, and has set challenging targets for the generation of electricity from renewable sources. A comprehensive, long term Energy Route Map for Wales is expected to look at practical ways of reducing our energy demands, increasing the use of renewable energy sources, improving the efficiency of systems using fossil fuel, and collecting and storing carbon.

Most of the carbon savings in the very near future will arise through energy efficiency and large renewable energy schemes. We will, therefore, increase our support of the work of Carbon Trust and others on energy efficiency, and continue our efforts to secure appropriate developments of wind power, biomass plants, and technologies for capturing wave and tidal energy. But this will not divert us from promoting small scale technologies for harnessing renewable energy. These are becoming increasingly important, hence the Assembly Government's intention to develop this action plan to facilitate the uptake of microgeneration technologies for heat and/or electricity production.

Introduction of microgeneration into our homes and communities is something that we can all aspire to. The benefits go beyond the kilowatts of heat or electricity generated and a reduced dependence on centralised generation, there being a clear synergy between microgeneration and energy awareness leading to reductions in energy use and a desire for greater energy efficiency. In addition to the environmental and economic benefits, microgeneration technologies can also help to address the serious social problem of fuel poverty and provide significant economic development opportunities.

This plan sets out some priorities for action, recognising that progress must be monitored and that changes may be required as the microgeneration market and technologies develop. For the plan to succeed there will need to be close partnerships between the Assembly Government, the UK Government, local authorities, the Carbon Trust, the Energy Saving Trust, universities, voluntary bodies, the building industry and the manufacturers and installers.

My hope is that microgeneration technologies will become common in our homes and work-places, and that Wales will develop a strong industry and supply chains for their manufacture, supply and installation.

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Executive summary

This document presents a plan of action to facilitate the uptake of microgeneration technologies in Wales for the generation of local energy; that is, heat and/or electricity for homes, groups of buildings, communities and small businesses. The Assembly Government's intention is to use the limited resources available on specific activities which have the greatest impact on the general microgeneration market. These activities are grouped into six categories, as follows:

- increasing information and knowledge
- expanding technical and professional skills
- overcoming barriers
- support for indigenous industry and businesses
- exemplar projects
- R&D

An estimate, produced by Energy Saving Trust, of the potential uptake of microgeneration in Wales is presented along with the Assembly Government's targets for the number of installations of microgeneration technologies by 2020, and before. The uncertainties associated with technology development mean that these can not be firm commitments, rather they are benchmarks provided as a spur to action and as a demonstration of the Assembly Government's commitment to expanding the microgeneration market. The targets are:

- 20,000 microgeneration heating units installed by 2012, with of the order of 100,000 by 2020,
- 10,000 micro-electricity units installed by 2012, with of the order of 200,000 by 2020, and
- 50 combined heat and power and/or district heating systems in place by 2020.

A group comprising officials from the Welsh Assembly Government and outside organisations will oversee the implementation of the actions contained in this plan, and will report to the Minister for Enterprise, Innovation and Networks in March 2008 on progress in 2007 and on the predicted progress to 2012 and beyond.

Summary of Actions and timing

Category	Proposed actions	Timing
Increasing information and knowledge.	<ul style="list-style-type: none"> Public awareness campaign. Portal improvements. Establishment of a Sustainable Energy Network in Wales. 	<ul style="list-style-type: none"> By end 2007. 2007 – 2009 (ongoing). By end 2007.
Expanding technical and professional skills.	<ul style="list-style-type: none"> School curriculum and HE/FE courses to include more on climate change and benefits of low-carbon energy; industry to create a demand for related qualifications. Expand, as necessary, courses to those providing advice and installing microgeneration systems. Provide advice and training to those involved with planning regulations. 	<ul style="list-style-type: none"> By end 2008. 100% increase in number of people gaining energy related qualifications per year between 2007 & 2012. By end 2007.
Overcoming barriers.	<ul style="list-style-type: none"> Appropriate extension of permitted development rights. Seek devolution of building regulations. New buildings in Wales to be zero carbon Work with DTI on payment for exported electricity and grid improvements to cope with more microgeneration. 	<ul style="list-style-type: none"> By end 2007. Decision sought by end 2007. From 2011. By end 2007.
Support for indigenous industry and businesses.	<ul style="list-style-type: none"> Review success of Green Energy Cluster and decide, with cluster members, the best way forward. Support companies involved with micro-heat systems, including ESCOs. Support uptake of microgeneration in key Welsh business sectors. 	<ul style="list-style-type: none"> By end 2007. 20,000 micro-heating systems installed by 2012; Double the number of energy supply contracts between 2008 & 2012. Sector related targets identified by end 2007.
Exemplar projects	<ul style="list-style-type: none"> Assess potential for microgeneration in Welsh Government Estate. Demonstrate potential for microgeneration in new developments on WAG-owned land. Microgeneration technology in more schools and HE facilities. Exemplar installations in public sector funded buildings. Demonstration of microgeneration technologies. 	<ul style="list-style-type: none"> Assessment report by March 2008; implementation by 2010. Major demonstration by 2009. Plans, with costs, by end 2007. Systems in place by 2009. 50 public sector buildings with microgeneration by end 2012. 10 demonstration events organised by 2012.
R&D	<ul style="list-style-type: none"> Formation of new low-carbon research institute. Coordination of research effort on microgeneration and storage technologies Commercialisation of new microgeneration technologies. 	<ul style="list-style-type: none"> By 2008. Demonstrated progress by 2010 Range of advanced technologies in commercial development by 2015.

1. Introduction

The aim of the action plan is to increase significantly the installation in Wales of effective, reliable and affordable microgeneration systems for the production of local energy; that is, heat and/or electricity for homes, groups of buildings, communities and small businesses.

A draft version of the action plan was put out to consultation in 2006 and resulted in 50 detailed responses¹. The final action plan is based on issues emerging from an assessment of the responses and on the continued dialogue with key stakeholders across Wales and in the UK Government. There was general consensus that the following key points needed to be addressed:

- a) Financial incentives to encourage production and consumption.
- b) A suite of measures to help achieve economies of scale.
- c) Public sector to lead by example and drive progress.
- d) Government to set targets and maintain progress towards them.
- e) Energy efficiency and microgeneration to be considered together.
- f) Awareness raising to be useful, resourced and comprehensible.
- g) Provision of clear consistent data which is independently verified.
- h) Utilisation of existing initiatives and organisations.
- i) Removal of bureaucratic barriers to installation and uptake.
- j) Education and training.
- k) Improvement of grid infrastructure.
- l) Support for community projects.

