

NATIONAL PARKS STUDY TOUR



# FULL REPORT

## INTRODUCTION

**During February 2009, a small group of people from Exmoor National Park embarked on a study tour in order to learn from community activity going on in other National Parks, principally in relation to climate change.**

The tour group consisted of the Sustainability and Economy Manager of Exmoor National Park Authority (Tim Stokes), a representative from the Exmoor Trust (Archie McIntyre) and representatives from a local community-based organisation Forum 21 (Wendy Stephenson and Will Evans).

We visited the North York Moors, Lake District and Peak District National Parks over a period of three days. Organisation of the itinerary for each day was undertaken locally by officers in each National Park - in consultation with Exmoor National Park Authority's (ENPA) Sustainability and Economy Manager.

The total cost of the tour was £925. Funding totalling £610 for representatives from the Exmoor Trust and Forum 21 was secured from the Exmoor Sustainable Development Fund. ENPA bore the costs associated with the attendance of the Sustainability and Economy Manager, including the hire of a vehicle.

In organising the trip we made an effort to take account of the sustainability of the journey. However, it proved to be a difficult task to improve the sustainability of travel. Due to the nature of locations concerned, a journey by public transport would have been impractical. Furthermore, attempts to hire a car with low carbon dioxide emissions were thwarted in part by the lack of availability of such vehicles locally; it would have been possible to hire such a vehicle (e.g. Toyota Prius) but a detour would have been required to collect it. However, the vehicle eventually secured was a Ford Focus 1.6 tcdi which has relatively low carbon dioxide emissions compared with most other cars available. We had also originally intended to travel in one vehicle. However, one of the members of the tour party was visiting relatives in the North East prior to the start of the tour, so she travelled up independently and met us locally. Where practicable thereafter, we shared vehicles, particularly on the shorter trips within the National Parks.

## STUDY TOUR DAY 1 - NORTH YORK MOORS NATIONAL PARK

### **Bon Ghyll hydro-electric scheme**

David and Trudy Sanderson are tenant farmers of the National Trust. They manage a farm some 275m above sea level in the North York Moors National Park. The farm is 'off-grid'. The cost of connecting to the grid was estimated to be in the region of £100,000.

Just under two years ago, they installed a 1kw micro hydro-electric system in a narrow valley that runs about 100m from their house. The 1kw 'Archimedes screw' is an unobtrusive system that rotates gracefully in a Perspex shield.

A weir has been constructed which helps to divert the water from the main course of the stream for a short stretch (no more than 20m) to the screw.

The screw is mounted on a short but steep slope with a head of around two metres. The water flows into the screw turning it. Only a small amount of water is required to do this - such is the efficiency of the engineering. The screw is attached to gears and a small turbine which it turns to produce electricity. Since installing and operating the system, they have since discovered that the gear box was not required.

The three-phase AC power is transferred through a cable to an outbuilding close to their house which houses the lead acid storage batteries and an inverter which delivers 200V AC to the farm. This storage system allowed the farm to receive between two and three days of full power even if the turbine was not running. If the output exceeds the capacity of the batteries, the excess is 'dumped' into a small electric heater. The energy is not entirely wasted as it helps to keep the ferrets (who live in the outbuilding) warm! The total cost of the batteries was around £500 though David noted that he had procured these on eBay and that the cost of new batteries would have been in the region of £2,500 - £3,000.



He estimates that the total cost of the equipment for the system was in the region of £18,000 about £10,000 of this being apportioned to the Archimedes Screw. This was part-funded by the North York Moors Sustainable Development Fund (SDF) and the National Trust. However, the National Trust appointed a consultant to project manage the scheme with a budget of £50,000, all of which was spent. It was not clear what activities were undertaken to justify this cost and it seemed that David was not sure either!

Some of the budget was allocated towards digging the short leat that

draws water from the main stream into the hydro-power scheme. However, David dug this out himself using nothing more technical than a spade and some hard graft.

They now save around £2k per annum in relation to the diesel required to power the generator. They still have to use the generator from time-to-time. However, they have managed to keep this to a minimum by adapting their lifestyle slightly to account for the variations in the output of the hydro-power scheme. For example, at times of low flow, they will try to make sure they avoid using energy intensive domestic and farm equipment

Because of the mechanical simplicity of the system, maintenance is relatively simple. It involves clearing leaves and other potential blockages on a regular basis and opening it up to oil moving parts every few months.

David and Trudy Sanderson can receive a £100 payment through the Higher Level Scheme of Environmental Stewardship to host demonstrations of the technology. Trudy has received special training through the Countryside Educational Visits Accreditation Scheme (CEVAS). They have also prepared information packs for schools to promote visits to the scheme. However, this has not increased the number of school visits though it is understood that they have disseminated the information to the children.

