CHAPTER 11

Community energy generation

‘There is huge opportunity with the CLT sector. There could be thousands of CLTs because the model doesn’t just have to apply to housing, it can apply to any form of business or development’

Dr Bevis Watts, Triodos Bank

11.0 Community energy generation

Some community groups may aim to implement their own renewable energy schemes to reduce their community's carbon footprint and contribute towards the wider transition to a low carbon economy. Some such schemes can also provide a sustainable income source to support the CLT or wider charitable aims in the local area.

The technologies most suitable to a particular location will depend on a number of site specific factors, including the size of the development and its heating and electricity requirements, the natural resources available to it within the land boundary and whether gas is available for heating or not.

The advantage of a community owned renewable energy system is that larger, shared systems tend to be more efficient and better value for money than smaller, individual ones and by sharing the costs of the project, potentially large sums of money can be raised to fund the capital costs, without necessarily needing a bank loan. These are generally recouped over time through schemes such as the Feed in Tariff (FIT) and Renewable Heat Incentive (RHI), which pays generators to produce renewable energy.

St Ewe Affordable Homes, Cornwall

11.1 Renewable energy options

Renewable Energy Options

Technology	Description	Where applicable
Solar photovoltaic cells (PV)	Panels attached to a roof or on frames on the ground which produce electricity from the sun	Any large south/south-east/south-west facing roof or area of land which is not overshadowed by trees or other buildings, with daytime electricity user onsite. Roof needs to be in suitably good condition for panels to remain for 25 years. Asbestos roofs are not suitable. Listed buildings or those in conservation areas will need special consents from the local planning authority.
Solar thermal	Panels attached to a roof which are powered by the sun and produce hot water	Most residential buildings have suitable hot water requirements. It requires a hot water storage tank, so not suitable for combination boilers or heat on demand systems. Again needs to be as south facing as possible and unobstructed by trees or other buildings.
Wind	A turbine that produce electricity when blades are rotated by the wind.	A site with good year round wind resource, where turbine is sufficient distance from nearby properties and roads are accessible for delivery of parts. Wildlife on site or close by may influence location.
Hydro	A turbine located in a river or stream, which is rotated by the movement of water and produces electricity	Upland streams with large drop or lowland rivers with an existing, large weir. Nearby electricity connection is important to keep costs down.
Ground Source Heat Pump	Heating from the latent heat in the ground (c12 degrees year round below the frost line), which is boosted by a heat pump, similar to those that are used in fridges, but run in reverse.	Locations where gas heating is not an option and under floor heating is already installed or is feasible.
Biomass Heating	Solid fuel heating generally from wood, in a domestic context	Where there is a reliable, local supply of sustainably sourced fuel. Better suited to rural locations due to air quality restrictions in some urban locations. Need sufficient space for boiler and storage of fuel, as well as district heating pipes to distribute the hot water around the site.

The table on the left describes the renewable energy technologies most likely to be applicable for a CLT and some basic guidance as to when they are likely to be applicable.

Anaerobic digestion (AD) is another technology which can generate both renewable electricity and heat from farm wastes, food waste and/or energy crops. However, it has not been included in the table as extensive research by a number of organisations has so far shown that it is challenging for communities to access sufficient waste to fuel the plant and at a community scale it is hard to make it financially viable. It is hoped this will change over time. However, an AD plant is probably the most complex renewable energy technology for a community to run, as it is essentially an agri-industrial business, which is more complex and demanding to run over time than most other renewable energy technologies.

Feed-in tariffs

Schemes producing electricity from sustainable sources such as solar power, small wind and hydro should benefit from feed-in tariffs (FITS). Tariffs are payment for every kilowatt hour of electricity generated. The rate paid depends on the type and size of the system used to generate renewable energy. An additional payment is made for surplus electricity not used locally that is fed into the National Grid.

This system was legislated in the Government's Energy Act 2008 in order to incentivise small scale renewable electricity initiatives. Feed-in tariffs are applicable to England, Wales and Scotland.