We intend to use a definition for microgen that will not limit application to just one building; technologies appropriate for a small district scheme or a collection of buildings are also to be encouraged. Hence we will adopt the definition used in the GB Microgeneration Strategy ‘Our Energy Challenge’²: Microgeneration is defined as *the production of heat and/or electricity on a small-scale from a low carbon source*.

The suite of technologies caught by this definition includes solar (photovoltaics and thermal), micro-wind, micro-hydro, heat pumps (air, water and ground-source), biomass, micro combined heat and power units, and small-scale fuel cells.

The aspirations in this action plan are consistent with those in the Assembly Government’s Sustainable Development & Spatial Plan and the aspiration for all new buildings in Wales to be zero carbon from 2011. The plan is also consistent with the GB Microgeneration Strategy’s aim “to create conditions under which microgeneration becomes a realistic alternative or supplementary energy generation source for the householder, for the community and for small businesses”

¹ A summary of the responses to the consultation document is available at www.wnergysavingwales.org.uk

² DTI Microgeneration Strategy: Our Energy Challenge, March 2005

2. Background and context

2.1 Energy Route Map for Wales

It is expected that the new Welsh Assembly Government will publish a Wales Energy Route Map which was the subject of extensive consultation in 2005/2006. This should explain in detail the goals for Wales across a wide spectrum of energy and energy efficiency matters including a strong role for microgeneration of heat and electricity.

2.2 Need for a microgeneration action plan

Some of the key reasons for promoting microgeneration are that it can:

- reduce the amount of carbon emissions associated with heat and electrical power needs of properties
- avoid power losses along the electricity grid (i.e. the 1.5% of loss in the transmission system and 5.7% on the distribution networks³)
- encourage a change of culture and habits
- ease pressure on distribution networks
- have a significant impact on the way power is generated and used
- reduce the need for new generating stations to meet the predicted energy gap as old nuclear and coal plants come to the end of their operating life
- have the potential to generate employment via production, installation and maintenance and, for biomass, employment opportunities from growth, processing and distribution of wood and energy crops
- have the potential to encourage innovation leading to intellectual property generation and in turn potential economic growth through commercialisation of the intellectual property

2.3 Links to other strategies and plans

The action plan is intended to be compatible with the DTI Microgeneration Strategy “Our Energy Challenge” (March 2006), which sets out the strategy and policy context for Great Britain, as well as examining the key market objectives for microgeneration and the support required to achieve them.

It also aims to contribute to other policies and strategies of the Welsh Assembly Government; in particular:

- Welsh Assembly Government’s sustainable development action plan which states, as a top ten commitment, that the Assembly Government and its agencies will encourage the development of an indigenous microgeneration “renewable” industry in Wales, with a particular focus on opportunities for small and medium enterprises.
- Welsh Assembly Government’s environment strategy.
- Energy Saving Wales.
- W:AVE Wales a Vibrant Economy.
- People Places Futures, Wales Spatial Plan.
- Turning Heads, a Strategy for the Heads of the Valleys 2020.
- Property Strategy for Employment in Wales.
- Planning Policy Wales.

³ UK Parliament, Select Committee on Trade and Industry First Report, 30 January 2007

To achieve the goals of this plan will require leadership by governments at UK, Wales and local levels. It will also require close liaison with universities, voluntary bodies, the building industry, and the manufactures and installers of appropriate technology. Crucially, it will depend on the decisions of individuals, so it is essential that clear information and advice is readily available from the Carbon Trust, the Energy Saving Trust and other authoritative sources.

2.4 **Support**

2.4.1 Low Carbon Building Programme

Phase one of the DTI's low carbon buildings programme was launched on 1 April 2006 and will run over three years; it replaces the previous DTI Clear Skies and Solar PV grant programmes. Open to householders, public, not for profit and commercial organisations across the UK (except the Channel Islands and the Isle of Man), the programme will demonstrate how energy efficiency and microgeneration can work hand in hand to create low carbon buildings. Two streams of grants are available under phase one of the programme, making available some £30 million in total.

Stream one: for householders and community organisations.

Stream two: for medium and large microgeneration projects by public, not for profit and commercial organisations.

Phase 2 of the Low Carbon Building Programme opened in December 2006 and provides grants for the installation of microgeneration technologies to public sector buildings (including schools, hospitals, housing associations and local authorities) and charitable bodies. The second phase makes a further £50 million available.

Grants are available for the supply and installation of any combination of the following technologies:

- solar photovoltaics
- solar thermal hot water
- wind turbines
- ground source heat pumps
- automated wood pellet stoves
- wood fuelled boiler systems

Organisations can receive up to £1 million in grant funds over the lifetime of the programme. This may be for multiple technologies at multiple sites, subject to a maximum of three eligible technologies per site, and through more than one application.

2.4.2 European Funds

Wales will benefit in the period 2007 to 2013 from allocation of EU Convergence Funds in West Wales and the Valleys, and EU Regional Competitiveness and Employment Funds in East Wales.

The strategy for the Convergence region will focus on promoting a sustainable economy by increasing employment, in particular by reducing economic inactivity; by creating a favourable business environment; by supporting the key drivers of productivity growth, particularly innovation, entrepreneurship, skills, investment and trade; by developing more sustainable integrated transport and ICT systems that give people and businesses better access to jobs, services and markets; and by building sustainable communities.

The strategy for East Wales will focus on improving competitiveness through investments in the knowledge economy by fostering research, technology and innovation; enhancing the environment; promoting accessibility and raising skills.

The Assembly Government will seek to use both funds to promote relevant microgeneration projects in each of the six categories of activities identified in this action plan.

2.4.3 Skills support

As exemplified by DELLS support for developments at Sharp, Wrexham, the Assembly Government will work closely with the relevant sector skills councils to seek opportunities for focussed support for skills developments across the whole spectrum of microgeneration systems R&D, manufacture and installations.

2.4.4 Other sources of funding in Wales

Businesses, communities and householders in Wales can access various sources of funds to support energy efficiency activities and microgeneration projects. These are listed in the funding directory in the appendix to this document.

3. Actions required in Wales

This chapter sets out the actions that, taken together, are needed to significantly increase the number of microgeneration installations in Wales.

