GET GENERATING

A Renewable Energy Guide for Rural Communities

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ACRE
Campaign to Protect Rural England
Commission for Rural Communities
Tackling rural disadvantage
NALC

?

Do you live in a rural community with limited access to mains gas?

Are you looking for alternatives to the rising costs of oil, electric heating or LPG to heat you homes and community buildings?

Are you and your community interested in becoming more self-sufficient in energy use from local renewable sources?

Are you a local councillor or involved in a local community group interested in exploring renewable energy options?

If so, then this guide is for you

It provides an overview of community based renewable energy options for rural community groups, local councils and individuals. It provides a starting point and signposts more detailed sources of advice, information and help for rural communities to get generating and take the next step in planning and delivering their own renewable energy developments.

Action with Communities in Rural England is the national umbrella body of the Rural Community Action Network (RCAN). Our members provide comprehensive support and advocacy to help rural communities take action for themselves to achieve a vibrant and sustainable future. RCAN members offer specialist expertise on community-owned assets, community-led planning and to rural challenges in the environment, housing, transport and access to services.

www.acre.org.uk

The Campaign to Protect Rural England are the champions of England's countryside. CPRE is a registered charity with over 60,000 members and supporters living in our cities, towns, villages and the countryside. We operate as a network with over 200 district groups, a branch in every county, a group in every region and a National Office all campaigning for a sustainable future for the English countryside.

www.cpre.org.uk

The Commission for Rural Communities acts as the advocate for England's rural communities, as an expert adviser to government, and a watchdog to ensure that government actions, policies and programmes recognise and respond effectively to rural needs, with a particular focus on disadvantage.

www.ruralcommunities.gov.uk

The National Association of Local Councils (NALC) represents the interests of town and parish councils in England - a total of around 8,500 councils. The councils NALC represent serve electorates ranging from small rural communities to major cities, and are all independently elected. NALC provides support and advice to our members directly through a network of county associations.

www.nalc.gov.uk

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1. Introduction

Over the last few years an increasing number of rural communities have discovered that investing in local renewable energy generation can bring big benefits to their community. Benefits range from providing a source of ongoing income, reducing energy bills, providing a focus for community regeneration and helping to reduce carbon emissions. Examples of communities who have done this are highlighted throughout this guide and many more examples can be found on the linked websites in the appendix.

Wood Pellet Boiler Wenhaston Village Hall, Suffolk

A typical community renewable project might be the installation of solar water heating panels on a community leisure centre or school, the replacement of an old oil fired boiler with a wood pellet boiler in a village hall or perhaps the organisation of a local solar panel buying club. Larger projects could see community ownership of wind turbines sited appropriately within the landscape and with wide community support or a shared biomass heating system for a cluster of houses that are not connected to mains gas.

Community projects can share the benefits and income from renewable energy generation, whilst at the same time sharing the responsibility and workload. Utilising local renewable energy sources also provides communities with insurance against rising costs of fossil fuels and an opportunity for communities to work together towards a mutually beneficial goal, creating connections that can stimulate wider community collaboration in the future. By taking control of and having a stake in energy generation, communities can make a tangible contribution to a more sustainable future for their community alongside contributing to national and global efforts to tackle climate change.

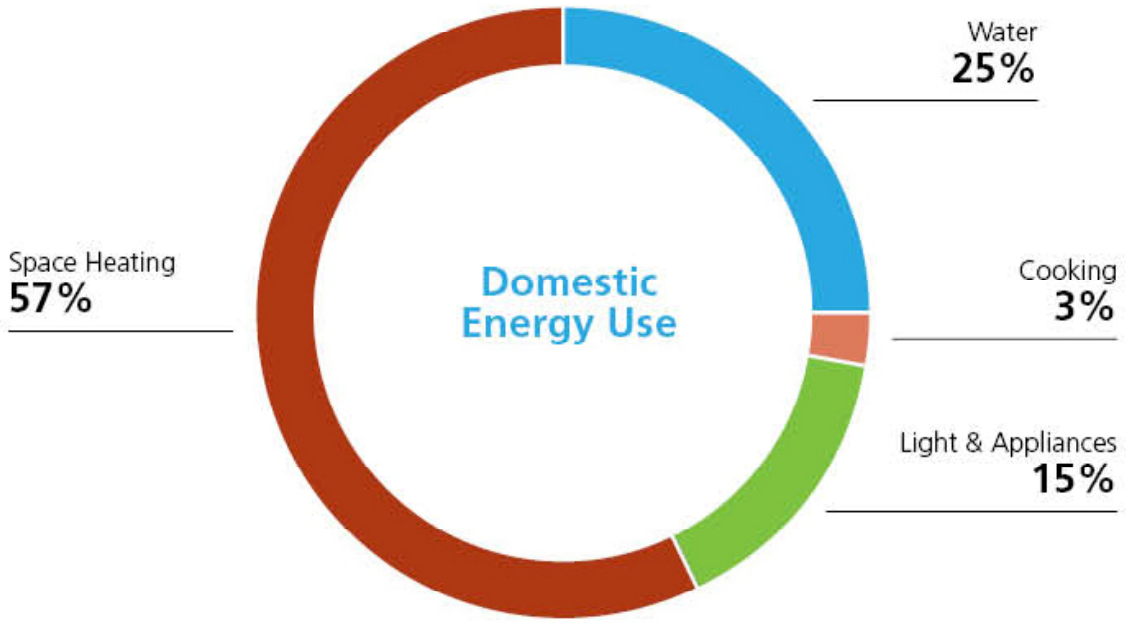
There has been rapid growth in the range and quality of renewable technologies. This guide provides a basic introduction to the most relevant options for rural communities and signposts the best sources of more detailed information and advice on each topic. One key resource is **Community Energy Online**, a new government website designed to guide communities and local councils through the stages of developing a low carbon or renewable energy project.

2. Energy Basics

The rate at which energy is generated or used is measured in watts. The unit most commonly used when discussing energy is a kilowatt (kW) which is 1,000 watts or 1kW. For example an oil filled radiator heater is rated at 1.5kW, i.e. when it is switched on it needs 1.5kW to work effectively. Where larger amounts of energy are generated and consumed the units will be measured in the following formats: Megawatt (1,000, 000 Watts or 1MW) and Gigawatt (1,000,000,000 Watts or 1GW).

Energy consumption is usually measured in kilowatt hours (kWh) i.e. the amount of energy used over an hour. So if the 1.5kW oil heater is left on for an hour it will consume 1.5kWh of energy. Electricity is sold by the kWh which equals one unit. The price of electricity varies by energy supplier and time of year but on average is currently around 12p per kWh. So using the oil radiator for an hour will consume 1.5 units of electricity costing 18 pence.

An average 3 bed terrace house consumes 19,000kWh a year. Most of the energy used in the home or a community building is to provide heating rather than electricity. An average 3 bedroom house uses 15,000kWh a year for heating and hot water and 4,000kWh a year for electricity (lights, appliances etc).



Heating is therefore very important, especially for rural buildings that are not connected to mains gas and are reliant on more carbon intensive and often more expensive fuels such as heating oil, electric heating and LPG. Focusing on insulating your building to prevent wasted heat and then investigating options for generating renewable heat are important first steps for off grid communities.

3. Energy Efficiency

Before considering renewable energy options it is vital to think about energy efficiency first, i.e. how your community can minimise its energy consumption. One in three rural homes and buildings are constructed with solid walls and built before 1945, which means they are likely to be very energy inefficient – 45% of a building's heat can be lost through the walls. Reducing the amount of energy wasted and minimising your community's energy requirements will save money on energy bills and reduce the size and cost of any subsequent renewable energy developments.

Energy efficiency measures include things like insulating walls, lofts and under floors, double glazing, draught proofing, using low energy lightbulbs, ensuring temperature controls are fitted to radiators and blocking off unused chimneys. Other measures include ensuring electrical appliances are A rated for energy efficiency when replacing them and raising awareness amongst people who use the building to turn off equipment (not left on stand-by) and lights when not in use.

Case Study: Community Energy Efficiency Projects - Bovey Climate Action

With a population of just 7,000, Bovey Tracey is a small Devon town with a big ambition. A group of residents set up Bovey Climate Action (BCA) in 2006; four years later BCA has over 300 members, all dedicated to making Bovey a more sustainable community. The group set up a number of fun projects to inspire people to save energy including:

- **Eco Dolls House**: one member of the group has made a large doll's house fitted with 31 energy saving features, which is displayed at schools and events for young people. The house comes with a quiz, which challenges children (and adults!) to name each of the features. It's a great chance to have fun and learn about energy saving at the same time
- **Waste Watchers**: this project focused on working with 50 families in Bovey using a home energy audit, carbon calculator and thermal imaging camera to see where they are wasting energy. Since the home audits the families have cut their energy bills by an average of 20 per cent
- **The School 'Hamster' Project**: who remembers the school hamster? The school used to let the pupils take a hamster home for a week to learn about looking after animals. BCA's version is a bit different. They lend Electrisave Smart Meters to local primary schools. The children take them home for a week to monitor their family's electricity use. The Electrisave is a simple gadget which easily fits to the electricity supply and then displays the power, the cost and the CO2 used. The idea is that once the children see how much energy is being used in the home, they'll be keen to turn off lights and appliances and will pester their parents to do the same. You can also borrow an Electrisave from the Climate Change corner in Bovey Library
- **Strike a Light**: working with The Energy Saving Trust, BCA runs a campaign to give away free energy saving lightbulbs to every house in the town and has produced a factsheet on choosing and using low energy lightbulbs.