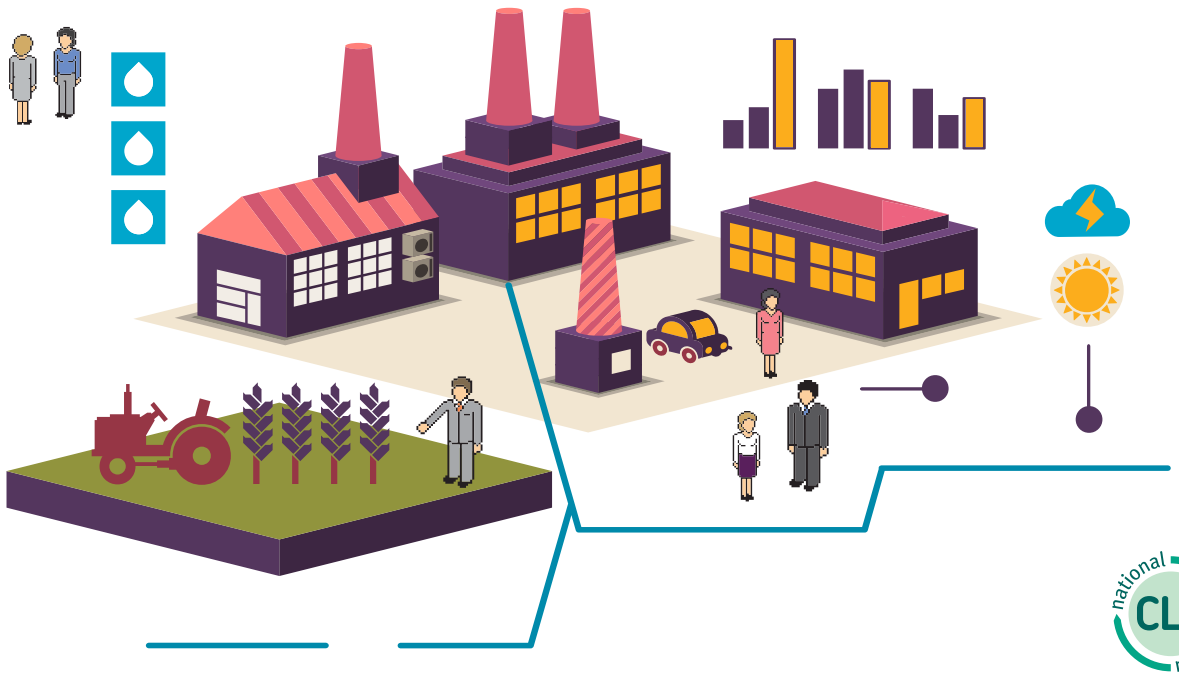
The government regularly reviews the FIT and revises it in line with market prices, to ensure the rates are sufficient but not excessive. For the latest information see the Feed in Tariffs website at **www.decc.gov.uk/fits/**

Renewable Heat Incentive

The Renewable Heat Incentive (RHI) is a fixed payment for the heat generated in a renewable fashion, such as by ground source heat pumps, solar thermal panels or biomass boilers. Once the renewable heat system is in place, the amount of heat it produces is measured. A fixed payment is made, based on the measured output, the type of technology and the size of the system.

Community renewable schemes are eligible for the RHI, as are households, landlords, businesses, farmers, schools, hospitals, care homes and others enterprises. The RHI came into force in April 2011 for commercial schemes. Residential schemes become eligible in the subsequent phase, the date of which has not been announced yet.

Further information on how to implement a sustainable heating system, how to qualify for the financial incentives and the latest on the start of Phase 2 can be found on the website at **www.decc.gov.uk/RHI/**



11.2 Community financing

A community group may have a budget for heating systems or sustainability measures, in which case financing should be relatively straight-forward. All of the previously listed technologies benefit from the FIT or RHI (apart from currently biomass heating in homes), so this income, in addition to the savings made on fuel bills, should cover the costs of maintenance and repay the cost of the system over its life. The rates do change over time, so it is important to check what the current rate is and when it is due to be revised.