3.1 Increasing information and knowledge

3.1.1 Public awareness campaign

There is a need for active promotion of the importance of minimising carbon emissions in our homes and businesses so the Assembly Government will launch a public and business awareness campaign to draw attention to the global and local threats posed by climate change and to ways to help mitigate these threats. The campaign will encourage people to reduce energy consumption, to improve the energy efficiency of their homes and businesses, and to learn more about microgeneration technologies.

- 3.1.2 Information on microgeneration technologies
 A basic overview of microgeneration technologies is provided in Technical Advice Note 8 on Renewable Energy⁴. In addition, the Welsh Assembly Government has produced an internet portal which guides those interested in finding out more about energy efficiency and renewable energy to authoritative websites run by other organisations. (www.energysavingwales.org.uk). The portal has recently been updated to enhance its usefulness; feedback from users will continue to be monitored to guide further improvements in future.
- 3.1.3 Establishment of advice network
 The awareness campaign and portal will encourage people to seek specialist advice on which microgeneration technologies are most suited for their location and needs. The Assembly Government will, therefore, support a professional, readily available advice service covering energy efficiency and microgeneration technologies with links to authoritative information such as the best practice guides produced by the Energy Saving Trust.

Table 1. **Actions on increasing information and knowledge**

Action	Target/timescale	Key players	Sources of support ⁵
Launch a clearly branded campaign to draw the attention of the public, communities and businesses to climate change issues, and to the availability of practical mitigating measures they can take.	Raised awareness of climate change by end 2007 and realisation that everyone can help to mitigate the effects.	WAG, EST, CT.	WAG, Defra.
Promote existing website portal on energy efficiency and microgeneration, and continue to monitor the number of contacts and their comments.	Average number of monthly contacts to double between 2007 and 2009, with most contacts expressing satisfaction at service.	WAG, CT, EST.	WAG.
Establish a Sustainable Energy Network in Wales.	Network operating by December 2007.	WAG, CT, EST.	WAG, Defra.

3.2 **Expanding technical and professional skills**

- 3.2.1 Education in schools and colleges
 The national curriculum should cover climate change and actions that individuals can take to reduce the emission of greenhouse gasses. In addition, HE/FE colleges and professional institutions should include micro- and local-generation in relevant course structures. Industry has a crucial role in generating the demand for such courses by advocating for and practicing recruitment of a qualified workforce. There is also a

⁴ Technical Advice Note (TAN) 8: Planning for Renewable Energy; Welsh Assembly Government, July 2005

⁵ Support can involve advice, guidance, collaboration, policy initiatives or financial assistance.

need for industry to provide work-based learning providers on these issues.

3.2.2 Vocational training

Vocational education and training is becoming more demand-led. There is a need for Sector Skills Councils, the Sector Skills Development Agency, and individual employers to take account of the need for microgeneration-related skills when reviewing and developing occupational standards and vocational qualifications.

A workforce of qualified and accredited installers and advisors will enhance consumer confidence, as well as improve the reliability and longevity of installed technologies. There is a need to encourage uptake of best practice, such as EST's requirement that all its EEAC advisors have a basic minimum of an NVQ in energy awareness.

New initiatives on this issue need to take account of the progress to date; for example, the progress achieved through training courses organised by the Centre for Alternative Technologies in Machynlleth.

3.2.3 Training for planners, architects and surveyors

We need to ensure that unnecessary barriers to the installation of microgeneration are removed. Clear information and training is needed by planners, planning committees, and others involved in the design and specification of buildings to make sure that the outcomes required from new planning guidance are not lost.

Table 2. **Actions on expanding technical and professional skills**

Action	Target/timescale	Key players	Sources of support ⁵
Incorporate climate change and the benefits of low-carbon energy into the national curriculum, HE/FE courses and work-based learning.	Bilingual courses to be available to schools in Wales by 2008. Appropriate courses in other institutions by 2008.	DELLS, DTI, HE and FE institutions, industry.	WAG.
Scope the current demand for courses available to those involved in providing advice on, and installing, microgeneration systems and expand supply as necessary.	100% increase in the number of people gaining energy related qualifications per year between 2007 and 2012.	Sector Skills Councils, the Sector Skills Development Agency, industry, HE and FE institutions, WAG (DELLS), Carbon Trust and Value Wales, professional institutions	WAG, EU Convergence Funds.
Provide advice and training on microgeneration technology and relevant government policies for those involved with planning regulations.	All planning officers following new Assembly Government guidance on microgeneration systems by the end of 2007.	WAG, LAs, Carbon Trust, CAT, professional institutions.	WAG, LAs.

3.3 **Overcoming barriers**

Barriers to the uptake of microgeneration technologies in Wales were identified, in responses to the Assembly Government's 2006 consultation, as: planning application delays, unsupportive building regulations, and difficulties in receiving fair payment for exported electricity. The long payback period for investment in microgeneration technology has also been identified as a barrier. The Assembly Government anticipates that the measures identified throughout this action plan to increase the uptake of microgeneration systems will help to reduce their cost through economies of scale.

3.3.1 Planning issues

Planning policy affects all buildings, including public ones. The Assembly Government's current consultation documents on planning and climate change outline how to reduce the carbon emissions from new development through development plan policy and local guidance. A design statement will be required to accompany planning applications identifying issues such as energy efficiency and passive solar gain. The Assembly Government is also currently looking at draft legislation to ensure planning permission is not required unnecessarily for micro-generation technologies.

3.3.2 Building regulations

The Assembly Government's aspiration is that all new buildings in Wales from 2011 onwards should be built to zero carbon standards. To show its commitment to making this vision a reality, over the next 6 months the Assembly Government is going to make BREEAM 'Excellent' or equivalent a core condition of its funding for projects and programmes involving new buildings, and a core condition of land disposals for development.

The Assembly Government will also seek devolution of building regulations so as to allow it to prescribe a standard framework, including zero carbon, for all buildings whatever their source of funding and which is tailor made for Wales.

3.3.3 Payments for exported electricity

Although payments under the renewable obligation mechanism is available to people generating electricity from microgeneration systems there is a need to introduce a system of fair payment for electricity exported to the grid. Such payments have helped to accelerate the uptake of micro-electricity systems in Germany and other countries. The Welsh Assembly Government will keep in close contact with DTI on this issue and on improvements to the grid to cope with increasing numbers of microgenerators exporting electricity.