For more information visit **www.boveyclimateaction.org.uk**

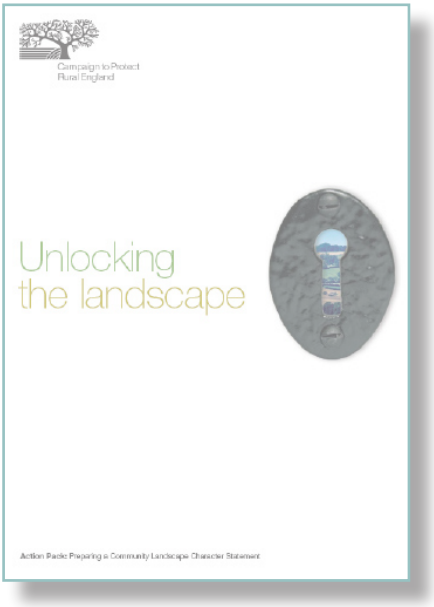
4. Community Led Planning for Renewable Energy

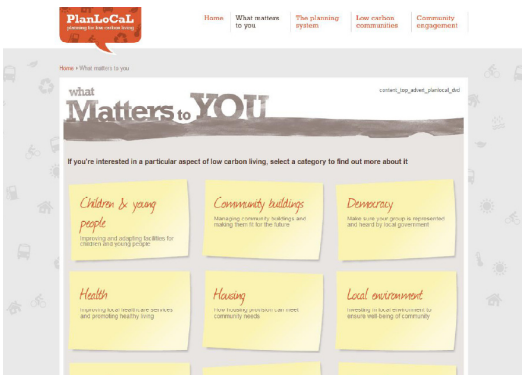
Before jumping into a renewable energy project it is important to understand your community's wider needs and aspirations and ask how renewable energy might fit with and help deliver them. Community energy schemes stand a better chance of success if they are developed in line with planning guidance and community views.

Community led planning is a step-by-step process that enables every citizen to participate in, and contribute to improving the social, economic, environmental and cultural well-being of their local area. Already undertaken by approximately 4,000 communities across England, it represents an opportunity for people to take responsibility for making things happen locally, rather than waiting on others to do it for them. Over the years, Community Led Plans have taken on different names including Village Appraisals, Parish Plans, Market Town Action Plans and more recently, Neighbourhood Plans. These have developed their own particular characteristics, tending to be used in different geographical contexts.

A national toolkit produced by Action with Communities in Rural England (ACRE) is available to help guide community groups through the Community Led Planning process. Contact your local parish council or Rural Community Action Network member to find out if your community already has a Community Led Plan and/or Parish Plan and ask how renewable energy might help deliver it. For more general information and guidance on the planning system, you can visit CPRE's Planning Help website.

Some renewable energy developments can be locally contentious, because of the visibility and potential impact of technologies such as wind turbines, solar farms, and anaerobic digesters. One way in which communities can decide on the special landscape features unique to their area, and gain a better understanding of where and how renewables can fit in with existing landscapes, is to prepare a Community Landscape Character Statement - it's not as technical as it sounds!. This document enables people to decide what's important in their local landscape and how they'd like it to look in the future. It can be used as a planning tool to guide renewable development and can be adopted as an official planning document by the local authority. CPRE has produced a step-by-step guide called Unlocking the Landscape.





Planning for low carbon living (PlanLoCal) is another key resource to help rural communities engage in and plan for low carbon energy developments locally. Based on the principles of Community Led Planning the PlanLoCal website provides free resources for communities including a DVD resource pack to help community leaders plan and deliver public events to engage the community in planning renewable energy installations. This includes guidance on running participatory exercises and expert advice on energy technologies, planning policy and project finance, plus more, practical case studies from communities who have already done it.

Case Studies: Community Led Planning – South East Rural Community Councils

South East Rural Community Councils (SERCC) work on climate change has been built around the Community Led Planning (CLP) toolkit which is used by community groups as a practical resource to support their activities. SERCC worked with one of its members, Action in rural Sussex, to produce a climate change section of the regional CLP toolkit. It takes the form of an A1 poster called 21st Century Village, showing important steps and resources to help communities cut their carbon footprint which local groups can use. The village of Plumpton used the toolkit to organise events prompted by their Village Action Plan. They recreated aspects of the 21st Century Village poster around Plumpton to raise awareness and spread good practice on climate change. This included practical presentations by residents who, for instance used solar panels or ran walking buses. As a result the village has established Plumpton Goes Green team to continue local sustainability work. The group is now exploring the possibilities for village level renewable electricity generation and developing village information to help households reduce energy use and install renewable energy systems.

For more information visit **http://www.sercc.org.uk/ and http://www.plumptonvap.co.uk/team_plumpton_green.php**

5. Community Buildings

Community buildings such as village halls, community centres, church halls and community sports pavilions are important centres for community activity, service delivery and social interaction. As a focal point these buildings provide a real opportunity for communities to investigate renewable energy projects, particularly where the building is in need of maintenance and investment, such as a new boiler or heating system or has a south facing roof suitable for generating solar electricity.

ACRE's national village hall survey found that 60% of responding halls were planning major improvements in the next five years and 10% require urgent repairs to keep them in use; 19% of respondent halls are using oil for heating and 37% are using electric radiant-convector or storage heaters. As heating and lighting costs are one of their principal running costs community buildings are vulnerable to energy price rises. There is potential for these halls to investigate renewable energy and many are starting to do so. ACRE's survey found that whilst only 1% (22 halls) used renewable heating, a similar number had received grant money and were in the process of investing in renewable energy.

Community buildings also provide a highly visible and effective way to involve the wider community in renewable technologies. Many individuals have installed renewable energy systems in their own homes after seeing them in their local village hall. Further detailed information on renewable energy use in community buildings can be found in ACRE's Village Hall Information Sheet 16 - How 'green' is your village hall? Contact your RCAN member for a copy. If you'd like to see examples of well designed green buildings in use, CPRE Norfolk runs a series of Green Buildings open days in September of each year, and can provide information about the buildings throughout the rest of the year (see further information below).

Case Study: Community Buildings – Horton Village Hall, Somerset

The old “Victory Hall” had been in service since 1919 having been built in 1822 as a Church of England Chapel. By 2004 it was too small for the growing population, was expensive to heat and in need of substantial repair. Following a village open meeting survey, the hall Management Committee was mandated to build a new hall that would meet the needs of the community and would include renewable energy to reduce future running costs. The architect was given a brief to design a building with a budget of £250,000 for the building and another £50,000 for external work. The design was to have minimal impact on the environment and use sustainable building practices, including solar Photo Voltaic (PV) for electricity, air-source heat pumps for heating and air conditioning, wall and loft insulation, together with a Bio-rock sewage treatment plant. After four years of intensive fundraising using the motto, “Horton Village Hall – together we can make it happen”, £100,000 was raised by the community. This was supplemented by grants of almost £150,000 notably, from the Parish Council and also from District and County Councils, and together with private donations and sale proceeds from the old hall, the community had raised enough funds for the build to go ahead. After much deliberation, the Management Committee accepted a fixed building cost of £338,000. Work commenced at the end of September 2008 and the hall finally opened in August 2009. Significant cost savings were achieved by local people volunteering their services and expertise.

Solar PV and Heat Pumps

32 photovoltaic (PV) panels were installed at a cost of £27,197 by Southern Solar and were 100% grant funded. The expected system output annually is 4,352kWh delivering CO2 savings of 1,871.4 kg/year. The system was commissioned on 2nd July 2009 and to date has generated 7,538 units. This included 4,524 units generated from the 1st April to the 30th November 2010, which have been exported to the grid. Under the government’s Feed-in Tariffs (FITS – see the funding and finance section below) this will generate £475. Alan Dawe, Vice Chairperson of Horton Village Hall said, *“we are very pleased with the photovoltaic panels which to date have exceeded the estimates provided. Our estimated income for the seventeen months since July 2009 is £776.42, an average of £45.67 per month”*. The heating consists of eight ceiling cassette units supplied by five air source heat pumps on an outside wall which cost £18,500 to supply and install. The main advantage is the low running costs, delivering a 60% saving compared to oil or electric heating systems with the additional benefit of lower CO2 emissions. Hall users are pleased with the level of warmth provided by the air source heat pumps in winter.