In many cases, however, communities may have excellent resources and a desire to make use of them to reduce their carbon footprint, but financing the high capital costs can be a problem. Raising funds for a community share issue can provide the answer. Where very large sums are sought, this can be matched with a loan, without affecting the community ownership of the project. A community share offer could be limited to members of the CLT or could involve a wider community locally, supportive of renewable energy and the activities of the CLT. Several millions have been raised for large scale wind projects such as Baywind in Cumbria (the UK's first community owned wind project) and Westmill in Oxfordshire. As long as the project can provide a reasonable return to the investors, it has proven possible to raise such sums without grant aid or private sector involvement.

Not-for-profit organsiations that can help you assess what opportunities you have and whether they are viable for community ownership are:

- Energy4All Ltd (UK wide)
- Sharenergy Co-op (England and Wales)
- Ynni'r Fro (Wales)
- Community Energy Scotland
- Carbon Leapfrog

Some of these also have funds to help pay for the development work, which can be expensive and can be hard to obtain as it is at risk, if the project does not turn out to be viable. Other funders include:

- The Community Generation Fund
- Pure
- Community Energy Challenge
- Co-operative Enterprise Hub

Case studies

Small Scale Hydroelectricity: Torrs Hydro New Mills

Using a local river to construct a scheme, Torrs Hydro New Mills based in Derbyshire was set up to create a small hydro-electric scheme capable of generating up to 250,000 kWh of electricity a year: the equivalent of the annual electricity consumption of around 50 typical British homes. The scheme was constructed with assistance from a specialist development company, H2OOPE, who specialise in consulting on community-led hydro electric schemes. In total, the scheme cost around £330,000. It was financed through a combination of grant funding (c£165,000), loan finance, and share capital (c £125,000) raised through the formation of an IPS for Community Benefit. As such the scheme is owned by the community acting to improve their local environmental sustainability. Torrs Hydro holds regular open afternoons in the summer and has commenced an educational programme with local schools.

Future profits from the scheme will fund a community grants programme.
For more on Torrs Hydro please visit **www.torrshydro.org/index.php**

Further advice and support:
www.sharenergy.coop
www.h2ope.co.uk
www.thegreenvalleys.org

Community Solar: Leominster Community Solar

Leominster Community Solar was set up as an Industrial and Provident Society (co-operative) to install, own and maintain a 50kW array on the roof of a sports hall in the market town of Leominster, Herefordshire. This array provides about 10% of the electricity demands of the sports centre and helps them to meet their carbon targets, as well as reducing costs, with the purchase of solar electricity at lower cost than their grid electricity. This is aimed at providing members of the co-op who invested the £150,000 required an average 6% return over the 25 year life of the project. For tax payers who invested, there are tax breaks which mean that the average return is closer to 8%.

Local support for the project was overwhelming with the share offer being oversubscribed by over 40%, despite the government proposing swift changes to the FIT that would have jeopardised the project.

Further details about the project and how to implement as similar one can be found at:
www.sharenergy.coop/leominstersolar/

Case studies

Medium-scale wind: **Bro Dyfi Community Renewables**

Bro Dyfi Community Renewables was formed in 2001 as an Industrial and Provident Society for community benefit, to develop community-owned energy projects using wind and other sources of clean sources of power. Its first project was a 75 kW Vestas wind turbine installed in 2003 on the hill above the Centre for Alternative Technology (CAT) near Machynlleth in mid Wales. The turbine supplies CAT with power, and the surplus is sold to the National Grid. A proportion of the shares were paid for by a grant from the Energy Savings Trust. The dividend from these shares goes into a community energy fund, which funds energy efficiency measures in the Dyfi Valley. A second project to replace the redundant prototype wind turbine at Mynydd Glandulas with a refurbished 500kW Nordtank started generating in 2010.

For more information, go to the website at ww.bdcr.org.uk, which provides an analysis of their project development including consideration of capital costs and legal structure.

For communities that do not have the capacity or desire to take forward a wholly community owned development there may be opportunities to liaise and partner with commercial and professional organisations developing renewable projects in their locality.

For more information on how best to take your project forward:
www.energysteos.coop
www.sharenergy.coop/blog/2011/01/14/new-wind-pack/
www.scotland.gov.uk/Publications/2009/03/20155542/CRETKPDF