Table 3. **Actions on overcoming barriers**

Action	Target/timescale	Key players	Sources of support ⁵
Appropriate extension of permitted development rights.	A change of permitted development regulations by 2008 so as to include certain microgeneration technologies (e.g. PV and solar thermal).	WAG, LAs.	WAG (internal staff resources).
Make BREEAM 'Excellent' or equivalent a core condition of WAG funding for projects involving new build. Seek devolution of building regulations.	More WAG control over energy efficiency of buildings and application of microgeneration. Decision on building regulations by end 2007. All new buildings in Wales to be zero carbon from 2011.	WAG, UK Government.	WAG.
Work with DTI on issues related to payment for electricity exported from microgeneration systems and on grid improvements to cope with more exporters.	Clear guidance on grid connection and payment structure by end of 2007.	DTI/Ofgem; service companies aggregating customers' output for ROC reward purposes.	Revised Ofgem rules by 2010 (to be considered as part of the next distribution price control review).

3.4 **Support for indigenous industry and businesses.**

3.4.1 Green Energy Cluster

The Welsh Assembly Government's environmental goods and services innovation programme has funded a project to offer support specifically designed for businesses involved, or seeking to become involved, in the small scale renewable energy sector. This project has established an industrial development group known as the 'Green Energy Cluster' which all relevant companies and organisations have been invited to join. This keeps members up to date with the latest business opportunities in the renewable energy sector including forthcoming industrial events and new legislation. It also provides companies with opportunities to network with other businesses.

There is a need to assess the benefits of progress to date and to decide, with cluster members, the best way to proceed.

3.4.2 Support for micro-heat

Micro-heat systems include solar thermal systems, biomass boilers and ground- and air-source heat pumps, all of which can provide effective replacement for fossil fuel as the energy source for water and space heating. Opportunities will be sought to support an indigenous micro-heat industry and supply chains, for example through support for the

installation and manufacturing companies, and through the proposed advice network.

Energy Service Companies would benefit from an increase in district heating schemes and from installation of more biomass heating or CHP systems in public buildings.

3.4.3 Support for key business sectors

In its strategy for economic development (Wales: a vibrant economy, W:AVE), the Assembly Government outlined high-growth areas that are important for the future of the Welsh economy. Microgeneration technologies are likely to provide particular value to the following sectors:

- **Construction**, where microgeneration could help ensure compliance with: the Sustainable Development & Spatial Plan, BREEAM excellent ratings to new houses, and the aspiration for new buildings to be zero carbon from 2011.
- **Hospitality, leisure and tourism**, where benefits could arise from installing solar thermal on hotels and campsites, or from biomass heating.
- **Social health care**, which would benefit from replicating, in the private sector, initiatives of the Welsh Health Estates.

The Welsh Assembly Government will target these specific sectors in its awareness-raising campaigns and education / training programmes.

Table 4. **Actions in support of indigenous industries**

Action	Target/timescale	Key players	Sources of support ⁵
Review success of Green Energy Cluster and decide, with Cluster members, the best way forward.	Participating companies report additional success as a result of involvement in GEC.	Businesses, CBI, Trade Unions, etc; Defra, DTI, WAG including Value Wales.	WAG (EIN) support for environmental goods and services companies' growth. EU Convergence Funding.
Support companies manufacturing and installing microgeneration heat systems. Identify, with the help of LAs and communities, suitable locations for district heating schemes.	20,000 micro-heating systems installed by 2012. Double the number of energy supply contracts between 2008 and 2012.	Private sector, LAs, householders, energy suppliers/EEC, EST/CT/WAG/Defra/DTI.	WAG, including support for skills and supply chain developments; European Convergence Funding.
Support key business sectors.	Sector related targets to be developed by end 2007.	WAG, CT, Universities, construction industry, hospitality sector, social care.	WAG; business sectors.

3.5 **Exemplar projects**

3.5.1 Welsh Assembly Government estate

Incorporating microgeneration technologies into buildings in the Welsh Assembly Government estate, including the Welsh Health Estates, has many benefits: it reduces carbon emissions, helps generate interest in the technology, helps develop an indigenous industry in Wales and, over time, saves money. Examples of good practice are already to be found around Wales, including the new Welsh Assembly Senedd in Cardiff Bay and in the Welsh Health Estate where continued improvement in energy performance is being achieved through use of £3.1million fund allocated to the NHS Trusts in Wales.

Plans have been developed for the new Assembly Government office in Aberystwyth to be heated by locally produced biomass and there is a commitment to consider renewable energy sources for all new and refurbished WAG buildings.

A range of microgeneration technologies is already being utilised across the NHS Wales Estate. These include biomass boilers, combined Heat and Power installations, and a large photovoltaic array.

Further assessments of the opportunities for installing microgeneration on the Welsh Assembly Government estate will be undertaken and a report produced by March 2008 identifying appropriate plans for implementation by the end of 2010.

3.5.2 Major Regeneration projects

The Heads of the Valleys Strategy, ‘Turning Heads...’, was launched by the Minister for Enterprise, Innovation and Networks, Andrew Davies AM, in June 2006 to help tackle the issues faced by the Heads of the Valleys communities. The Minister announced £140 million of extra funding over the 15 year life of the programme, to involve all key stakeholders in the on-going regeneration of the Heads of the Valleys, within the overall context of the Wales Spatial Plan.

The geographical area covered by the Programme incorporates a large proportion of social housing, approx 41,000 units, affected by the Welsh Housing Quality Standard (WHQS 2012). Many of these do not have provision for full heating and are poorly insulated – a large percentage being of single stone wall construction.

It is the intention to maximise the impact of the implementation of the standard in as many ways as possible, including where feasible, microgeneration.

In addition to improving heating facilities and increasing energy efficiency, the Welsh Assembly Government would like to incorporate microgeneration systems into these homes where appropriate, or to make use of larger scale local renewable energy technology. It is

envisaged that, due to the large number of homes to be upgraded, there could be opportunities for companies to be established locally for the manufacture, installation and maintenance of the microgeneration equipment, supporting the economic growth objectives of the Heads of the Valleys strategy.

3.5.3 Projects on Assembly Government owned land

Even though building regulations are not currently devolved to the Welsh Assembly Government, the Assembly Government can still ensure that low-carbon buildings are constructed on land it owns by specifying requirements for energy efficiency and microgeneration in the conditions of sale of the land. An example of good practice is the development at the former steel works site at Ebbw Vale in a partnership between the Welsh Assembly Government and Blaenau Gwent County Borough Council. An energy strategy for the development has been devised, demonstrating how projects can move towards being carbon neutral over time; this will establish a model for other developments.