Peter Jones spoke of the merits of this scheme in educating the National Park Authority (NPA) members about the benefits of renewable energy. Two of them sit on the Grant Advisory Panel for the North York Moors SDF and had visited the site with other members of the panel to understand the benefits of the scheme. He noted that this experience aided understanding when discussing other 'green' energy ideas in the context of the SDF and with NPA members in a policy context.

David and Trudy praised the North York Moors NPA for the support that they provided to enable the system to be installed and more generally for the way in which it supports farmers.

David really keen to share his thoughts with others and would gladly chat to anyone who wants to do something similar. Contact through Peter Jones (01439 770657, [p.jones@northyorkmoors-npa.gov.uk](mailto:p.jones@northyorkmoors-npa.gov.uk))

### Lessons learned

- Micro-hydropower generation on the scale witnessed here is mechanically quite straightforward, practical, reliable (anecdotally), and offers a reasonably quick payback on the investment made. .
- Systems on this scale are not visually intrusive and with careful design should not unduly impact negatively on the ecology of a river.
- Farmers and other landowners with a practical leaning are likely to have few problems in managing and maintaining this technology (Archimedes Screw) as the engineering is not particularly complex.

### Application of learning in an Exmoor context

- There are number of farms on Exmoor that have access to nearby streams that could benefit from this technology. However, the systems will need to be designed to ensure that they mitigate any adverse impacts on the ecology of a river, particularly in relation to the passage of migratory fish. As a consequence, not all sites will be suitable.
- Farmers and householders who are off-grid are likely to benefit most from this technology. There are a number of dwellings and farms in Exmoor National Park that are off-grid.

## Community Renewable Energy Team

The Community Renewable Energy Team (CRET) which was set up in 2004, consists of Peter Jones, the Community Renewable Team Officer and Judy Holliday. The CRET facilitates the development of community sustainable energy plans and the deployment of renewable energy technology within the North York Moors National Park.

The total value of the project over the three years from 2008 - 2010 is £1.3m (including match and in-kind funding) of which Yorkshire Forward is contributing £500,000. This helps to pay for two members of staff (Judy and Peter). £100k has been allocated towards projects and most of this has been spent on feasibility studies. Notable successes of the CRET include: assisting a community group in setting up the Esk Energy Industrial and Provident Society to manage the development of a hydropower scheme; and assisting the community in Appleton-le-Moors and Spaunton in setting up a community interest company. The team has also done much to facilitate action to improve the energy efficiency of dwellings in the area.

The North York Moors NPA has been through the process of compiling its Local Development Framework and now has policies for each type of renewable energy.

### Lessons learned:

- The presence of a service that is dedicated to facilitating the deployment of renewable energy and to assisting communities is beginning to bear fruit. In particular, the capacity of the community to organise itself and seek funding for sustainable energy projects has been increased markedly. Though only a few renewable energy systems have been deployed to date as a consequence of the service, many more are in the pipeline. The service also appears (anecdotally) to have the support of the community.

### Application of learning in an Exmoor context:

- At present, there is little in the way of resources to facilitate the deployment of renewable energy technologies in Exmoor National Park. RE4D provides bespoke advice for householders and businesses located in the part of ENP that falls within Devon. However, understandably given its resources, it seems to offer a largely re-active service. On the Somerset side of ENP there is no access to bespoke advice. ENPA's Sustainability and Economy Manager can provide a degree of facilitation for RE projects but does not have the capacity to assist projects on an ongoing basis.
- Funded by the Exmoor SDF, Forum 21 is currently providing a service to settlements in ENP to assist them in developing sustainable energy plans. This service is likely to cease in August 2009 unless further funding can be found. If funding could be sourced to continue this service, it could be developed further to into a source of bespoke renewable energy advice for householders and businesses in Exmoor National Park.
- ENPA needs to develop policy statements across the range of renewable energy technologies to ensure its position is clear and supportive of appropriate development.

## Appleton-le-Moors Community Woodland Project

After a short drive along narrow, upland roads, we came to Appleton-le-Moors where we met Jim Hall from the Appleton and Spaunton Community Interest Company (CIC) [www.appletonlemoors.co.uk/energy.htm](http://www.appletonlemoors.co.uk/energy.htm). Jim is semi-retired but works part-time as an assistant ranger for the National Park Authority. Highly energetic, he has been involved in a number of initiatives aimed at improving increasing the use of sustainable energy within the community.