For further information visit **www.hortonvillage.co.uk**

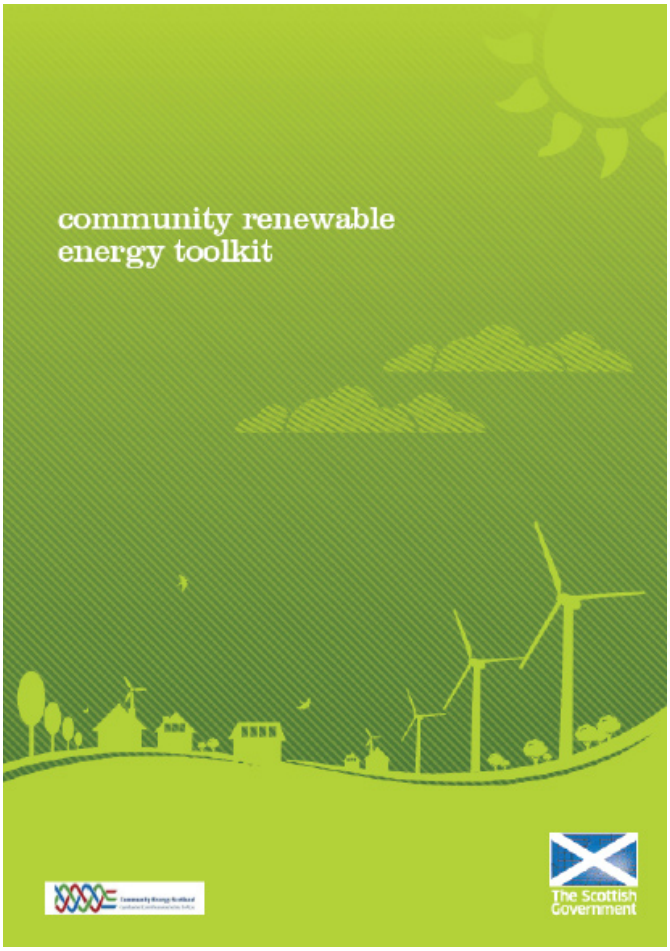
6. Community Ownership

Traditionally, community benefits from renewable energy projects have been in the form of contributions to host communities from larger commercial developers. But, increasingly, opportunities exist for communities to take the lead on renewable energy developments, choosing to own and manage the project themselves. Although the risks and effort of community ownership are greater, the benefits and rewards are also greater – many renewable energy projects make more sense at community scale. A growing number of communities have taken forward the ownership option successfully.

Community ownership of renewable energy developments can take a variety of forms with a range of legal, governance and financial structures, from private limited companies and limited partnerships, to co-operative and social enterprise based models such as community interest companies and industrial and provident societies (IPS).

For rural communities the IPS co-operative structure has proved the most popular model for renewable energy developments with clearly defined legal and financial structures registered through the Financial Services Association. IPS co-operatives can raise capital funds through community share offers to invest in local community owned renewable energy projects. The co-operative model delivers economic and social benefits to the local community, ethical investment opportunities and provides a vehicle for larger developments to be delivered with the community retaining control and ownership.

If full community ownership is not an option but you are aware of commercial renewable energy developments proposed in your area, you could still investigate opportunities for securing benefits. These may range from financial payments to the community, to establishing local trust funds or shared ownership options. From an environmental perspective, it is worth investigating how benefits from renewables can be used to pay for energy efficiency upgrades or microgeneration infrastructure for your community. The Scottish Renewable Energy Toolkit contains some useful guidance and examples on negotiating benefits arrangements.



Case Study: Community Ownership – Torrs Hydro Power, New Mills, Derbyshire

The scheme is located on an existing weir on the site of Torr Mill, a textile mill built in 1790. The new turbine sits in the same location as the original mill pit where the water wheel would have been. A 63kW Archimedes screw turbine has been installed with the aim of generating over 240,000 kWh each year. The community worked closely with the social enterprise developer Water Power Enterprises (h2oPE) and the Environment Agency to deliver the scheme. From the very start community ownership was fundamental to local residents. Richard Body, one of the scheme's four unpaid founding directors explains, "first, we, the locals, wanted to own the hydroelectric scheme and second, we wanted all benefits to come to the local community".

To enable this to happen the community formed an Industrial and Provident Society to manage the project. They issued a community, share scheme which resulted in 230 members investing over £125,000 towards the hydropower scheme's total cost of £330,000. Loans and grant funding made up the difference. The project attracted investment from all parts of the community including local housing estates, as well as the big houses and smaller terraced households. The construction of the hydro scheme also provided benefits locally with 60% of construction costs spent locally. The amount of energy and income the scheme delivers depends on river levels, as the screw will stop generating if the river is too low or too high. But the group is expecting the scheme will generate around 240,000 units per year, which equates to roughly £24,000 of electricity. As for profits to spend locally, the community hope for £2,000 − £3,000 per year initially but this will increase to £10,000 annually when the loans are paid off. How profits are spent will be decided by shareholders but boosting environmental sustainability will play a part, for example towards funding local insulation of community buildings. Water Power Enterprise are also working with the communities of Settle and Bainbridge on similar community owned projects. They point out that there are thousands of weirs like New Mills, particularly in the north of England which could start generating renewable energy for the benefit of their communities.

For further information visit: **http://torrs-hydro-new-mills.blogspot.com/** and **www.h2ope.org.uk**

7. Funding and Finance

Developing a sound financial business plan is the cornerstone of any community renewable energy scheme. There are a variety of funding and finance options that communities can investigate. Funding is usually taken to mean grants and charitable or private donations and finance is usually in the form of bank loans, investment raising capital from share options.

Nationally the government's Feed-in Tariffs (FITs) scheme for renewable electricity generation and the Renewable Heat Incentive (RHI) for renewable heat generation are the main funding programmes to encourage the development of smaller scale renewable energy schemes by individuals and communities (less than 5MW). FITs are currently available for the following technologies: Wind; Solar photovoltaics (PV); Hydro; Anaerobic digestion; and Domestic scale microCHP (with a capacity of 2kW or less). The Renewable Heat Incentive will work in a similar way to FITs, providing payments for energy generation from renewable heat technologies such as heat pumps. Therefore RHI is still under development and is expected to be launched in June 2011.

However, it is important to realise that FITs and RHI take the form of payments for the units of renewable energy generated and exported when the scheme is up and running, rather than up front capital grants to establish the project. Therefore community groups will still need to find funds or finance for the development and construction stages of a renewable energy project. It is also important to note that the return on investment provided by FITs payments will vary from project to project depending on the type of technology used and the likely generation and use at each particular site. The finances need to be worked through carefully on a project-by-project basis.

Two important things to note about FITs

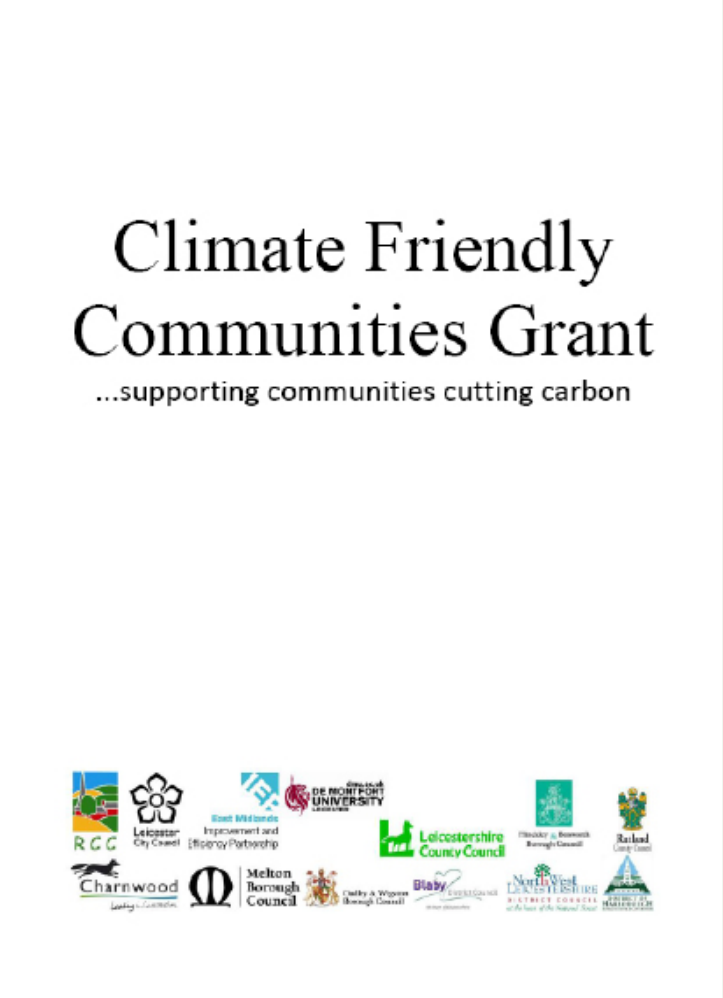
Microgeneration Certification Scheme (MCS): to qualify for FITs or RHI payments the renewable technology you use must be installed by a registered MCS installer. The MSC scheme has been established to ensure that equipment and installers meet robust standards. Use the MCS Database to find local certified installers.

