

Community Action for Energy (CAfE) in the UK **Dyfi Valley Community Renewable Energy Project**

Ekodyfi, United Kingdom

Summary

This case study explains how several organisations in mid Wales have come together to enable local people to carry out small-scale schemes using various renewable energy technologies.

End-user area	Target Audience	Technical
<input type="checkbox"/> New buildings	<input checked="" type="checkbox"/> Citizens	<input checked="" type="checkbox"/> Energy efficiency
<input type="checkbox"/> Refurbishment of buildings	<input type="checkbox"/> Households	<input type="checkbox"/> Heating
<input type="checkbox"/> Transport and mobility	<input type="checkbox"/> Property owners	<input type="checkbox"/> Cooling
<input type="checkbox"/> Financial instruments	<input type="checkbox"/> Schools and universities	<input type="checkbox"/> Appliances
<input type="checkbox"/> Industry	<input type="checkbox"/> Decision makers	<input type="checkbox"/> Lighting
<input type="checkbox"/> Legal initiatives (municipal regulations, directives, etc)	<input checked="" type="checkbox"/> Local and regional authorities	<input type="checkbox"/> CHP
<input type="checkbox"/> Planning issues	<input type="checkbox"/> Transport companies	<input type="checkbox"/> District Heating
<input checked="" type="checkbox"/> Sustainable communities	<input type="checkbox"/> Utilities	<input checked="" type="checkbox"/> Solar energy
<input type="checkbox"/> User behaviour	<input type="checkbox"/> ESCOs	<input checked="" type="checkbox"/> Biomass
<input type="checkbox"/> Education	<input type="checkbox"/> Architects and engineers	<input checked="" type="checkbox"/> Wind
<input type="checkbox"/> Other	<input type="checkbox"/> Financial institutions	<input type="checkbox"/> Geothermal
	<input type="checkbox"/> Other	<input checked="" type="checkbox"/> Hydro power
		<input type="checkbox"/> Other

Context

The Dyfi valley, a community of some 12,500 people, centred on Machynlleth is in coastal mid-Wales. Around 60% of the residents are Welsh-speaking. Within the valley's 74,000 ha are many family hill farms; however, the economy is increasingly dominated by tourism and other services. In recent years, there has been a serious decline in farm incomes. Young people have moved away, and there has been a change in community composition. On the other hand, there are many assets: the environment (landscape and habitats), language and culture, change and tradition, and a sustainable technology business cluster.

The use of water power had been widespread until the 1950s. The local economy then became dependent on imported electricity, as there was little mains gas. Today, annual energy expenditures are about £4 million. Commercial wind farms produce as much electricity as is consumed locally, but most energy for heating is still imported. The area wants to build on its experience and reputation for renewables.

Objectives

The project aimed to:

- Encourage local people to engage with energy issues;
- Establish some "community-based" renewable energy installations;

- Improve understanding and support for renewable energy by maximising local benefit and by taking a consensus approach.

Specific targets:

- 5 individual schemes;
- 350 kW of capacity (whether electricity or heat);
- 1 forward-planning strategy for the local energy economy.

The criteria for “community-based” were:

- Local benefit;
- Local support;
- (At least) majority local ownership;
- (At least) majority local control;
- Schemes may be in private, joint or common ownership.

Process

Technologies employed were hydro, wind, solar thermal, solar electric, wood heat and ground source heat pump.

The EU funding enabled the project to grant-aid eligible schemes at a rate of up to 30% of capital costs. Financial help was also given towards feasibility studies. The Project also offered staff time – the Project Officer responded to suggestions but also initiated them in some cases (particularly following a hydro-electric resource study). He provided first level feasibility studies free, together with other administrative support and guidance as necessary, including acting as planning agent for a farmer and as secretariat for two community groups formed for the purpose.

Promotion was achieved through visits to various local groups, including councils, and telling those known to be active in local networks of all kinds. Public meetings were held on specific topics and the Post Office delivered leaflets door-to-door on two occasions. Local media were also important, including the three very local Welsh-language monthlies. Word of mouth is crucial in this rural community.

Initial ideas were worked up (where they proved to be feasible) into applications for grant aid and the successful ones guided forwards to implementation. Scheme proposers / owners included schools, farmers, other businesses, householders and community groups. The latter have created an Industrial and Provident Society called Bro Dyfi Community Renewables Ltd. This is a vehicle for local development and ownership. It has erected a 75kW wind turbine as its first project.

A Solar Club promotes solar water heating to householders and puts them in a position where they may install their own system.

The project began in earnest in June 1998. The initial funding was for three years and elements of it were extended until June 2002. A similar project for the whole of Powys has begun and will continue the work.

Ecodyfi's renewable energy work is being continued as follows:

- Continue development of schemes not completed during the previous project;
- Continue Solar Club, on a wider geographical basis;
- Address energy reduction in transport as well as households and develop renewable heat provision, including from local wood resources;
- Work towards 100% renewable energy supply for the Dyfi Valley by these means.