3.5.4 Schools and Higher Education facilities

School buildings serve as focal points for communities and especially households with school-age children. The adoption of appropriate microgeneration systems in schools is, therefore, a clear demonstration and constant reminder of the potential benefits of the technology. Monitoring of the systems by teachers and pupils also re-enforces information in the national curriculum on renewable energy and climate change. An opportunity exists for Local Authorities to seek LCBP funds to help install microgeneration technology in schools.

Many Higher Education estates are already pursuing renewable energy options. For example:

- the University of Wales Aberystwyth has engaged an energy consultant with assistance from the Carbon Trust to examine possible use of renewable energy - in particular wind turbines and wood-chip boilers;
- University of Wales Institute Cardiff has solar water heating on two residential blocks, each accommodating about 70 students. It is also installing a ground source heat pump in its new Food Industry Research Centre.

These and similar projects need to be promoted so as to encourage others to follow suit.

3.5.5 Other public buildings

There are good examples of Local Authorities incorporating microgeneration technologies into their buildings, e.g. in Pembrokeshire where the County Council has installed six biomass wood fuelled boilers in various schools and a leisure centre which together can provide up to 550kW of heat energy. There is a need to facilitate the sharing of best practice among Local Authorities.

3.5.6 Demonstrations

Demonstration of microgeneration technologies at high-profile events which are partially sponsored by the Welsh Assembly Government can raise public awareness of the technologies and demonstrate commitment to progress to a low-carbon energy economy.

Table 5. **Actions on exemplar projects**

Action	Target/timescale	Key players	Sources of support⁵
Undertake an assessment of all buildings on the WAG estate, including the Welsh Health Estate, to see which could benefit from microgeneration technologies.	Assessment report to be completed by March 2008 and plans implemented by 2010.	Companies, property developers, public sector, CT Partnership for Renewables, EST, WAG, WHE.	LCBP; WAG.
Demonstrate the potential for microgeneration in proposed developments on WAG-owned land.	By 2009, a major demonstration site with chp and/or district heating commissioned.	Private sector, EST, LAs, ESCos, CT – Connective Energy; NGT/DNOs/SMEs.	LCBP, WAG.
Introduce microgeneration technology to more schools and HE facilities.	Detailed plans, with costs, to be drawn up by December 2007. Systems to be installed by 2009.	WAG, LAs, WLGA, CT, EST.	LCPB, WAG.
Incorporate exemplar installations into public sector funded buildings such as business parks, hospitals and offices.	50 public sector buildings with microgeneration by end 2012.	CT, EST, BRE, Framework suppliers within LCBP.	LCPB.
Demonstration of microgeneration technology at schools and other facilities, and at high profile public events such as the Ryder Cup, Eisteddfodau, and agricultural shows.	At least 10 demonstration events organised by 2012.	WAG, CT, EST.	WAG, event organisers, CT, EST, LAs.

3.5 **Research and Development**

3.6.1 Low-carbon energy systems and energy storage

Pursuit of low-carbon energy systems is among the three main strands of a proposed science policy for Wales (the others are associated with health developments and enabling sustained economic and social renewal). An opportunity exists to build on the work of OpTIC Technium and CAT, and the formation of the Welsh Energy Research Centre and, it is hoped, a major new low carbon research institute in

Wales, to undertake much more research into renewable energy, including microgeneration, and energy efficiency. It is proposed that research on the storage of electricity and heat should also be undertaken with the aim of maximising the benefits of microgeneration systems.

3.6.2

Commercialisation of good new microgeneration concepts

The microgeneration sector has potential for high growth and Techniums offer the ideal environment for young companies to commercialise microgeneration concepts. Each Technium provides high quality office space along with access to business and technical support and direct links with academia. The sector focus of the Sustainable Technologies Technium and the Pembrokeshire Technium could help establish a cluster of companies involved in the microgeneration sector.

The ECM² building in Port Talbot will have the ability to incorporate novel microgeneration technologies on a demonstration basis ('plug and play' within the building management system). This will also allow local developers to prove their technology and thereby help develop microgeneration businesses in Wales.

There is also innovation funding available through EIN innovation support for individuals and companies of all sizes that are located in Wales. Grants cover:

- Technical and commercial feasibility - to assess the viability of turning innovative ideas into new products, processes or technologies
- Industrial research - practical research to help prove the concept
- Pre-competitive development or design and development - to develop and test a prototype or pilot scale process
- Exploitation - to assist with commercial exploitation costs.

Table 6. **Actions in support of R&D**

Action	Target/timescale	Key players	Sources of support⁵
Co-ordinated research into microgeneration and maximisation of its benefits through better means of storing electricity and heat.	Formation of a new low carbon research institute by 2008. Significant research progress by 2010.	WERC; Universities, CT - Innovation, Defra/DTI/WAG. EPSRC (Supergen).	WAG R,D&D financial and demonstration support, EU Convergence Funds.
Commercialisation of new microgeneration technologies and appropriate research innovations; e.g. next generation PV.	By 2015 range of advanced technologies in commercial development.	Technium Sustainable Technologies and Technium Pembrokeshire, Companies, CT, universities, WERC, ESCos, EPSERC (Supergen).	EU Convergence Funds, EU (FP7), DTI/WAG (EIN) support.

4. Specific challenges

4.1 Fuel poor houses

The Assembly Government's Fuel Poverty Commitment sets out our strategy for tackling fuel poverty in Wales. A household is in fuel poverty if, in order to maintain a satisfactory heating regime, it would have to spend more than 10% of its income on all household fuel use.

The 2004 Living in Wales survey estimated that there were 130,000 households in Wales in fuel poverty. A further analysis of the survey, setting out the characteristics of these households is expected to be published in summer 2007. This will be followed by the development of a local area fuel poverty indicator, which should assist national and local government in identifying areas with the highest concentration of fuel poverty.

This situation often affects the most disadvantaged members of society, such as the elderly, benefit dependant families, the sick and the disabled, with associated problems for health and general well being. The Assembly Government's first priority is to assist vulnerable households, and has made an extra £5m available to pensioners through the Home Energy Efficiency Scheme in both 2006/07 and 2007/08.

Microgeneration technology might help alleviate fuel poverty in some limited situations. However, given that many households in fuel poverty live in homes with a poor standard of energy efficiency, activity is likely to remain focused on installing cost effective energy efficiency measures wherever possible.