FITs and Grants: due to EU State Aid rules some community projects and village halls have experienced difficulty applying for FITs payments because they have received a government grant. Government guidance has indicated that as long as the grant level is at or below the value of 200,000 Euros (about £170,500) over 3 years then a project can still claim FITs and not have to repay the grant. However, when investigating publicly funded grants for your project it is important to check the latest advice on this from the Department for Energy and Climate Change - FiTs and Grants website.

In practice most communities are utilising a range of funding and finance options to try to make their projects a reality, including local fundraising, applying for grants, applying for bank loans, raising share options and building in FITs payments. Councils, charitable trusts, energy companies and community development organisations are worth approaching for possible funding options.

Some local councils and Rural Community Action Network (RCAN) members are developing area based partnerships to lever in funding to help tackle climate change, as shown by the case study from the Rural Community Council (for Leicestershire and Rutland).

Case Study: Building Partnerships to Deliver Local Funding and Tackle Climate Change – Rural Community Council (Leicestershire and Rutland)



The Rural Community Council (RCC) for Leicestershire and Rutland has developed an effective partnership with local councils and De Monfort University to help fund and support community action on climate change. The catalyst for the partnership and the key to unlocking the current funding was a series of awareness raising events on energy efficiency and climate change, run by the RCC under the banners of Climate Friendly Communities and the Big Switch Off and in conjunction with community led plans. The success of these events caught the attention of local councils and helped to unlock funding from the Local Strategic Partnership via the East Midlands Regional Improvement and Efficiency Partnership. The RCC along with the local environment partnership involved De Monfort University in the project, who also provided match funding from its Knowledge Transfer Partnership programme. From this partnership the RCC has received funding to support an officer for the Communities Cutting Carbon project and to establish a £50,000 Climate Friendly Communities grant to help fund local carbon reduction projects. The partnership demonstrates the links between climate change action, community engagement and academic research. Securing funding that can go directly to support communities in their climate change ambitions has been time-consuming in terms of bringing together different funding streams but it has been instrumental in enabling communities to fulfil their ambitions and progress their ideas and projects on renewable energy and climate change. The Knowledge Transfer Partnership grant is supported by the Department for Environment, Food and Rural Affairs (50%), National Environment Research Council (25%) and the Environment and Social Research Council (25%).

For more information visit **http://www.ruralcc.org.uk/climate-friendly-communities-gra.html**

The introduction of FITs has led to a number of installers offering customers free solar PV panels. Usually the company installing the panels keeps the income from the generation and export tariffs, while the householder or building users benefits from reduced energy bills through use of the electricity generated.

However these ‘free’ solar offers need careful consideration of the real benefits and technical issues such as insurance liability and comparative benefit to the community. The Energy Saving Trust and the Centre for Sustainable Energy have both produced useful guidance on the questions to ask when considering this option (see Appendix).

Another option to be aware of is the emergence of partnership models to enable the sharing of FITs income, such as in the model developed by Community Energy Solutions.

Case Study: Sharing Feed-in Tariff Income – Community Energy Solutions

Community Energy Solutions (CES) a non profit distributing community interest company has teamed up with another social enterprise, Empower Community, to deliver large scale solar PV programmes with local councils and housing associations on a shared Feed-in Tariff basis. It provides a shared ownership model which may be helpful to communities in assessing competing offers. Key features include:

- The property owner will receive a substantial annual income from the solar PV projects from year 1 for the full 25 years of the FiT without making any financial contribution to the costs
- The building occupant will benefit from the electricity produced by the PV system which will be supplied to the occupant for free
- Surplus profits are donated to a Local Community Vehicle established by the project to provide a 25 year income stream to develop and support social and environmental initiatives in the local area
- Even after the end of the Feed-in Tariff payments, both property owner and residents can continue to benefit from the power that the solar PV systems are generating
- Further projects within the project area where a solar PV scheme is being implemented can be initiated. These can include area-wide energy efficiency programmes and projects involving other renewable energy technologies.

EMPOWER COMMUNITY

ACCELERATING THE TRANSITION TO SUSTAINABLE LOW CARBON LOCAL ECONOMIES

For more information visit **www.cesgroup.org**

8. Renewable Energy Options for Rural Communities

There are a range of renewable energy options for rural communities to consider but before leaping into one project or technology it is important to think broadly about the energy needs of the community over the long term, and how it fits with community needs and with the community plan.

Renewable heat options will be most important for communities that do not have connections to a supply of mains gas. Considering which sources of renewable heat are most suited to the location and offer the best long term benefits for the community are important, alongside the types of housing and buildings requiring heat.

A summary of renewable energy options are discussed below with links to more detailed information provided in the appendix. It is important to note that each technology has a range of benefits and drawbacks. What will work well in one community and site will not suit another. Each community will need to research their options carefully and seek professional advice, including survey's and/or feasibility studies.

Renewable Electricity

Small-scale Hydropower (micro hydro)

Hydro power is one of the oldest methods of harnessing renewable energy, with the first water wheels used over 2,000 years ago. Hydro power systems convert energy stored in flowing water to turn a turbine to produce electricity. Hydro power has to be close to the site of power usage and/or have a connection to the national grid to export the electricity generated. Power can be produced even from a small stream and hydro systems can generate power all year but they may stop generating for a couple of months in the summer, if rainfall is low. Systems run day and night and hydropower systems can have a long life cycle of at least 40 years.

Community micro-hydro schemes can be suitable for old mill sites with weirs and sluices and faster flowing upland streams and rivers. Although micro-hydro can have a low environmental impact, especially where existing infrastructure is reused, sites need to be chosen carefully – detailed guidance is available from Friends of the Peak District in Peak Power.

Hydro schemes up to 5MW can claim Feed-in Tariff payments. Costs for hydro schemes are very site specific and are related to the size of the system and output required. The Torrs Hydro project in the Peak District cost £360,000 for a 63kW Archimedes screw turbine, generating an estimated 240,000 kWh each year. A similar project in Settle cost £420,000 for a 50kW Archimedean screw, expected to generate approximately 165,000 kWh of electricity per year. Micro-hydro projects offer a good option for communities with old mill sites or weirs, many of which are in upland areas.

Solar Electricity - Photovoltaic Panels (PV)

PV panels use cells to convert solar radiation from sunlight into electricity − the greater the intensity of light the greater the flow of electricity. Solar PV panels are usually mounted on roofs or on the ground, facing south to be most effective. The size of the PV array depends on how much power is needed, the type of cell technology used, available load bearing south facing roof space or land space (if mounted on the ground) and most importantly, budget. Typical domestic PV systems vary from 2kWp (kilowatts peak) to 3.5kWp providing 1,600 kWh – 2,800 kWh a year, costing from about £6,500 to £10,500. Larger systems for community buildings will cost more; the 32 PV panels on Horton Village Hall cost of £27,197 providing 4,352kWh a year.

To enable more households to benefit and reduce the per unit capital costs through bulk buying, some communities and councils are clubbing together to form solar clubs, as illustrated by the Solar 100 project in Marlow. Solar PV offers a good option for rural community buildings such as village halls, community centres and agricultural buildings with south facing roofs. Any electricity not used by the building can be exported to the national grid. Generating solar electricity through accredited PV installations can earn households and communities an income through Feed-in Tariff payments.

Case Study: Solar PV community Buying Group - Solar 100 project, Transition Marlow Buckinghamshire

Transition Town Marlow was established in March 2009 to develop community led action towards delivering a sustainable and resilient town of Marlow in the face of dwindling oil supplies and the effects of climate change. Marlow is the 200th community to become an official part of the Transition Movement. “Marlow’s energy is in its Community”, is the official motto of the group and a central activity has been the creation of a solar buying club. Pioneered by group member Philip Ditchfield, Solar 100 aimed to get 100 households generating solar energy during 2010. By pulling together to form a buying club the community has stronger negotiating power with suppliers. The group carried out months of research, spoke to 10 different installation companies, the local council, an architect and an energy provider to secure a good deal for the people of Marlow and surrounding towns. To date, 185 households have registered as interested in the scheme, and 30 Marlow families now generate electricity through photovoltaic and solar thermal cells. Philip said “We have enough homes to leverage a 12% discount, so everyone got a rebate after six months. But I’m still aiming for 100 homes, which would mean a rebate of 20% or about £600 to everyone involved. The project will also save 80,000kg of CO2 each year. Imagine if every town across the UK did that! I hope people outside of our seven-mile radius around Marlow will start their own scheme.”