Financial resources and partners

The European Commission provided 34% of the capital and revenue funding from the European Regional Development Fund (ERDF) through the Objective 5b structural funding programme. The Welsh Development Agency, Powys County Council, Dulas Ltd and the Shell Better Britain Campaign all contributed to the revenue element. Investments by local private sector participants / owners in individual schemes counted as part of the “match-funding” for the EC support. Ceredigion County Council and Cymad (then a LEADER group) provided additional funding for feasibility studies.

65 initial scheme registrations were carried through to 28 grant offers. 16 schemes were completed and grant-aided (at up to 30% of costs). 541 thousand Euros were invested in these, including 155 thousand Euros of ERDF grant aid. In addition, solar water heating was installed in 10 houses, representing a further 24 thousand Euros. Revenue costs were 312 thousand Euros, making a total of 1,032 thousand Euros.

The Dyfi Eco Valley Partnership (**ecodyfi**), a Company Limited by Guarantee, manages the project. It was created by Powys and Gwynedd County Councils, Dulas Ltd, the Centre for Alternative Technology, the Welsh Development Agency and the Snowdonia National Park Authority and has drawn in other partners and local people in becoming the independent sustainable community regeneration body for the area. It is now managed by a Board of local people, some with connections to other organisations.

Results

The total installed capacity of completed renewable energy schemes was 205 kW electrical capacity (hydro, wind, solar) and 150 kW heat capacity (solar, wood, heat pump).

Schemes completed to date include:

- 120 kW grid-connected hydro (by a farmer);
- 3 x 800 – 1000 W (domestic) solar electric, one of which powers a ground-source heat pump;
- 1.4 kW solar electric array at Dyfi Eco Park;
- 2 x 690 W solar electric arrays at schools;
- 124 sq. m. solar thermal array plus heat transfer main at CAT;
- 2 x domestic woodstove / solar water heating systems;
- 10 installations by Solar Club members.

The benefits have spread through the local economy and community (even where the recipient of grant aid was an individual) through the following means:

- Reduced expenditure on energy supplied from outside the community keeps more money circulating in the local economy;
- Equipment supply, technical support, civil engineering and maintenance was supplied commercially from local SMEs or sole traders;
- Each scheme contributes to the credibility of a green local energy economy whose existence can be promoted and replicated elsewhere, again drawing on local SME services. Reduced consumption of fossil fuels reduces emissions of carbon dioxide, alleviating global climate change.
- One job has been created directly from this project and a further 8 jobs safeguarded.

Many people in the community are now more aware of the economic and environmental implications of energy use and this influences their behaviour in subtle ways, from being more careful to switch off unused electrical to using public transport.

Key Success Factors

- Availability of grant aid / officer support / technical expertise and assistance with “at risk” development money e.g. feasibility studies;
- Keen individuals;
- Sufficient time for the development phase.

Lessons learned and repeatability

- Grant-aid was seen as crucial: very small schemes tend to be economically marginal, with long pay-back times.
- It’s difficult for people to risk investing in development work before knowing whether planning permission, finance, etc will be secured, so subsidised or free feasibility work is important.
- Landowners and community groups often cannot carry out the necessary development work on their own and need a lot of “hand-holding” – providing information, sign-posting to technical assistance and/or doing some of the leg-work or administration for them.
- Small schemes are easier to get accepted by neighbours, planners and the community generally, but suffer from dis-economics of scale, particularly concerning grid connection costs. Legal costs (especially for share issues) don’t reduce proportionally with energy output, thereby reducing profitability. Professional fees may be resented - mechanisms to overcome them are important.
- Working with communities takes a long time.
- Individuals are important. People with enthusiasm and persistence are needed to make schemes happen. Others will then follow the example. Landowners can make or break schemes.
- Regulators play a crucial role. Planning authorities should be shown the context and general benefits to be gained, so they are informed when individual applications come in. Projects are vulnerable to changes in the regulatory environment. The Environment Agency tightened up the way it dealt with applications to abstract water for hydro-electricity schemes –significantly reducing the viability of sites.
- Changes in the market cannot always be anticipated. The review of the electricity trading system caused many months of uncertainty. The new system reduced viability by reducing wholesale prices and disadvantaged small intermittent generators (such as micro-hydro sites) because of the need to predict output. On the other hand, Renewables Obligation Certificates indicate political will to support renewables.
- The ability to link to the local distribution system at reasonable cost is an issue for schemes wishing to export electricity. The system operator may not have much experience of such generators. They may be unwilling to connect to single-phase lines – the generator would have to pay to upgrade these lines to three-phase. Standards of protection are high.
- Promoters need access to financial, legal and community development expertise as well as technical input.
- Schemes requiring shareholders need a means to attract and inform potential investors which is inexpensive and complies with the Financial Services Act: a Renewable Energy Investment Club has been formed by Dulas Ltd and Groundwork Bridgend
- Creating a market is difficult (e.g. for wood chip from forest residues and farm woodlands). There is insufficient confidence in the economics when the supply infrastructure is not in place.

The repeatability of the project is good. Easiest where landowners feel the need to do something different because their main business is under pressure. Another helpful factor is existing public sympathy for the technologies, resulting from folk memory or relevant business interests in the locality.

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