The initiative that we principally discussed was a proposed community woodlands project. This involves working with local landowner to enable some unmanaged woodland close to the village to be managed for wood fuel. It is intended that the wood fuel will be harvested to meet local



Meeting with Jim Hall from Appleton

demand. The first stage of the project will be the opening of a 'discretionary pathway'. Before that can be done risk assessments need to be undertaken to comply with health and safety legislation and insurance issues will need to be addressed. Jim mentioned another scheme in Lincolnshire which involved working with 'difficult' teenagers and individuals with learning problems. This had brought in another income stream for the scheme (presumably via social service budgets) but had also introduced further requirements for

legislative and procedural compliance. The Appleton-le-Moors project had therefore decided not to proceed with such a model.

Later in the morning, we briefly visited some nearby woodland which had been managed for wood fuel and biodiversity to provide some contrast to the unmanaged example that we had visited earlier.

Jim has also been involved in exploring the possibility of setting up an Industrial and Provident Society (IPS) with a view to deploying and managing on behalf of the community, two wind turbines at a location close to the village. They had managed to identify re-conditioned turbines that were relatively inexpensive. It seems it is now quite common for such equipment to become available as the pace of technological change in the sector is quite rapid leading to fairly frequent upgrading of systems. This proved to be a very divisive project for the village, polarising opinion and causing a degree of animosity between certain members of the community. There were even some unfounded accusations that directors of the Appleton and Spaunton CIC were seeking to 'line their own pockets' out of the scheme. In the end, planning

permission was not granted. Jim felt that they had probably erred in pursuing such an ambitious and controversial scheme before they had built up confidence in the wider sustainable community initiative.

The Community Interest Company has helped a number of householders to benefit from energy efficiency improvements to their dwellings. Mainly cavity wall and loft insulation. Some dwellings have benefitted from the installation of solid wall insulation and a small number of log burners have also been installed.

### **Lessons learned:**

- Community initiatives aiming to improve the sustainability of their settlements would be wise to develop a track record of success by securing some 'quick wins' before attempting to instigate any potentially controversial projects.
- Some technologies - particularly wind - can be very divisive and impact negatively on efforts to engage the community. It is therefore important to seek the widest possible community ownership of renewable energy schemes.
- The visibility of the community initiative is important. If people in a community see someone else getting their walls insulated through a community-run initiative, they will be more likely to follow suit. The work of the community initiative will also gain a good reputation locally, paving the way for further initiatives to be set up.

### **Application of learning in an Exmoor context:**

- There is a need to ensure that community schemes to promote the uptake of sustainable energy measures in ENP are accompanied by a robust communication strategy
- By reacting in an ad hoc fashion to opportunities for facilitating the deployment of renewable energy, there is a strong risk that there will be local opposition or antipathy. This is because there is a tendency to pursue larger, more risky projects. It may be beneficial to secure some quick wins first thereby creating a degree of confidence in the community that larger or more controversial schemes will succeed.

### **Community Energy Solutions**

Following some lunch at the Feathers in Helmsley, we headed off to Stokesley for a meeting with Lorraine Dobson of Community Energy Solutions (CES). CES was set up to help fuel poor households living in off-gas areas gain access to affordable heating. Its main focus has been on brokering gas connections for rural communities and the installation of insulation, heating and renewable energy technologies into houses occupied by low income households. Their Chief Executive, Chris Leek, was formerly with Eaga Partnership, the company which manages the Warm Front scheme aimed at tackling fuel poverty in England.

They broker funding through various funding streams including the Warm Front scheme and the Carbon Emissions Reduction Target (CERT) scheme. In relation to the CERT scheme, they generate projects in which the energy companies can invest and meet with their obligations

under the scheme

Using GIS they have mapped out deprived communities against the current gas grid and the availability of renewable energy technologies.

They have overseen the installation of 400 air-source heat pumps to date. Typically, these have a coefficient of performance of between 2.5 and 3. They use oversize radiators as the systems have to be retrofitted and under-floor heating is not financially viable in such circumstances.

They have also facilitated the connection of eight 'off-gas' communities to the gas grid. Whilst this cannot be regarded as providing sustainable energy, it has at least provided communities with access to more affordable warmth with the opportunity to utilise lower carbon fuels for heating and cooking.

They are in the process of developing a large biomass district heating scheme in Middleton-on-Teesdale which will be a community-owned scheme and could provide learning for any Exmoor projects of a similar nature.