Transition Town Marlow’s 100 Solar Project

For further information visit **www.transitionmarlow.org**

Wind Turbines

A wind turbine captures and converts energy into electricity as the wind turns its blades. Turbines vary in size from household systems typically sized up to 6kW to larger turbines of up to 50kW for larger community projects. Power from turbines varies with wind speed, and minor changes in wind speed can result in large changes in electrical output leading to intermittent supply. As a guide, an average wind turbine on a very good wind site will produce 35% of the electricity it could produce over a year at maximum output. Any electricity not used by the building or community can be exported to the national grid. Generating wind electricity through accredited installations can earn households and communities income through Feed-in Tariff payments.

Small scale wind power is particularly suitable for remote locations that do not have an electrical grid connection and rely on expensive and noisy generators for electricity. Small scale applications range from individual battery chargers to power for homes, schools or community buildings. Systems for homes and community buildings usually range from 1.5kW to 6kW and cost between £4,000 - £25,000, depending on size, location and type of system. Landscape impacts are a key consideration for onshore wind installations: guidance on this is provided in CPRE's Unlocking the Landscape report. Energy4All a social enterprise specialising in community wind, provides detailed guidance and case studies for communities interested in developing local wind power projects.

Case Study: Community Wind Power – Skeffling Village Hall

Skeffling is a small farming village about two miles from the North Sea in East Yorkshire. The village hall is the centre of the community providing a wide range of activities. Skeffling Parish Council wanted to encourage everyone to use the village hall to the maximum, but at the same time they needed to keep running costs low, so they decided to look into ways that they could generate power for the hall. The remote village did not have access to a local gas supply and found that it would be a very expensive to connect to gas. They decided to investigate the possibility of installing renewables to provide power, as well as heat to the hall. After initial research the parish council narrowed down the options to either solar photovoltaic (PV) panels or a wind turbine. Solar PV was ruled out as the low roof meant there was a risk that the panels could be stolen. They decided on wind because their location is ideally suited, surrounded by open countryside and near the coast with a good wind resource. A wind turbine would also be able to provide them with electricity for all of their power requirements including lighting, electric heating and hot water. The council also considered the wind turbine to be a clear sign to the wider community, demonstrating a sustainable approach to energy generation. The ability to export surplus electricity to the grid suited the application perfectly with the hall's intermittent use.

Another key element for the community was the decision to install a wind turbine that would be capable of generating more energy than they required. This was felt to be crucially important in securing the long term sustainability of the project, as it would enable income generation for investment in the future maintenance and eventual replacement of the turbine when it came to the end of its life. James Robinson, one of the parish council members, spent a lot of time researching the different turbines available. Skeffling Parish Council eventually chose a turbine of 6kWp size producing approximately 8,000kWh (8MWh) a year, costing £22,052 (grant received for

£11,026 from the low carbon buildings scheme – now closed). The estimated running cost savings from the turbine are £1,040 a year with CO2 savings of 4,344kg.

James started up a website **www.bigskeff.com** and updated photographs and information to keep the whole community informed about the progress of the wind turbine installation.

An energy efficiency survey was also carried out by the Humber and Wolds Rural Community Council. Income from the wind turbine has helped to fund the installation of energy efficiency measures such as double-glazing, energy efficient lighting and loft insulation. The wind turbine has been operating since March 2007 and the community has been pleased with the performance which has, on average, exceeded the forecast of 8MWh per year. The hall is used a lot more now because of recent improvements but the power generated by the wind turbine still meets demand and more, allowing them to export surplus back to the grid. From a local perspective the community response has been very positive.

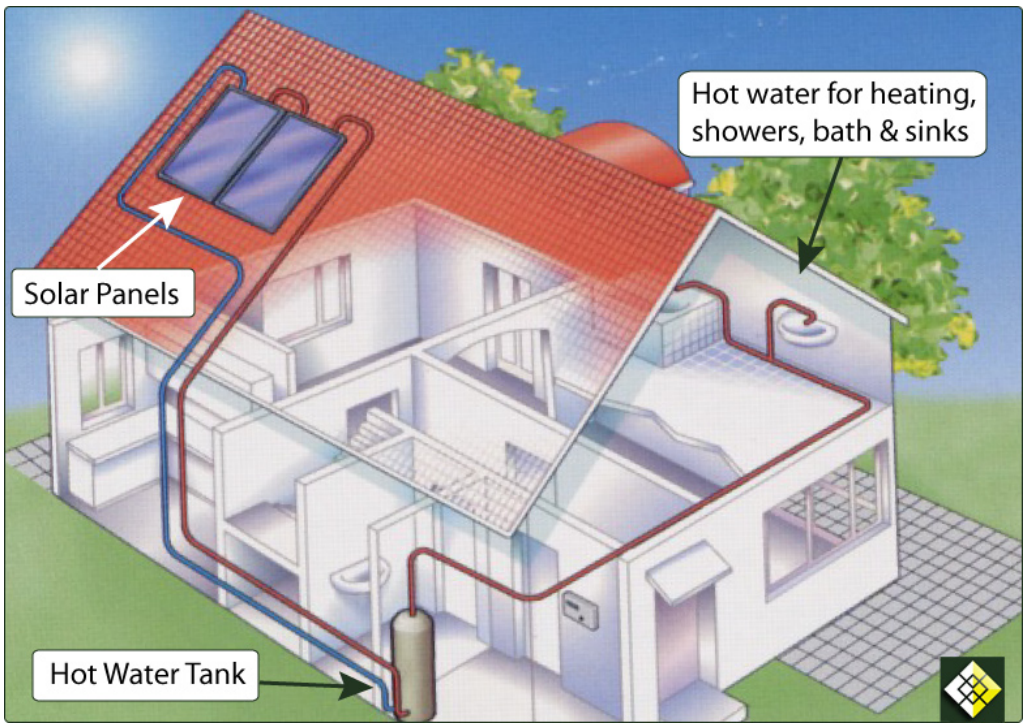
For further information visit **http://www.bigskeff.com**

Renewable Heat

Solar Water Heating

Solar water heating systems usually use roof mounted panels to collect energy from the sun to provide hot water. Solar water heating is often referred to as solar thermal not to be confused with solar PV which is for electricity generation. A hot water cylinder needs to be installed with a dual coil to act as a heat exchanger for the solar panels. A conventional boiler or immersion heater is then used in association with the solar system to provide hot water when solar energy is unavailable. Buildings will need around 5 square metres of south facing roof space which receives direct sunlight for the main part of the day.

Solar water heating can be used for domestic hot water or larger scale applications such as sports shower facilities and swimming pools. For community use solar water energy has been most effective in community centres with a need for regular shower use, e.g. serving playing fields. Costs vary according to the type and size of technology used, existing hot water system and location. A typical domestic installation ranges from £2,000 to £5,000.

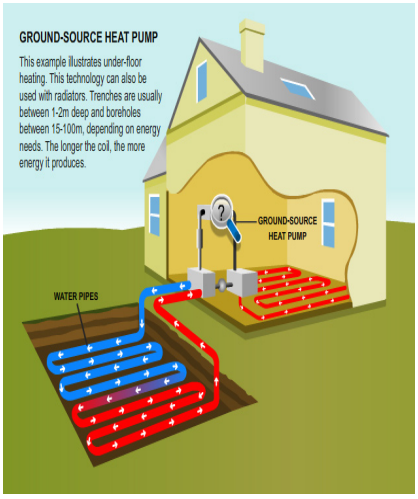


Case Study: Solar Thermal Bulk Buying – Wenhaston Energy Support Group

The Wenhaston Energy Support Group (WESG) was formed in March 2007 to encourage individual and community action through its role as a link between residents and environmental and grant-making bodies. It was thought up originally by parish councillors who were keen to see the community look at its carbon footprint and have this included in the Parish Action Plan. The Group is now independent of, but supported by, the parish council and is taking practical steps towards helping the community cut carbon emissions and research alternative and sustainable sources of energy to reduce dependence on oil. WESG also carried out two village carbon audits, which recommended a number of ways to cut carbon including solar water heating. To cut costs to individual households WESG organised a bulk buying process. They ran a tendering exercise with help from Suffolk Energy Action Link and invited firms to bid for their village project. Solarworks won the contract not only reducing the price per installation (in one instance by at least £1,500) but also providing villagers with a source of help and advice as part of their after sales service. So far Wenhaston has 14 households involved with more expected. The group has supported the refurbishment of the village hall, installing a biomass boiler which is fuelled by wood pellets, made by a Lowestoft firm from window and door frame off-cuts, and placing photovoltaic panels on the roof to provide electricity (the largest single area of PV cells in Suffolk, capable of generating 9.3 kilowatts of electricity). Grant aid has also improved the energy efficiency of the hall including double glazed windows and insulating the loft and cavity walls. WESG are now working with the Low Carbon Innovation Centre at the University of East Anglia to research community energy options.

