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Photo: Kirklees Council ©

The 'Circus': a new social housing development in West Yorkshire incorporating solar panels

Sustainable energy at the local level – making it happen

Philip Webber describes how a small council-based environment unit implemented one of the UK's largest programmes on local sustainable energy, despite a wide range of obstacles.

In 1990, I was appointed as a lone environment coordinator for Kirklees Metropolitan Council in West Yorkshire. Since then, I have gradually built up a team of 16 highly capable people and together we have expanded annual funding to approximately £2 million per annum. We have used this finance to generate an additional £4.5 million a year, largely in sustainable energy investments in the local community but also in advising other local authorities and giving grants to local community groups.

Start with efficiency…

The big (energy) plan was to invest in energy efficiency first – as this is the most cost-effective way to reduce greenhouse gas emissions. This energy efficiency drive was coupled with an anti-fuel-poverty campaign to achieve a degree of social equity by mainly helping low-income people, while richer, more profligate energy users could be offered measures they would pay for at a good bulk-buy price. This was done by working closely with the housing department (now outside the council) and housing associations, and taking advantage of energy grants for measures such as cavity wall insulation, loft insulation etc. Hence we had combined buying power. Taking advantage of European Commission money around seven years ago, we set up an energy agency to work alongside the council called Kirklees Energy Services (KES). The government had now taxed energy utilities, effectively forcing them to spend money on energy efficiency measures. Initially these utilities wanted to give us thousands of free low energy light bulbs. As ideas matured we started working with several utility companies in both gas and electricity to develop joint programmes, further adding to our financial resources at the local level. I must say that the way this has been implemented by government through several agencies and departments has been extremely confusing. With about six schemes and a lack of coordination with other initiatives, it is very difficult to navigate. By having an energy agency we can offer a one-stop advice service to householders and a choice of installers through a tendering process, with follow-up quality checks.

…and then renewable energy technologies

Our second aim was to invest in renewable energy – initially taking advantage of EU money (Framework V and Altener) with up to 70-90% funding. We were invited to be part of the largest European solar photo-voltaics (PV) project, called Sun Cities. The concept

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Sustainable energy at the local level – making it happen

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was to buy huge amounts of PV – therefore helping to reduce the price – and install these panels in large arrays on domestic and business roofs. The Dutch were the lead partners and, in the town of Heerhugoward, they have built a complete village in the middle of a lake protected by dykes with virtually every roof covered in solar panels. It sounds easy, get the money and put lots of panels on roofs – but it was not. It was actually quite hard to find enough large roof spaces, and this was an insight into how uncertain most building or refurbishment projects are. There are always delays in the timescales. Those lending the money always proved extremely cautious and there were continual questions about the likely strength of the commercial or housing markets. A completely unexpected blow was the sudden change in the Dutch government – which put the project funding in jeopardy for over a year.

After this project started we were invited to be part of the Department of Trade and Industry's (DTI) major PV demonstration project – this offered 50% funding for shorter timescales. We were able to combine this funding sometimes with the EU funding and sometimes with government regeneration money. All in all, it was a highly complex funding set-up with different timescales, reporting requirements and auditing regimes. Our highly talented renewable energy and energy officers managed to tie this all together into one of the largest PV programmes in the UK. At the same time we were also installing solar hot water panels and heat pumps, and trying out biomass-fired boilers. Over the last three years this amounted to a total spend exceeding £6 million per annum and resulted in (amongst other things) the installation of 5% of the total UK PV - the box (right) gives more details.

Sustainable energy projects of Kirklees Metropolitan Council

Activities to date

Technology	*Scale*
Energy efficiency (mainly building insulation)	~36,000 homes improved over 7 years
Solar PV panels (electricity)	518 homes (350kW peak installed – amounting to 4.9% of UK capacity)
Solar hot water panels	150 homes
Wind turbines	5 turbines* installed at three sites: • school (1 x 5kW) • training centre (2 x 15kW) • civic centre (2 x 6kW)
Carbon neutral development	Derelict mill converted to apartments and health spa, including biomass-fired Combined Heat and Power plant (wood) & solar PV panels (49kWp)
Heat pumps (air-source)	Under trial

Future activities

Each year from 2007, 53,000 households will be approached regarding grants, benefits and renewable energy technology installation until all households in the metropolitan area have been contacted. (Scheduled timescale: four years.)

*** NB These are not household wind turbines. They are much larger, with diameters between 6m and 9m and mounted on masts over 9m high.**

Bright ideas

It is always asked of any entrepreneur – where did he or she get their first £100,000 from? For us, there were two 'bright ideas':

- *Revolving energy investment fund.* This fund part-pays for itself by making energy-related loans. The fund is now worth around £190,000 each year and is about 60% self-funding.

- *Climate change taxation windfall.* When the Climate Change Levy was imposed on energy use, many companies and all local councils suddenly found themselves several hundred thousand pounds richer. This was because, at the same time, some employment taxes (National Insurance contributions) were reduced. As local councils are large employers of staff while not being intensive energy users, they received a large windfall. I managed to secure this sum for our work as an annual capital investment now standing at £300,000.