### **Lessons learned:**

- Securing 'quick wins' has helped to CES to gain the confidence of the community accelerating the pace at which it has been able to intervene positively.
- Engaging communities involves a lot of hard work requiring people with a high degree of persistence and willingness to cold-call.
- Lorraine noted that local events held in village halls to promote sustainable energy technologies, helped to persuade people to take deploy those technologies in their own homes.
- It may be good to act even if the solution isn't entirely perfect - so long as we learn from mistakes and successes and feed the learning into new programmes

### **Potential application of learning in an Exmoor context:**

- We have spent much time plotting a strategic approach and drawing together plans. Whilst these have been necessary steps and will reap benefits in the long term, there are currently few renewable energy systems in place. Given the need to take urgent action to tackle climate change, it may be beneficial to take more risk, accelerating learning by action-research.

## **STUDY TOUR DAY 2 - LAKE DISTRICT NATIONAL PARK**

### **Cumbria Green Business Forum**

The first meeting of the day was with members of the recently founded Cumbria Green Business Forum (CGBF). We met at the Grasmere hostel [www.grasmerehostel.co.uk](http://www.grasmerehostel.co.uk), which is run by CGBF member, Bev Dennison. We also met with Chair and co-founder of the CGBF, John Barwise, an environmental management consultant/auditor and Iain Blackburn, a CGBF

member who runs a 'cottage' business called Pure Lakes [www.purelakes.co.uk](http://www.purelakes.co.uk), which supplies environmentally-friendly hand-made toiletries, principally for the hospitality trade.

Established in 2007, the CGBF was set up to bring together businesses with 'green' credentials and/or aspirations in order to share learning and network.



Grassmere Hostel

Members have to commit to some form of continuous improvement in relation to their environmental management over time. However, the approach taken is one of informing members as opposed to dictating to them. Their motto is "Your Forum, Your Voice" an attitude to which they strongly adhere and which has resulted in great loyalty and support from forum members. The network is continuing to grow organically and now has approximately 70 members.

Around 40% of members are in the hospitality trade. The majority are from other sectors and this fact had surprised them slightly given the perceived preponderance amongst the small business sector in the area of tourism related businesses. The membership fee is £30 per annum.

One of the issues identified by the CGBF is that there is little support for SMEs to manage their environmental impacts and that the main environmental management system accreditations such as ISO 14001 and EU EMAS are beyond the resources of many small businesses. In response to this, they have created a local accreditation system which provides businesses with the opportunity of attaining a gold, silver or bronze standard. The accreditation is more about resource management than systems, but it does still utilise a basic systems methodology. Its development was funded through a grant of £10k from Groundwork and NWDA.

Another key activity they are engaged in is running seminars for small businesses relating to various environmental management themes. For example, they recently ran a waste seminar which attracted more than 60 people who made the effort to attend in spite of harsh weather conditions at the time

They are looking to develop a range of services to their members and work in collaboration with other local organisations such as the Chambers of Commerce, the Lake District National Park Authority, and other public sector bodies to develop initiatives. A key objective of CGBF is to continue build effective working relations between the business community and the National Park Authority which it believes is helping to build consensus on key policies that sustain the environment and strengthen the local economy.

They have developed a website [www.cgbf.co.uk](http://www.cgbf.co.uk) which is an important focal point for members.

### Lessons learned:

- There is considerable enthusiasm amongst the small business sector to improve its environmental performance but appears to be little 'official' support available to facilitate this - or at least the support that is available, is not necessarily perceived to be fit for purpose.
- A local network for businesses appears to work well, encouraging commitment and loyalty from its members
- The CGBF is currently run on a shoestring budget and the energy and enthusiasm of its

members and committee. In the Cumbria context, it seems to work very well. The value of the co-ordinators personal contribution to its success should not be underestimated. There appears to be a lot of work involved. Although there is no doubting the altruism of members, it probably helps that the co-ordinator has a professional interest in the success of the initiative through the potential for increased demand for his services as an environmental auditor. A synergy of this nature is probably essential if the concept is to be a success elsewhere unless other funding sources for co-ordination can be secured.

### Potential application of learning in an Exmoor context

- There may be scope to develop the CGBF model in the Exmoor area. The West Somerset Working Neighbourhoods Fund could potentially be approached for seed funding to set up such an initiative. The RDPE Local Action for Rural Communities fund and Exmoor Sustainable Development Fund are other potential sources of such funding
- The presence of an Exmoor version of the CGBF could help partners to achieve success in the delivery of management plan targets (list)

### Thirlmere District Wood fuel Heating Scheme

Later in the morning we met with Rod Yeoman from Impact Housing Association. Rod has teamed up with the NEA to set up Impact Affordable Energy (IAE). 'Impact' stands for **'IM**provement' through **'ACT**ion'. IAE's main aims are to:

- Provide advice and support to householders
- Implement energy efficiency and insulation projects for householders
- Negotiate discounted tariffs for carbon abatement from mainstream energy companies
- Set up community-based renewable energy production and distribution schemes

Rod gave us some background into IAE and the challenges that it faces locally. In particular, there is only limited access to gas in the area and many homes are poorly insulated. Furthermore, many dwellings are old, solid-walled dwellings that are difficult to adequately insulate.