For further information visit **http://www.wenhastongreen.org/index.htm**

Heat Pumps



Ground source heat pump

Air source heat pump

Heat pumps work like refrigerators in reverse – they absorb heat from the air or ground and pump it into homes and community buildings to provide heat. There are three types of heat pumps: air source heat pumps (ASHPs), ground source heat pumps (GSHPs) and water source heat pumps (WSHPs).

ASHPs absorb heat from the outside air and pump it into radiators, underfloor heating systems or warm air convectors to heat the building. It is worth noting that heat pumps often require larger radiators to ensure adequate heat is delivered through the system. GSHPs and WSHPs transfer heat stored in the earth or in ground water/pools into a building during the winter, and transfer it out of the building and back into the ground during the summer. The ground or pool in other words, acts as a heat source in winter and a heat sink in summer. As with ASHPs they connect to radiators or underfloor heating to provide warmth and hot water. GSHPS tend to be more efficient than ASHPs because the average ground temperature in winter will always be significantly warmer than the average winter air temperature, so they perform better. However, due to the pipes involved GSHPs and WSHPs require more outside space to accommodate ground arrays in trenches or boreholes and the right type of soil (clay soils and shallow soils can provide challenges). But one thing rural communities usually do have is space, so this can make them particularly viable in rural areas.

Heat pumps have some impact on the environment as they need electricity to run, but the heat they extract from the ground, air, or water is constantly being renewed naturally.

Costs of heat pumps vary according to the size, technology, building type, location and ground works needed. The installed cost of a typical domestic 8kW GSHP system ranges from £8,000 - £12,000. Installed costs for a similar ASHP range from £5,000 - £10,000. There has been a lot of debate about the cost effectiveness of heat pumps and their performance does very much depend on the type of house or building, how insulated it is and the heating requirements. The Energy Saving Trust has published a Heat Pump Review looking at these issues. ASHPS tend to suit smaller well insulated properties, and GSHPs or WSHPs for larger buildings. For all heat pumps it is important to ensure that the building is insulated first to maximise heat retention, that the heat pump system is sized correctly for the building and that the heating system will work efficiently and effectively with the heat pump.

District Heating Schemes

District heating systems use a single source of heat which can be from renewable source such as biomass or geothermal sources to heat a number of buildings located very near to the heat source. They normally work by heating water that is then pumped around an underground district heating pipe to carry the hot water past each building (which are fitted with heat exchangers to allow the building to take the heat it needs from the system). This is much cheaper and easier to install in new housing developments and works best where there is a cluster of houses or buildings close together and close to the heat generation source that can be supplied through a communal system.

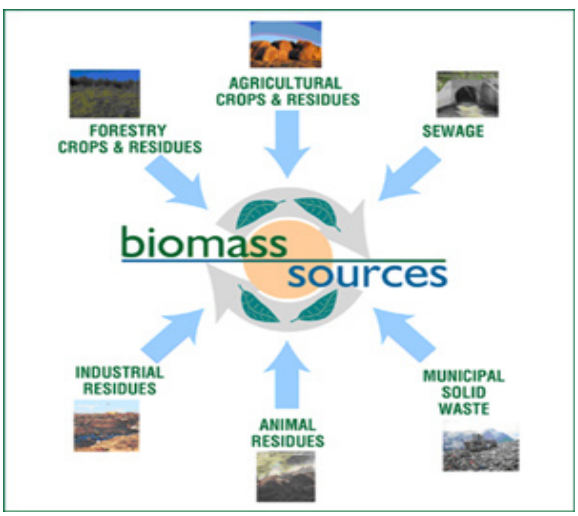
Laying a district heating pipe, Hoathly Hill, High Weald

Options for renewable district heating are often based on a combined heat and power boiler fuelled by local biomass resources (often wood chip or wood pellet based). There are several examples of rural district heating schemes including South Carlton village in Lincolnshire. The village comprises 22 houses owned by the Burton Estate. In 2007 all 22 houses were converted from oil and electric heating to a district heating system, using a Biomatic 250kW boiler, fuelled by woodchips from the 150 acre woodland estate alongside a 310kW oil boiler.

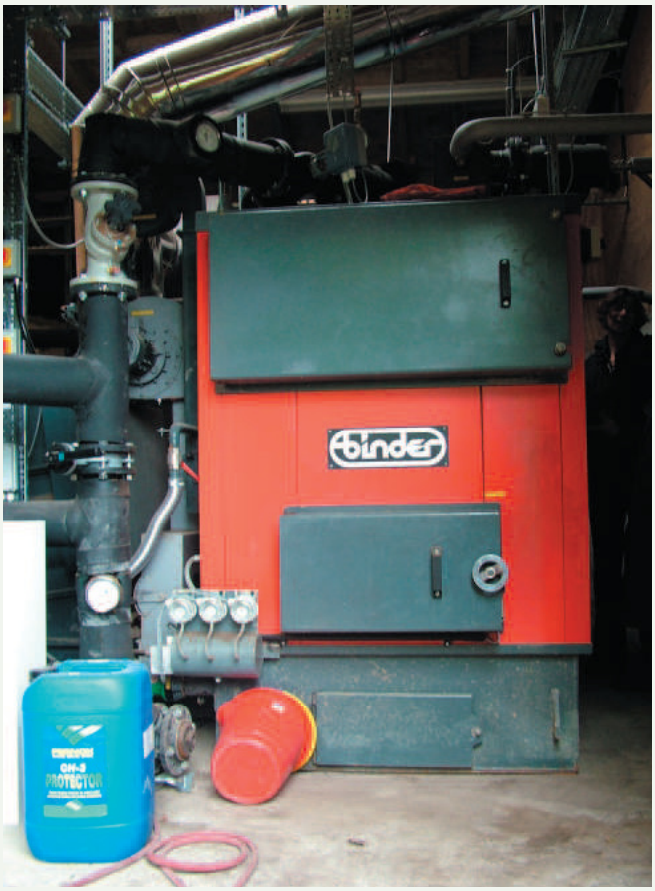
For further information visit **http://www.ruralenergy.co.uk/studies/**

Biomass

Biomass (e.g. wood, energy crops such as willow or miscanthus grass and biodegradable wastes such as slurry and food waste) can be burnt to produce heating and hot water. Producing energy from biomass has environmental and economic advantages. It is most beneficial and cost effective when a local sustainable wood or biomass fuel source is used, leading to local investment, employment and supply infrastructure. Wood fuel can be used for heating through traditional log or pellet burning stoves (usually between 5kW and 12kW output) which can also be fitted with a back boiler to provide hot water. Larger biomass boilers (15kW and bigger) usually burning wood chips or wood pellets can be suitable for larger schools and community buildings for central heating and hot water. Wood chip boilers are usually used when a very local supply of wood chips is available. Wood pellets are a more efficient fuel than wood chips but may need to be imported from abroad which adds to the cost and carbon footprint. Hence, securing local supplies of wood fuel is a key part of the process for biomass systems. Biomass heating also requires space and/or an outbuilding to store the fuel and can require heavy work to shift the fuel around. Costs vary according to size and type of system. Domestic wood burners generally cost between £1,500 to £3,000. The cost of biomass boilers depends on fuel choice. An average 15kW pellet boiler (average size for a 3-bed semi) could cost between £4,000 and £12,000. On top of this you will need to pay wood fuel costs, which again, vary dependent on whether logs, chips or pellets are used and how far they have to travel to reach you.



Case Study: Community Biomass Heating – Hoathly Hill, High Weald



Hoathly Hill Community lies on the outskirts of West Hoathly village in the rural landscape of the High Weald AONB. The Community was established in 1972 with 27 housing units, ranging from single person flats to 4-bedroom detached family homes. Climate change, carbon neutral ambitions, use of local natural resources, landscape protection, environmental responsibilities and cost saving all contributed to the decision by the community to move to biomass heating. Renewable Heat and Power Ltd carried out a feasibility study in 2004 which led to the decision to install a modern, low maintenance wood chip boiler system.

The project cost nearly £400,000. The community raised £160,000 in grants from a number of sources, including the High Weald AONB Sustainable Development Fund, EDF Energy Green Fund, SEEDA Rural Initiatives Fund and the Lottery. The balance was shared between the households connecting up to the system and part financed by a loan from Triodos Bank. The annual heat load for the site is calculated at just over 750,000kWh. Total annual costs were estimated at around £30,000, including an allowance for repair and maintenance. Annual costs for the wood fuel is estimated at around £14,500 a year, including an amount for administration and overheads. The boiler is a 300kWh Binder boiler with high efficiency insulated flow and return pipes to all the houses. There are two 4,000 litre buffer storage tanks. Wood chip to fuel the boiler is produced at the Balcombe Sawmill only five miles away. What was previously wood waste is now converted into a valuable product with consistent demand. Jamie Kirkham, the sawmill manager, is delighted with this new market. The boiler will require approximately 300 tonnes of wood chip annually.