The Assembly Government has carried out, in partnership with social housing providers, some piloting of renewable energy solutions for vulnerable hard to heat households. A full scoping study will be carried out to fully assess the cost effectiveness and practicability of introducing renewable and alternative solutions into the Home Energy Efficiency Scheme.

Defra is expected to commence statutory consultation on proposals for the next phase of the energy suppliers Energy Efficiency Commitment in late spring 2007. In their initial proposals for EEC Phase 3 (2008-2011), Defra has set out the intention to move from an energy savings to a carbon savings target. This would enable suppliers to gain credit for installing measures for increasing the amount of electricity or heat produced by microgeneration. Experience gained from such installations, especially in hard to heat homes, will be monitored. It is likely, however, that for the foreseeable future EEC will remain primarily focused on delivery of the most cost effective energy efficiency measures in the household sector.

4.2 Locations off gas-grid

One third of Wales' population of 2.9 million live in the predominantly rural areas of central and west Wales. Many of these rural areas have no access to mains gas and may also be more susceptible to electricity power cuts in adverse weather. Pilot projects under the HEES and the Heads of the Valleys programmes will help to indicate appropriate microgeneration technologies for

such locations. As with other initiatives, a community focus may be the appropriate way forward in some situations.

Table 7. **Actions in priority areas**

Action	Target/timescale	Key players	Source of support⁵
A pilot project, associated with HEES, is assessing the potential benefits of incorporating microgeneration technologies into fuel-poor houses.	Contribution to abolishing fuel poverty in Wales by 2012.	Energy suppliers and WAG.	WAG HEES and Community First programmes.
Assess areas off gas main to determine potential benefits of microgeneration.	10% of houses off gas mains to have microgeneration system installed by 2020.	WAG, EST, Advice network.	LCBP, WAG.

5. Relevant actions in the GB microgeneration strategy

The Assembly Government will contribute, as appropriate, to the following DTI and Defra actions from the GB microgeneration strategy as these have relevance to the uptake of microgeneration technology in Wales:

- Further research into consumer behaviour and, in particular, what drives early-adopter purchase decisions.
- A communications package, including information packs, to help develop a knowledge base within the construction industry.
- Energy suppliers to develop a scheme that will reward those microgenerators exporting excess electricity.
- Possible inclusion of electricity generating technologies (other than microchip) within the framework of the 3rd phase of EEC.
- Establishment of an accreditation scheme covering products, installers and manufacturers - to provide consumers with an independent indication of reliability and a route for complaints. (This will build on the existing Clear Skies and Solar PV accreditation schemes)
- Ensuring that network and market systems are able to cope with growing numbers of microgenerators exporting electricity.
- Ensuring that there is a straightforward process for network connection for electricity producing microgeneration technologies below a certain size (16A per phase). There is a need to ensure that any changes made to provide better access for microgeneration is done in a manner which does not reduce safety levels.

- Possible field trials that bring together smart meters and microgeneration
- Overcoming barriers faced by small generators when connecting to the distribution network.
- Development of a route map for each microgeneration technology.

6. Targets for the microgeneration of electricity and heat

The future uptake of microgeneration technologies is difficult to predict as it depends on many variables, such as: the state of the technology, payback periods, grant schemes, price of electricity and gas, payment for exported electricity, planning guidance, building regulations, ease of installation, rules for grid connection, concern about climate change, energy security and future energy prices. However, there was a strong call in the responses to the Assembly Government’s consultation on microgeneration for targets to be identified so as to demonstrate commitment to market growth.

The Assembly Government commissioned the EST in January 2007 to produce a report on the potential for microgeneration in Wales. Their study and analysis covered PV, wind, GSHP, biomass for heating, active solar (solar thermal), CHP, and fuel cells, and looked at the difference in uptake under different support mechanism:

- with no subsidy
- a tariff of 10p/kWh for exported electricity
- LCBP at 30% with no cap, and
- with regulation affecting all new build.

The biggest impact on uptake was shown to be regulation.

Compiling the EST predicted uptake for all micro-heat and for all micro-electric technologies gives the rounded numbers shown in table 8:

Table 8. **EST estimates of potential for micro-heat and micro-electricity systems in Wales with regulation affecting all new build**

Year	Number of installed micro-heat generation systems	Number of installed micro-electricity generation
2012	38,700	750
2020	89,200	197,000

The Assembly Government's assessment of the number of installed microgeneration systems is similar, as shown in table 9:

Table 9. Assembly Government targets for microgeneration

20,000 micro-heat systems installed by 2012; of the order of 100,000 by 2020.
10,000 micro-electricity systems installed by 2012, of the order of 200,000 by 2020.
50 chp and/or district heating systems in place by 2020.

If the Assembly Government's targets on installations are realised, the anticipated reduction in carbon emissions per year in Wales would be of the order of 0.1 million tonnes in 2020.

These targets are somewhat more cautious than the EST predictions for the number of micro-heating systems installed by 2012 due to some concerns about the speed of introduction of micro-CHP technology. However, the ambitions for the uptake of micro-electricity systems by 2012 are significantly higher than EST predictions because of the strength of PV expertise in Wales (e.g. at Sharp, G24i, installation companies and universities).

The installation of both micro-heat and micro-electricity systems will be spurred on by recent and planned initiatives of the Assembly Government, in particular:

- proposed regeneration work in the Heads of the Valleys
- developments on Assembly Government owned land
- new planning guidance for microgeneration systems
- aspirations for all new buildings to be zero carbon by 2011.

7. Summary of actions and timing

Category	Proposed actions	Timing
Increasing information and knowledge.	<ul style="list-style-type: none"> • Public awareness campaign. • Portal improvements. • Establishment of a Sustainable Energy Network in Wales. 	<ul style="list-style-type: none"> • By end 2007. • 2007 – 2009 (ongoing). • By end 2007
Expanding technical and professional skills.	<ul style="list-style-type: none"> • School curriculum and HE/FE courses to include more on climate change and benefits of low-carbon energy; industry to create a demand for related qualifications. • Expand, as necessary, courses to those providing advice and installing microgeneration systems. • Provide advice and training to those involved with planning regulations. 	<ul style="list-style-type: none"> • By end 2008. • 100% increase in number of people gaining energy related qualifications per year between 2007 & 2012. • By end 2007.