The main focus of the discussion was on two small, community district wood fuel heating system that they are planning to deploy in Thirlmere. The village is comprised of 47 occupied properties of which 17 are owned by (IHA). These were previously owned by the local water board and are generally old and poorly insulated.

In considering an approach to providing affordable warmth for these dwellings they considered the considerable natural resources of the area including wood, wind and water. In the end, they decided that wood fuel would be the best option to achieve this aim.

The village is quite dispersed being broadly split into two main sections. So the scheme will

involve two wood fuel boilers serving either end of the village. Each boiler will be 200kw. The systems will provide heat for 13 of the homes managed by IHA. Four of their remaining homes were too remote from the systems to be viable. They will also offer heat to the other private dwellings in the village. To date, there has been no take-up of this offer. However, it is anticipated that many will chose to join once the systems are up and running as the cost of heat relative to fossil fuels, will be considerably cheaper. Each dwelling serviced by the district heating systems will have a heat meter installed to account for the heat used in each dwelling.

The dispersed nature of the village and the fact that the systems will be retrofitted to existing dwellings means that this scheme will probably be more technically difficult and expensive than it would be if it was a 'new build' scheme.

They are now at quite an advanced stage having obtained feasibility studies and quotes for the two systems and having raised most of the funding required - the combined cost of the two schemes is likely to be in excess of £500,000.

Funding is being raised from a number of sources including: the North West Regional Development Agency, the Lake District Sustainable Development Fund (£40,000), the Bioenergy Capital Grants Scheme (£300,000), loans and CERT funding.

Obtaining CERT funding has been problematic. Originally, they entered into discussions with an energy company that suggested they might contribute £300,000 towards the scheme. However, after gathering the information regarding CO2 savings and fuel poverty alleviated, they claimed that the Ofgem formula for CERT funding limited them to a contribution of £10k instead. They are now working with another company (EDF) to negotiate a new support. Rod suggested that we could consider trying to access funding through the social tariff pot instead of CERT.

To identify a suitable company to undertake the work, they contacted the Renewable Energy Association and asked them to circulate the tender document to their members. Around 10 companies applied. The community was involved in short-listing and in the selection of the contractor eventually chosen to undertake the work. A few thousand pounds was required to cover costs that were requested in certain cases for the provision of feasibility studies.

The boiler will be supplied by the Austrian company Herz. They have a local associate company that will install the boiler.

Rod noted that he was aware of a number of other community renewable systems though not many wood fuel heating systems. He suggested that we should investigate a wood fuel district heating system in Kielder. He also suggested that we speak to National Energy Action in relation to obtaining case studies of community-owned energy services companies ('HelpCo' project mentioned).

Other useful information provided:

- There are a number of good examples of community owned renewable energy systems in the Highlands of Scotland.

- The Aberdeen Heat and Power Company is a large ESCO that is worth investigating.
- They are developing an 'up-side down' tariff structure with NEA to encourage householders to use less energy.
- The Bio-energy Capital Grant Scheme requires three quotes. It is not open to new-build applicants.

### Lessons learned:

- Though the scheme they are proposing is technically quite difficult and expensive and has required a lot of work to bring to fruition, they are now very close to making it a reality. In seeking to replicate such a project, we are likely to face many similar barriers. Their experience shows that these barriers can be overcome.
- The drive for this system to be installed has come from Rod Yeoman and Impact Housing Association. He has invested a significant proportion of his time in the last year in developing this project.
- The community has been involved in this project from an early stage and probably as a consequence of this there is considerable local support for the project.

### Potential application of learning in an Exmoor context

- The scheme represents highly valuable learning in relation to the installation of such systems in Exmoor National Park - especially in relation to a potential scheme at the Cutcombe Market site. We need to ensure that the community in Cutcombe is fully engaged with the project. The establishment of a community energy services company in Cutcombe could provide a vehicle for developing other renewable energy projects in the village e.g. to supply electricity (AD?)
- It also demonstrates that it may be possible to install such systems in established communities, particularly if we can identify a housing association that is supportive and that has a cluster of dwellings within a settlement.

### **Rebecca Willis - author of the 'Low Carbon Lake District' report and deputy chair of the Sustainable Development Commission**

Her work focuses on environmental politics and policy-making at both the national and regional level. She has researched and written on issues such as climate change, energy policy, public attitudes to the environment and the impact of new technologies. The Low Carbon Lake District report is available online at: [www.lake-district.gov.uk/climatechange..](http://www.lake-district.gov.uk/climatechange..)