For further information visit: Hoathly Hill Community: **www.hoathlyhillcommunity.co.uk/**

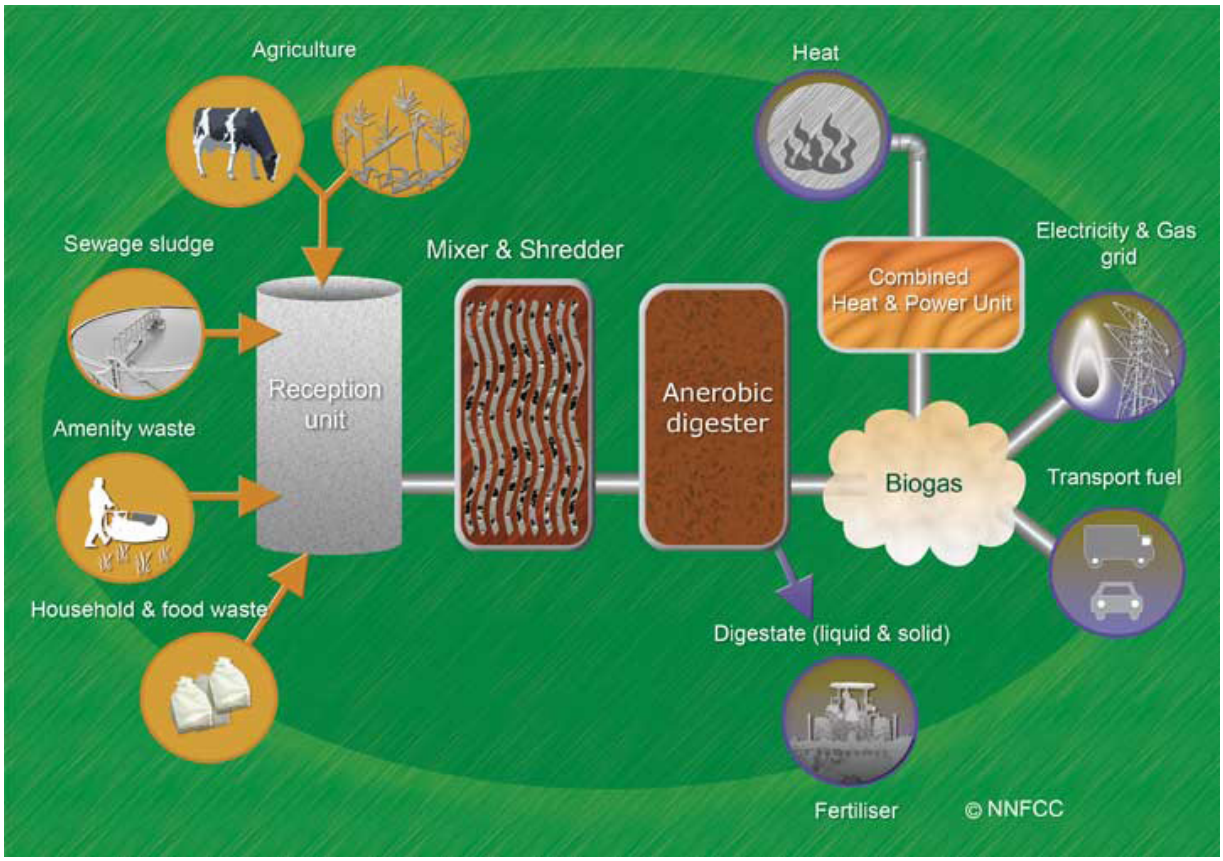
Anaerobic Digestion

Anaerobic Digestion (AD) is a natural biological process where organic waste such as slurry and other farm waste is broken down in a fermentation process to produce biogas or bio-liquids. The resulting biogas or bio-liquids can be burnt for heat and/or electricity. In the near future, biogas and bio-liquids could be further processed into synthetic natural gas (SNG) and fed into the UK's gas grid.

AD plants can be sited on farms to produce heat and power and leave a valuable fertiliser at the end of the process – such small scale plants can fit in to the local landscape and benefit the wider environment by reducing nitrate pollution. Larger mixed waste AD plants, though more challenging to site, can also utilise household kitchen waste with other organic waste to produce energy and heat.

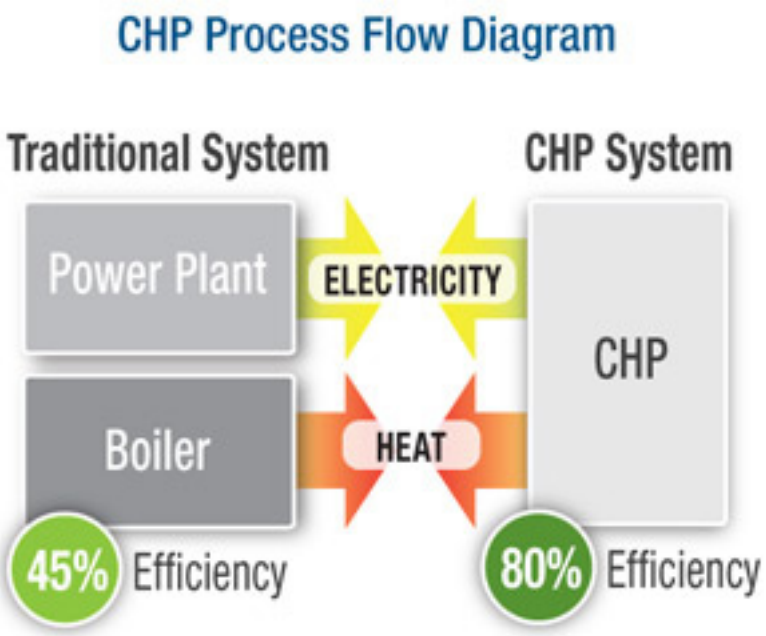
AD is not a new technology and has been used in the UK since the 1800s but we have only around 50 modern AD plants currently compared to over 4,000 in Germany. However, there is growing interest and investment in the technology amongst farming communities, and the Feed-in Tariff and proposed Renewable Heat Incentive should stimulate a further growth in AD plants. The community group

Sustainable Youlgrave has been investigating the potential for a small scale AD plant in the Bradford River Valley area involving many local farmers. See **www.sustainableyoulgrave.org** for further information. The official information portal for AD is **www.biogas-info.co.uk**.



Combined Heat and Power (CHP)

CHP is any plant or boiler that generates electricity and heat at the same time in the same process. It is a very efficient use of fuel as it maximises the usable energy from combustion, e.g. CHP plants and boilers can achieve over 70% efficiency, compared to just 35-45% in conventional electricity generation plants due to heat loss. CHP is most effective where power and heat are needed and can be used at the same time. The power can either be used on site or exported to the national grid. The fuel for CHP units can be renewable or fossil fuel. Most renewable fuel CHP units run off biomass, biogas or bio energy crops. Domestic CHP boilers are now on the market and could be particularly effective for very remote rural households that do not have a mains gas connection or a grid connection for electricity.



Visit **www.chpa.co.uk** for further information.

9. Lesson From The Leaders

Although this guide has tried to provide an overview of information on renewable energy, there is no substitute for learning from the experiences of other communities. To this end Northumberland Renewable Energy Group created a report based on the pitfalls and perils experienced by five community renewable projects so that others can learn from them. The report details the experiences of Kielder biomass district heating scheme, Bellingham Station Yard wood chip boiler, Heatherslaw Mill hydro scheme, Gairshields log gasification boiler and Stonehaugh Community Hall ground source heat pump and solar PV. The report gives detailed lessons and advice from these five communities and provides the following top tips to communities considering renewable energy:

- **For larger community projects independent technical advice is essential:** structure the project's finance to allow for an independent feasibility study early on – don't only rely on the suppliers or installers of equipment to do this for you as they have an interest in making a sale
- **Research and appraise the energy demands on the system:** look to reduce the size of your renewable energy system by implementing efficiency measures first. Be honest about the energy needs the system has to deliver on and also the often greater demands on your time to ensure it runs effectively. Pay particular attention to how the renewable system will integrate with existing systems (e.g. Heat pumps with existing radiators). Research your fuel supply options as early as possible as this will help guide your system design and help to estimate running costs. Remember the whole industry is still learning about renewable energy, even the experts, so keep asking the questions and keep researching at every stage
- **Leadership and community training:** strong leadership is needed to ensure proper project management and financial accountability. Communities have to be very self-analytical about their capabilities, identifying what they can do for themselves and where their weaknesses are, so that the need to procure additional skills or expertise can be factored into development costs early on. Build a provision for community training into bid applications to develop capacity in the community for the ongoing development, running and maintenance of the system. Try to arrange shadowing or mentoring of project developers by community members to spread understanding of the system. Do not sign off the commissioning of the technology until you are confident in the operation of the system and members of the community have received training on running it. Remember to ask about repair and warranty arrangements
- **Regulation:** talk to regulatory bodies, such as your local planning authority and the environment agency early on to establish what permissions are needed and get advice and guidance
- **Funding:** consider how you will manage cash flow in advance and discuss it with funders. If using large funding sources such as the EU, ensure you have adequate measures in place to protect against individual liability in the case of claw-back. Work on worst case scenario for the amount of cost savings or revenue you will generate from your renewable energy system. This will help to manage expectations and should lead to the community being pleasantly surprised rather than disappointed about the outcomes.