Category	Proposed actions	Timing
Overcoming barriers.	<ul style="list-style-type: none"> • Appropriate extension of permitted development rights. • Seek devolution of building regulations. • New buildings in Wales to be zero carbon • Work with DTI on payment for exported electricity and grid improvements to cope with more microgeneration. 	<ul style="list-style-type: none"> • By end 2007. • Decision sought by end 2007. • From 2011. • By end 2007.
Support for indigenous industry and businesses.	<ul style="list-style-type: none"> • Review success of Green Energy Cluster and decide, with cluster members, the best way forward. • Support companies involved with micro-heat systems, including ESCos. • Support uptake of microgeneration in key Welsh business sectors 	<ul style="list-style-type: none"> • By end 2007. • 20,000 micro-heating systems installed by 2012; Double the number of energy supply contracts between 2008 & 2012 • Sector related targets identified by end 2007
Exemplar projects.	<ul style="list-style-type: none"> • Assess potential for microgeneration in Welsh Government Estate. • Demonstrate potential for microgeneration in new developments on WAG-owned land. • Microgeneration technology in more schools and HE facilities. • Exemplar installations in public sector funded buildings. • Demonstration of microgeneration technologies. 	<ul style="list-style-type: none"> • Assessment report by March 2008; implementation by 2010. • Major demonstration by 2009. • Plans, with costs, by end 2007. Systems in place by 2009 • 50 public sector buildings with microgeneration by end 2012. • 10 demonstration events organised by 2012.
R&D	<ul style="list-style-type: none"> • Formation of new low-carbon research institute. • Coordination of research effort on microgeneration and storage technologies • Commercialisation of new microgeneration technologies. 	<ul style="list-style-type: none"> • By 2008. • Demonstrated progress by 2010. • Range of advanced technologies in commercial development by 2015.

8. Monitoring implementation of the Action Plan

A subgroup of the Wales Energy Forum will be established to oversee, alongside officials from different departments within the Welsh Assembly Government, the implementation of the actions contained in this plan. The subgroup will report to the Minister for Enterprise, Innovation and Networks in March 2008 on progress in 2007 and on the predicted progress to 2012 and beyond.

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Glossary

BREEAM:	BRE Environmental Assessment Method
CAT:	Centre for Alternative Technology
CBI:	Confederation of British Industry
CHP:	Combined Heat and Power
CT:	Carbon Trust
Defra:	Department of Environment, Farming and Rural Affairs
DEIN:	Department for Enterprise, Innovation and Networks (WAG)
DELLS:	Department for Education, Lifelong Learning and Skills
DTI:	Department of Trade and Industry
DNO:	Distribution Network Operator
ECM ² :	A centre for manufacturing research and development
EEAC:	Energy Efficiency Advice Centres
EEC:	Energy Efficiency Commitment
EGS:	Environmental Goods and Services
ESCO:	Energy Services Company
EPSRC:	Engineering and Physical Sciences Research Council
EST:	Energy Saving Trust
FE:	Further Education
GEC:	Green Energy Cluster
GSHP:	Ground Source Heat Pump
HE:	Higher Education
HEES:	Home Energy Efficiency Scheme
LAs:	Local Authorities
LCBP:	Low Carbon Building Programme
NFP:	Not for profit organisations
NGT:	National Grid Transco
NVQ:	National Vocational Qualification
Ofgem:	Office of Gas and Electricity Markets
OpTIC:	Opto-electronics Technology and Incubation Centre
ROCs:	Renewable Obligation Certificate
SMEs:	Small to Medium size Enterprise
SSC:	Sector Skills Council
Supergen:	Sustainable Power Generation and supply
TAN:	Technical Advice Note
TUC:	Trade Union Congress
WAG:	Welsh Assembly Government
WERC:	Welsh Energy Research Centre
WHE:	Welsh Health Estates
WLGA:	Welsh Local Government Association

APPENDIX: FUNDING DIRECTORY FOR WALES

FUNDING for BUSINESS

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The Welsh Assembly Government is not responsible for the content of external internet sites.

Fund Name & Type	Website Details	Contact / Telephone	Managing Organisation	Criteria for Applicants	Amount of Funding	Time-scale
Energy-Efficiency Loan	www.thecarbontrust.co.uk/loans	<i>Tel:</i> 0800 0852005	Carbon Trust	SMEs wishing to invest in energy saving equipment that either upgrades or replaces existing facilities	Interest-free loans of £5- £100k.	Ongoing
Environmental Improvement Grant	www.arenanetwork.org/services/grants.asp	Green Dragon Arena Network Pencoed Technology Park Pencoed CF35 5HZ <i>Tel:</i> 08700 130014 <i>e-mail:</i> info@arenanetwork.org	Arena Network	Businesses can obtain support to assist with investing in innovative practices, processes or equipment that will help reduce environmental pollution	£300 - £5,000	Ongoing
Green Dragon Environmental Grant	www.greendragonems.com	Arena Network Groundwork Wales Ladywell House Newtown Powys SY16 1JB <i>Tel:</i> 01686 610930 <i>e-mail:</i> enquiries@greendragonems.com	Groundwork Trust	SMEs with environmental management systems in place including at least Green Dragon Level 2 or ISO 1401 or BS8555 or EMAS	Max £10k, to cover 30% of project costs	Ongoing

Fund Name & Type	Website Details	Contact / Telephone	Managing Organisation	Criteria for Applicants	Amount of Funding	Time-scale
<p>Low Carbon Buildings Programme (Replaces 'Clear Skies' and Solar PV programmes) (Grant)</p>	<p>www.lowcarbonbuildings.org.uk/home/</p>	<p>Tel: 0800 9157722</p>	<p>Energy Savings Trust (EST) & Building Research Establishment (BRE)</p>	<p>Projects for renewable technologies: renewable energy sources, energy efficiency and microgeneration.</p> <p><u>Stream</u> two- businesses, community organisations and the public sector</p>	<p>£80 million</p>	<p>The programme will run over 3 years, starting from 01/04/06</p>
<p>Environmental Fund (Previously known as Renewable Energy Fund) (Loan)</p>	<p>www.financewales.co.uk</p>	<p>Rhian Pugh- Renewable Energy Manager Finance Wales Oakleigh House Park Place Cardiff CF10 3DQ <i>e-mail:</i> rhian.pugh@financewales.co.uk <i>Tel:</i> 02920 338100</p>	<p>Finance Wales</p>	<p>SMEs wishing to develop projects involving renewable energy/energy efficiency/recyclables and providing environmental goods and services.</p> <p>Applicants must be able to demonstrate that they have a viable business which can repay the loan plus interest accrued.</p>	<p>Maximum of £150,000. In exceptional circumstances £600,000 in tranches of £150,000.</p>	<p>Investment period- up to 5yrs</p>