In this relatively short meeting, the other points of note were:

- Becky is involved in efforts to set up a local renewable energy agency, similar to Regensw in the South West of England.
- Becky noted that she had been advised by Energy4All [www.energy4all.co.uk](http://www.energy4all.co.uk) (a not-for-profit community renewable energy advocate) that the only community schemes worth investing in are those that invest in wind turbines.

## STUDY TOUR DAY THREE - PEAK DISTRICT NATIONAL PARK

### Torrs Community Hydro Scheme



Torrs Hydro salmon sculptures

Torrs community hydro-electric scheme in New Mills, Derbyshire was commissioned in August 2008, less than two years after the seed of the idea was planted in the community by Water Power Enterprises, a social enterprise which aims to set up community-owned, small-scale hydropower systems. It seems a local family connection alongside the suitability of the site was behind the choice of New Mills. Water Power Enterprises helped the community group to start up, apply for funding and project managed the installation of the system.

The system installed is a 70kw Archimedes Screw driven by the confluence of two rivers on the site of a derelict mill. The screw was imported from Germany by Manpower Consulting Ltd and installed by a hydropower company called Western Renewable Energy which is based in Devon. On the day we visited, unfortunately the system was not fully operational due to a fault which meant the system had to be closed down temporarily. However, since it was installed, it has been providing approximately 40 - 50kw of power output on a regular basis. Some of the advantages of an Archimedes Screw are set out below:

- Leaves and small items of debris can pass through the screw, reducing the need to clear the trash screen.
- The screw turns quite slowly (the Torr Mill one revolved at 29 rpm) thus preventing injury to fish caused by contact with moving blades.
- Large chambers of water are maintained at all times, allowing fish and debris to pass slowly down through the machine.
- The swim-bladders of fish are not affected, as the water pressure remains constant.
- No draft tube is required, reducing the civil costs of excavation.



Torrs Hydro Archimedes Screw

- High efficiency is maintained over a wide variation in flows.
- No fine screening is required, reducing installation and maintenance costs.

Members of the community were assisted by Water Power Enterprises to set up an 'Industrial and Provident Society for the Benefit of the Community' (IPS Ben Com), Torr's Hydro New Mills Ltd [www.torrshydro.co.uk](http://www.torrshydro.co.uk). This is a vehicle for community-ownership of assets which enables large sums of money to be raised through the issue of shares. Although they considered a number of potential community-ownership models, they felt that an IPS was most suitable for their circumstances.

Esther Jones is a director of the IPS and has a lot to offer others in terms of advice regarding the community set-up and legal backdrop to setting up a community-owned renewable energy system.

Esther noted that legal issues, particularly in relation to the power purchase agreement have been a considerable obstacle to progress and costly at around £17k. These were not anticipated at the start of the process.

Significant funding for the project was provided by the East Midlands Development Agency (£75k), the Co-operative Fund (£75k) and the Peak District Sustainable Development Fund (£15k). However, the biggest fund-raising initiative turned out to be a share issue which raised £98k just over two months.

One of the members of the Torr's Hydro New Mills group commented that they doubted whether hydropower on this scale was commercially viable at this stage and in this setting because ongoing maintenance of the system had been quite intensive. For example, the machine needs to be regularly monitored to ensure that it is operating correctly. Furthermore, the nature of the streams and their location results in considerable amounts of debris flowing downstream, especially after heavy rain. Whilst smaller items can pass through the screw, larger accumulations do occur, especially in higher flow conditions and need to be cleared.

It was interesting to note that the Environment Agency (EA) required the project to provide a fish-pass to aid the passage of migratory fish, which they funded themselves. This was despite the fact that their own surveys had indicated that no migratory fish were present nearby neither upstream nor downstream (with the exception of a dead sea trout found a mile upstream). It seems likely that the EA felt that this represented a good opportunity to provide fish passage beyond an existing weir with an eye to the future when better habitat conditions downstream might encourage the re-colonisation of the river by migratory fish.

### Lessons learned

- Through setting up an appropriate community-owned organisation, it is possible to raise considerable amounts of funding for renewable energy projects. It is important to fit the ownership model to the project - not the other way around.
- It is important for those involved in the setting up community ownership schemes to

gain a thorough understanding of models of community-ownership as these can be very complex.