Both ideas are now accepted by HM Treasury as good UK practice.

Using this as the match-funding then enabled the original money to generate twice as much again. Almost all funders like to see their own investment matched by other financial sources, so everyone is happy.

The need for rebuilding

A recent report by the Tyndall Centre for Climate Change Research[1] highlights the critical need to reduce energy demand. In the housing field, they argue that there is a need for clearance of some areas of poor housing as the most efficient way to create new energy efficient homes. After all, our UK stock is only now as good as standards in the Nordic countries 18 years ago! This is important because, even with new stronger building standards (such as the new Part F building regulations), most housing stock already exists, wasting energy and money.

Through working with local housing associations we have been able to clear some unfit housing and rebuild really exciting new social housing (for less well-off tenants) with integrated solar panels for hot water and electricity and to high insulation standards. One building, called the 'Circus', has been built in a circle with roof-mounted panels (see photo on p.1), while nearby the 'Southern Lights' development uses

a saw-edged design with panels on south-facing roof elevations (see photo on right).

Changes and obstacles

Unfortunately no one – not even ourselves – can follow the path we took to install renewable energy technology. EU funding is no longer available for solar panels. The EU rightly believes that governments have the necessary powers and instruments to encourage renewables. The DTI demonstration programme is no more either – although we now have the new Low Carbon Building Programme. But this and other funding sources are nowhere near enough to cause the dramatic increase in domestic renewable energy capacity that is needed to make a large contribution to tackling climate change.

The major expansion of renewables in Germany shows how things should really be done. There, householders (and others) are paid a higher tariff for supplying electricity from domestic renewables to the grid than they are charged for buying electricity from the grid. Thus a huge market for domestic renewables has been created. This has proven simple and effective.

Unfortunately, in the UK, the current market and planning frameworks positively hinder renewables. Technically it is possible to sell electricity to the grid, but serious obstacles must be overcome. For example, for solar PV, you need a special meter and cut-out relay otherwise the local electricity supplier will not let you connect to the grid. To get paid for the electricity you supply, you need to obtain a Renewable Obligation Certificate (ROC). However, to get one is difficult and time consuming, including agreeing to a 17-page contract. After all that, you then get paid at a lower rate than for the electricity you buy and have to pay a charge for the new metering. The situation with small wind turbines is worse. First, you will need planning permission. There is also a risk of noise nuisance or house vibrations. These are technical issues that can be dealt with, but there are so many new designs it will be some time before the market is clear and the best solutions found. Personally, I suspect that once the costs of solar PV, solar water heating, heat pumps and biomass-fired boilers reduce significantly, these will become routinely fitted. Even current biomass boilers fall foul of very complex clean air regulations which do not permit them to be used legally in many parts of the UK even when they have met EU standards.

Photo: Kirklees Council ©

'Southern Lights': a new social housing development incorporating solar panels

Renewables need to be marketed in the way that double-glazing was decades ago but with greater quality control, agreed standards and funding to back up new technologies. Rising energy prices will undoubtedly help, but we should also not underestimate the power of 'fashion'. To be somewhat cynical, we will know that domestic renewables have arrived when people change them how they currently change kitchens to achieve a 'new look'.

The building industry will also need to improve its ability to install such devices. Currently the new working-at-height regulations have caused additional costs and delays. Also fitting something on an existing roof is not always straightforward. Roof structures can be complex and adding something new can challenge the overall integrity of the design through introducing completely new loading elements. The planning system also needs to be speeded up. Currently it is far too slow to deliver any substantive changes within the timescales needed to save the planet.

I feel fortunate to have been part of the very early days of trying out a wide range of new renewable systems in practice. It has been fun despite the multiple frustrations of bureaucracy, funding regimes and a host of new legislation. At least people want to see the changes and we have been able to show them some practical examples of things that work.

Moving ahead

Looking ahead, I see the way forward arising out of making new relationships with partners across the district and across the region. The new Local Strategic Partnerships and local area agreements backed up by the new government approach in yet another white paper will give us the power to do this, if not the finance or the political will.

Frankly if we are to be serious about renewables and energy efficiency the state should invest more. We need to pay ordinary people a decent price for the domestic energy they generate. Stronger regulation would force utilities to take renewables more seriously. Energy providers need to be reimbursed for so called 'negawatts' – energy saving measures which ultimately pay for themselves. Government could and should make it all so much easier by tilting the market using regulation and then letting the market do what it is good at – moving money about. The German Chancellor, Angela Merkel, announced several billion euros for energy efficiency when she came into power. This is invigorating the economy far more than some of the current major projects favoured by the UK government – for example, a new nuclear weapons system and new aircraft carriers – not to mention helping to tackle the dangerous reality of climate change.

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This article is expanded from a presentation given at SGR's 2006 conference (see p.23).

References

1 Bows, A. et al (2006). Living within a carbon budget. Tyndall Centre for Climate Change Research. http://www.tyndall.ac.uk/publications/briefing_notes/Livingwithacarbonbudget.pdf