Fund Name & Type	Website Details	Contact / Telephone	Managing Organisation	Criteria for Applicants	Amount of Funding	Time-scale
Environmental Goods and Services (EGS)	www.wales.gov.uk/investing	Tel: 0845 010 3300- and ask for someone in the Environmental Goods and Services team in North, Mid or South Wales	Welsh Assembly Government (WAG)	Companies involved (or wishing to be involved) in the market for Environmental Goods and Services	<u>Specialist advice:</u> up to £3,000. <u>Project implementation:</u> Normally a limit of £10,000 or 50% of the costs (whichever is lowest).	Ongoing
Wood Energy Business Scheme (WEBS) (Grant)	www.woodenergybusiness.co.uk/	Mike Pitcher WEBS Manager Tel: 0845 604 0845 e-mail: mike.pitcher@forestry.gsi.gov.uk	Forestry Commission on behalf of the Welsh Assembly Government	SMEs who wish to produce, sell or supply heat from wood fuel. Projects must be located in either Objective 1 or Objective 2 (Powys) areas	Up to 40% of eligible costs	December 2007

FUNDING for COMMUNITIES

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Fund Name & Type	Website Details	Contact / Telephone	Managing Organisation	Criteria for Applicants	Amount of Funding	Time-scale
Communities First Trust Fund (Grant)	www.communitiesfirst.info/	Tel: 0800 587 8898 e-mail: enquiries@communitiesfirst.info	Communities First Support Network	Small community led organisations in Communities First areas: projects to include any that will provide economic, environmental, social or cultural benefit.	Max £5k	31/01/2007
Sustainable Development Fund (Grant)	www.peakdistrict.gov.uk/sdf.htm	Peak District National Park Authority Aldern House Baslow Road Bakewell Derbyshire DE45 1AE Tel: 01629 816312 e-mail: sdf@peakdistrict.gov.uk	Peak District National Park Authority	Any individual or organisation from the public, private or voluntary sectors, who are located within or outside the National Park boundaries. The fund supports sustainable development within all national parks and Areas of Outstanding Natural Beauty.	Community/ environmental projects: up to 75% of costs Business projects: up to 50% of costs	Until 2008, and possibly beyond

Fund Name & Type	Website Details	Contact / Telephone	Managing Organisation	Criteria for Applicants	Amount of Funding	Time-scale
<p>Low Carbon Buildings Programme (Replaces 'Clear Skies' and Solar PV programmes) (Grant)</p>	<p>www.lowcarbonbuildings.org.uk/home/</p>	<p><i>Tel:</i> 0800 9157722</p>	<p>Energy Savings Trust (EST) & Building Research Establishment (BRE)</p>	<p>Projects for renewable technologies: renewable energy sources, energy efficiency and microgeneration.</p> <p><u>Stream one</u>- home owners and community groups</p>	<p>£80 million</p>	<p>The programme will run over 3 years, starting from 01/04/06</p>
<p>WCVA Grants (Five streams)</p> <p><u>Project Grant</u></p> <p><u>Management Grant</u></p> <p><u>Start-up Grant</u></p> <p><u>Training Grant</u></p> <p><u>Pre-project Grant</u></p>	<p>www.environment-wales.org/</p>	<p>Environment Wales Baltic House Mount Stuart Square Cardiff CF10 5FH</p> <p><i>Tel:</i> 029 2043 1769</p> <p><i>e-mail:</i> info@environment-wales.org</p>	<p>Environment Wales</p>	<p>Voluntary organisations and community groups undertaking practical projects to promote sustainable improvements to the Welsh environment. Projects must be registered with Environment Wales</p>	<p><u>Project grants:</u> limit of £10,000.</p> <p><u>Management grants:</u> from £1,000 - £11,000</p> <p><u>Start-up grants:</u> limit of £1,000</p> <p><u>Training grants:</u> limit of £400</p> <p><u>Pre-project grants:</u> from £500 - £4,000</p>	<p>Maximum of 6 years</p>

FUNDING for HOUSEHOLDERS

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Fund Name & Type	Website Details	Contact / Telephone	Managing Organisation	Criteria for Applicants	Amount of Funding	Time-scale
Home Energy Efficiency Scheme (HEES) in Wales (Grant)	www.eagagroup.com/grants/index.htm	Call Centre Manager Eaga Partnership Ltd Unit 4 Ty Nant Court Ty Nant Road Cardiff CF15 8LW <i>Tel: 0800 316 2815</i>	Eaga Partnership Ltd	Householders who have a child under 16 or are pregnant, who receive an income related benefit. The grant allows for a range of energy efficient measures.	Up to £2,000	31/12/2010
Home Energy Efficiency Scheme (HEES) Plus in Wales (Grant)	www.eagagroup.com/grants/index.htm	Call Centre Manager Eaga Partnership Ltd Unit 4 Ty Nant Court Ty Nant Road Cardiff CF15 8LW <i>Tel: 0800 316 2815</i>	Eaga Partnership Ltd	Householders who are over 60, or a single parent with a child under 16, who receive a disability or income related benefit. The grants allows for a range of energy efficient measures.	Up to £3,600 or £5,000 for oil central heating.	31/12/2010

Fund Name & Type	Website Details	Contact / Telephone	Managing Organisation	Criteria for Applicants	Amount of Funding	Time-scale
Low Carbon Buildings Programme (Replaces 'Clear Skies' and Solar PV programmes) (Grant)	www.lowcarbonbuildings.org.uk/home/	<i>Tel:</i> 0800 915 7722	Energy Savings Trust (EST) & Building Research Establishment (BRE)	Projects for renewable technologies: renewable energy sources, energy efficiency and microgeneration. Stream one- home owners and community groups	£12.7 million	June 2008
Winter Fuel Allowances (Grant)	www.thepensionservice.gov.uk/winterfuel/home.asp	<i>Helpline:</i> 029 20428635	UK Government	Households with an occupant over 60	People between 60-79 will receive either £100 or £200, depending on circumstances. People over 80 get an extra £50 or £100.	The deadline for claims each year is the end of March
Working with Health Authorities	http://www.nea.org.uk	Contact local Primary Care Trust (PCT)	Local Authority/ Housing Association	Vulnerable people suffering ill health due to cold, damp homes. Energy efficient measures may be available.	Not specified	Ongoing