- Setting up a community-ownership structure and selling renewable energy is likely to require significant legal input which can be costly. It is important to build in such costs to any financial projections for renewable energy projects.
- Community-owned renewable energy schemes can have considerable benefits for the local community. In particular, there are favourable financial returns for many projects which can be returned to the community to fund other local initiatives. Community-ownership also encourages community involvement which can bring wider benefits to the community.
- A hydropower scheme on this scale does not necessarily run itself, and the body that owns the scheme will need to build in time for on-going maintenance of the system. However, it is possible to automate some of the maintenance required by these systems.

### Potential application of learning in an Exmoor context

- There are many potential and some existing projects in Exmoor National Park that could benefit from the knowledge of community-ownership models gained from this visit e.g. the Lyn hydropower project.

### Losehill Hall - wood fuel heating system

From New Mills, we headed off to Losehill Hall accompanied by Pete Spriggs and Richard Godley from PDNPA.

Losehill Hall is the Peak District National Park Authority's (PDNPA) learning and environmental



conference centre. A large building, built during the 19th century, it consists of around 40 en-suite rooms and a number of meeting and lecturing facilities. In total around 15,000 young people and adults attend various courses, meetings and conferences throughout the year. There are substantial variations in the level of use - the week we met was half-term and as a consequence, there was very little activity. However, there is always a base level of occupancy by virtue of the PDNPA staff stationed in the building.

A 50kw wood chip boiler was installed at Losehill Hall in 2004. Previously, the building had been heated by a gas system. The wood chip boiler provides base load heating. Gas boilers have been retained as a back-up to the wood fuel system and to meet all heating requirements above the base load. This allows the wood chip heating system to operate reasonably efficiently and for the heating system to be responsive to changes in occupancy and use that occur throughout the day and on a day-to-day basis.

The installation was funded through a mix of funding streams including “Clear Skies” funding (the precursor to the Low Carbon Building Programme) and the Peak District Sustainable Development Fund.

When the boiler was first installed, the PDNPA was aware that there was no supply of wood chip available locally.

Initially, it obtained its wood chip from a company from Barnsley. Whilst this was not ideal, there was an obvious need for demand for wood chip to be created before a local supply source would emerge. (Pete mentioned that Barnsley Council has a “biomass first” policy which ensures that biomass heating is considered as the first option when installing a new boiler - as a consequence, there are a number of biomass heating systems installed in the area and a plentiful supply of wood chip).

More recently, PDNPA sourced 100 tonnes of wood from the more local Chatsworth Estate. The wood is currently being sourced from Sheffield. This is stored and delivered by a local farmer in return for a small income.



Woodchip Store and boiler house at Losehill Hall



Woodchip Boiler Losehill

There have been a number of problems with the wood chip heating system. Sizing has been a problem and Pete felt that with the benefit of hindsight, they should have installed a larger boiler (or two smaller boilers). He advised that it is crucial to gather as much information as you can to build up a picture of likely heat loads.

Though conveniently located, there have been some minor issues with the wood chip store. For example, the building is square but the rotor arm which is used to sweep the wood chip into the auger (which feeds into the boiler) travels in a circular motion. This leads to accumulations of wood chip in the corners of the building. The cavity walls constructed for the wood chip store were not capped. As a consequence, when the wood chip was emptied into the store, some of it fell into the cavity walls. The wood chip store is also relatively small. A larger store would reduce the frequency of fuel deliveries required, thereby reducing the carbon dioxide emissions associated with the system.

The system requires significant amounts of ongoing maintenance. For example, ash needs to be removed from the boiler on a weekly basis and this is currently undertaken manually. It is also necessary to clean out the heat exchanger once a month and to undertake this task, the boiler needs to be switched off and completely cooled.

To reduce the frequency of maintenance, Pete would advise on investing in a system with a mechanised ash extractor.

Also, the system does not have a heat meter, so it is difficult to ascertain the calorific value of the fuel being supplied. This precludes the purchase of fuel on the basis of its calorific value as opposed to its weight which in Pete's opinion is the better option.

Because they can negotiate good prices for gas because of the quantity that they use, and because of the lack of any other demand for wood chip in the area, it is currently cheaper per kwh for them to use gas than wood chip. They are therefore seeking to encourage the installation of more wood chip boilers in the area, which in turn should stimulate the local supply chain for wood chip.

### **Lessons learned**

- In order to maximise the potential benefits of a wood fuel heating system, it is vitally important to carefully plan all aspects of its design. In particular, sizing of the wood fuel boiler and the design of the fuel store are important considerations.

### **Potential application of learning in an Exmoor context**

- Exmoor National Park Authority is considering installing a wood chip boiler for its headquarters in Dulverton. The knowledge gained of the installation should be of assistance in the system design.
- Other organisations considering installing wood chip boilers of a similar scale in Exmoor National Park could also benefit from taking on board the lessons learned from the Losehill Hall case study.