Seeing a renewable energy project in action really is the best way of learning. Find out if there are any renewable energy schemes up and running near you and ask to visit them and talk to the community leaders involved. Links are provided in the appendix for a number of climate change and renewable energy support groups and networks to help communities thinking of getting active in this area.

10. Over To You

We hope this guide has been a useful overview and that the signposts to further advice and information will help you with your ideas and project planning. Now it's up to you. Think about how you might inspire your community to investigate options for generating home grown renewable energy to provide community benefits now and for future generations.

11. Appendix: LInks to further information

Energy Efficiency

The Energy Saving Trust www.energysavingtrust.org.uk

National Energy Action www.nea.org.uk/

Centre for Sustainable Energy www.cse.org.uk/pages/energy-advice/

Energy Advice Pack for Off-Mains Gas Homes
www.nea.org.uk/assets/Uploads/Calor-pack-website.pdf

Community Led Planning

Action for Communities in Rural England http://www.acre.org.uk/our-work/community-led-planning

Centre for Sustainable Energy Planning for low carbon living resources
www.planlocal.org.uk (live from late January 2011)

Campaign to Protect Rural England Planning Help http://www.planninghelp.org.uk/home

Campaign to Protect Rural England Unlocking the Landscape
http://www.cpreonline.org.uk/unlockingthelandscape/

Town and Country Planning Association Guide to Community Energy
http://www.tcpa.org.uk/pages/community-energy-urban-planning-for-a-low-carbon-future-.html

Community Buildings

Action for Communities in Rural England Village Hall Information
http://www.acre.org.uk/our-work/community-assets/village-hall-information-service

Big Lottery Fund for Community Buildings in deprived communities
http://www.biglotteryfund.org.uk/prog_reaching_communities.htm?regioncode=-uk&tab=3

CPRE Norfolk Green Building Awards http://www.cprenorfolk.org.uk/greenbuildings/tours

Community Ownership

The Community Development Trust www.dta.org.uk

The Community Shares Programme www.communityshares.org.uk

Co-operatives UK www.cooperatives-uk.coop

Department for Energy and Climate Change Community Energy Online Governance Structures pages
http://ceo.decc.gov.uk/en/ceol/cms/process/Stage_3/plan/Governance_Str/Governance_Str.aspx

The Scottish Renewable Energy Toolkit http://www.scotland.gov.uk/Publications/2009/03/20155542/0

The Centre for Sustainable Energy, Community Benefits from Wind
http://www.cse.org.uk/projects/view/1054

Finance and Funding

Energy Saving Trust Grants Database
http://www.energysavingtrust.org.uk/Easy-ways-to-stop-wasting-energy/Energy-saving-grants-and-offers/Grants-and-Discounts-Database

Eon Sustainable Energy Fund http://www.eon-uk.com/about/sustainableenergyfund.aspx

Big Lottery Funding http://www.biglotteryfund.org.uk/

Funding Central Database http://www.fundingcentral.org.uk

Co-op and Community Finance
http://www.co-opandcommunityfinance.coop/

Community Sustainable Energy Programme guidance on FITs and Grants
http://www.communitysustainable.org.uk/filelibrary/NEW%20Logo%20Docs%20(August%202010)/CSEP_FAQs_FITs_V2_0.pdf

Guidance on Free Solar PV Schemes – CSE and the Energy Saving Trust
http://www.cse.org.uk/downloads/file/fair_deal_feed-in_tariffs.pdf
http://www.energysavingtrust.org.uk/Generate-your-own-energy/Solar-electricity/Consumer-guidance-on-free-solar-PV-offers

Solar4Schools – Solar PV schemes for schools www.solar4schools.co.uk

Micro Hydro

Peak Power, The Quick Guide to Micro Hydro, Friends of the Peak District
http://www.friendsofthepeak.org.uk/Campaigns/Climate_change/Small_scale_hydro_power/

Settle Hydro Project Case Study
http://www.yorkshire-forward.com/improving-places/where-we-live/rural-market-towns/settle/case-study

Environment Agency Community Guide to Hydropower
http://publications.environment-agency.gov.uk/pdf/GEHO1010BTDN-E-E.pdf

Water Power Enterprises www.h2ope.org.uk

Solar PV

Community Energy Online Solar PV
http://ceo.decc.gov.uk/en/ceol/cms/process/stage_4Project/solar_pv/solar_pv.aspx

Energy Saving Trust Generate Your Own Energy
http://www.energysavingtrust.org.uk/Generate-your-own-energy

The Renewable Energy Centre Solar PV
http://www.therenewableenergycentre.co.uk/power-from-the-sun-(photovoltaics)/

The Solar Trade Association http://www.solar-trade.org.uk/caseStudies.cfm

Community Wind

Community Wind Co-operative http://www.energy4all.co.uk/

The Renewable Energy Centre Wind Power http://www.therenewableenergycentre.co.uk/wind-power/

The Energy Saving Trust http://www.energysavingtrust.org.uk/Generate-your-own-energy/Wind-Turbines

Community Energy Online – wind
http://ceo.decc.gov.uk/en/ceol/cms/process/stage_4Project/wind/wind.aspx

CPRE Unlocking the Landscape Report www.cpreonline.org.uk/unlockingthelandscape/

Renewables East Community Wind Guidance
http://www.renewableseast.org.uk/uploads/2008-7-3-RE-Community-Wind-Guidance-Note-published.pdf

Solar Water Heating

The Energy Saving Trust
http://www.energysavingtrust.org.uk/Generate-your-own-energy/Solar-water-heating

Community Energy Online Solar Thermal
http://ceo.decc.gov.uk/en/ceol/cms/process/stage_4Project/solar_thermal/solar_thermal.aspx

The Renewable Energy Centre Solar Heating http://www.therenewableenergycentre.co.uk/solar-heating/

Solar Trade Association http://www.solar-trade.org.uk/casestudies.cfm

Heat Pumps

Community Energy Online ASHPs
http://ceo.decc.gov.uk/en/ceol/cms/process/stage_4Project/air_source/air_source.aspx

Community Energy Online GSHPs
http://ceo.decc.gov.uk/en/ceol/cms/process/stage_4Project/ground_source/ground_source.aspx

Energy Saving Trust Heat Pump Field Trails
http://www.energysavingtrust.org.uk/Generate-your-own-energy/Heat-pump-field-trial

Heat Pump Association http://www.heatpumps.org.uk/

The Renewable Energy Centre
http://www.therenewableenergycentre.co.uk/ground-and-air-source-heating/

District Heating

Department for Energy and Climate Change
http://www.decc.gov.uk/en/content/cms/what_we_do/uk_supply/energy_mix/distributed_en_heat/distributed_en_heat.aspx

Combined Heat and Power Association http://www.chpa.co.uk/

Biomass Energy Centre District Heating Case studies
http://www.biomassenergycentre.org.uk/portal/page?_pageid=77,97356&_dad=portal&_schema=PORTAL

Biomass

The Biomass Energy Centre http://www.biomassenergycentre.org.uk

The Energy Saving Trust http://www.energysavingtrust.org.uk/Generate-your-own-energy

Community Energy Online Biomass
http://ceo.decc.gov.uk/en/ceol/cms/process/stage_4Project/biomass/biomass.aspx

Anaerobic Digestion www.biogas-info.co.uk

Combined Heat and Power www.chpa.co.uk

Learning from the leaders

Learning from the Leaders: A guide to help communities avoid the pitfalls and perils when developing a renewable energy project for the first time.
http://www.northwoods.org.uk/files/northwoods/Learning%20from%20Leaders%20Low%20Res.pdf

Low Carbon Communities Network http://lowcarboncommunities.net/

Energy Saving Trust Green Communities Network http://www.energysavingtrust.org.uk/cafe

Transition Towns Network http://www.transitionnetwork.org/

Independent Community and Householder Renewable Energy site, YouGen http://www.yougen.co.uk/

Action with Communities in Rural England
Somerford Court
Somerford Road
Cirencester
Gloucestershire
GL7 1TW

Tel 01285 653477
acre@acre.org.uk
www.acre.org.uk

Campaign to Protect Rural England
128 Southwark Street
London SE1 0SW

Tel 020 7981 2800
info@cpre.org.uk
www.cpre.org.uk

Commission for Rural Communities
John Dower House
Crescent Place
Cheltenham
GL50 3RA

Tel 01242 521381
info@ruralcommunities.gov.uk
www.ruralcommunities.gov.uk

National Association for Local Councils
109 Great Russell Street
London
WC1B 3LD

Tel 020 7637 1865
nalc@nalc.gov.uk
www.nalc.gov.uk