## Sustainable Youlgrave

After lunch at Losehill Hall we headed off to Youlgrave, a village situated a few miles to the South of Bakewell in the centre of the National Park.



Here we met John Youatt who is the chairman of the Sustainable Youlgrave initiative [www.sustainableyoulgrave.org](http://www.sustainableyoulgrave.org). John explained to us how he and a friend in the village had instigated Sustainable Youlgrave in February 2006 following debate about the state of the world and its environment. This had led them to the conclusion that people needed to act locally, particularly as they perceived a lack of genuine international or national leadership in relation to the issue.

Sustainable Youlgrave now has around 120 supporters and 40 members who pay a modest membership fee. John explained how the project has benefited from the serendipitous presence of a number of skilled and experienced people in the community who have offered their services in relation to the project. Indeed, one committee member is a retired renewable engineer whose input to date has been invaluable. Other committee members include a barrister, a media consultant, an ecologist, a sociologist and an IT specialist.

They have recently put together a vision and mission statement and an action plan to help them achieve their aims. One of their key targets is to take the greenhouse gas emissions of the community “beyond carbon neutral”, principally through the generation of renewable energy.

They have recently secured over £40,000 to commission a study regarding the feasibility of processing farm and other biodegradable waste through an Anaerobic Digestion (AD) system, in order to produce heat and power for the village. The funding was obtained primarily from the Peak District Sustainable Development Fund (£20k) and the East Midlands Development Agency (£18k). This followed on from an earlier, pre-feasibility study undertaken by one of their members for which they raised £5,193.

They have also undertaken a survey of the energy efficiency of dwellings in the village. This didn't turn out as planned and the response rate of 30% was lower than they had hoped. The survey was conducted on a postal basis. It will be repeated on a face-to-face basis by six post-graduate students from Sheffield University with a view to obtaining a much higher rate of response.

Though on balance to date, the project appears to have been a big success, it has generated some ill-feeling within the village. In particular, the issue of wind power has polarised opinions. We took from this that it may be unwise to articulate a strong pro-wind power position as a statement of policy as this may exclude people who are keen to see other forms of renewable energy technology deployed but who are anti-wind power.

## Lessons learned

- Because of its impact on visual amenity, wind power seems to polarise opinions wherever you are in the country, whether or not it is community-owned. It may be wise for a community adopting a pro-renewable energy stance to “sit on the fence” in relation to wind power. In doing so it will still be able to engage those that broadly support renewable energy but are anti-wind power
- There are often many people living in the community with relevant skills to run a local sustainability initiative. Quite often these may be retirees with time on their hands and plenty of enthusiasm

## Potential application of learning in an Exmoor context:

- There is possibly a large resource of skilled retirees living in Exmoor National Park who may be willing to give their time to projects that benefit the community. Engagement of this latent capacity could be achieved through the development of settlement sustainable energy plans for all interested communities in ENP.
- Settlements in Exmoor National Park that are going through the process of devising sustainable energy plans should be advised of the potential pitfalls of pursuing renewable energy projects that affect the visual amenity of an area.

## CONCLUSION

The study tour provided an exceptional opportunity to learn from others and should help to accelerate the deployment and uptake of renewable energy technologies in ENP. The knowledge gained in relation to community engagement models should also help in building community capacity locally for tackling climate change.

Though a balance needs to be struck between learning and doing, it is recommended that this approach to learning be continued. A structured approach to identifying study tour themes would help to ensuring that any future action in this regard is worthwhile, focussed and cost-effective.

The study tour participants agreed that the tour had been very beneficial. In particular, by meeting with people who are at a more advanced stage in tackling similar issues to those faced in Exmoor National Park, we have been able to learn from their successes and mistakes.

A recurring theme was the benefits for community initiatives of securing ‘quick wins’ which helps to gain the confidence of communities and their subsequent support for more ambitious initiatives. We also gained much specific knowledge regarding initiatives.

Finally, perhaps the most important message that we gleaned from this trip is that there is almost always someone else, somewhere in the UK who has already been down a similar path to the one on which you are travelling. By definition, there are very few pioneers! Consequently, there are likely to be many opportunities to learn from the successes and failures of others. We have realised that more often than not, people are very happy to share their knowledge and experiences with others.

**So our advice for those embarking on a new venture is to spend time seeking out examples of projects that are similar to your own and speak to the people involved. And if you do happen to be one of those pioneers, please share your ideas with others!**

**Study tour participants:**

Tim Stokes, Sustainability and Economy Manager, Exmoor National Park Authority

Archie McIntyre, Exmoor Trust

Wendy Stephenson, Forum 21

Will Evans, Forum 21