

Turning waste into energy: anaerobic digestion is a green answer for the Bradford Valley

- Pioneering £50K study sets out benefits and viability of both single-farm and shared anaerobic digestion facilities in Youlgrave area
- AD will help farms reduce running costs, aid slurry disposal and create local jobs
- Potentially significant reduction in greenhouse gas emissions
- Profits from community-run digester could boost local environmental and social projects
- Generic toolkit produced for other groups and farming communities to consider viability of AD in their area

Sustainable Youlgrave's long-awaited and ground-breaking study into anaerobic digestion (AD) in the Bradford Valley has revealed that single-farm, shared farm and a central AD digester would not just be environmentally and socially beneficial – they are financially viable, too.

Consultants commissioned by SY interviewed over 40 local farms and associated farm and waste management businesses, as well as the Youlgrave community and local authorities. They analysed a broad range of economic, regulatory and environmental factors, as well as examining a variety of approaches, including a single on-farm plant, an on-farm facility shared between several farms, and a larger, central AD facility.

They found that both on-farm and central digesters were viable. Farm running costs could be reduced and a shared digester, in particular, would not just create additional slurry storage but also provide a small number of local jobs. The improved fertilizer output, known as digestate, is

What is anaerobic digestion? It's simply the breakdown of waste in the absence of air, producing a gas – methane – to create energy, fuel and improved fertilizer. The AD process is an entirely natural one that occurs in nature wherever air is excluded, such as in bogs, the bottom of slurry tanks and even on the seabed. Aerobic digestion, on the other hand, is the breakdown of waste with air present – put simply, composting.

ideally suited to grassland (liquor) and arable crops (fibre), with minimal or no surface and ground water pollution and negligible odour compared to conventional muck-spreading

Overall, AD is a benign and safe biodegradable waste management system that produces energy, high grade fertiliser products and has minimal emissions. It creates a cleaner environment and of course as a renewable energy it makes a significant contribution to combating climate change. The annual reduction in Greenhouse gas emissions could be considerable – as much as 2,658 tonnes (equal to offsetting emissions from almost 230 houses) for a single on-farm digester; while a central or community-run digester would also have the potential to provide an income stream to support other community-based and educational projects.

SY's Chairman, Fred Baker, said that the study proved that AD was compatible with Youlgrave's location. "As a form of renewable energy, anaerobic digestion can be sensitively considered even in areas of high landscape value like national parks. And, since we are predominantly a rural farming area, tackling issues such as diversification and supporting hard-pressed dairy farmers makes a lot of sense."

One element of the study was the development of a 'toolkit' that other groups and farming communities can use nationwide to examine the viability of AD on their own patch. It is available as



Earlier this year DEFRA published a 48-page document called *Accelerating the Uptake of Anaerobic Digestion in England: an Implementation Plan*.

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a free download from www.peakdistrict.gov.uk/sdf or www.sustainablyoulgrave.org.

The £50K feasibility study, carried out by Methanogen & Associates, was jointly funded by the Peak District National Park's Sustainable Development Fund, East Midlands Development Agency and SY itself.

John Lomas, Director of Development Planning at the Peak District National Park Authority, said that his Authority recognised the commitment and enthusiasm of SY which has led to this report. "Sustainable Youlgrave and their consultants are to be congratulated on the thoroughness of their research and study. The report recognises the issues that need to be faced and provides an excellent starting point for considering how farms might help deliver future energy needs."

In terms of next steps, Sustainable Youlgrave is continuing its constructive dialogue with the local farming community, holding a meeting with farmers to present the study findings. Already one local farm has committed to developing its own AD facility, which SY committee member and dairy farmer Sue Flower says is great news. "Sustainable Youlgrave is committed to working closely with the farming community to explore ways in which our businesses can develop and become more sustainable," she said.

SY also plans to hold further discussions with the local authorities to explore all the regulatory issues surrounding AD development in the Bradford Valley. Sustainable Youlgrave hopes to finally see real investment in renewable energy on the ground in this corner of the Peak District.

And it seems that SY is not alone in championing anaerobic digestion. In July of this year Greg Barker, Climate Change Minister, announced that the Government was fully supportive of moves to develop AD: "Turning waste into something usable is a no-brainer!" he declared. "So I want to investigate how we can be far more ambitious in our use of anaerobic digestion. In the face of the challenge to build an economy that cuts carbon emissions, which ensures energy security, and which creates green jobs to help bring back economic prosperity - anaerobic digestion ticks all of these boxes. Plus it has the added benefit of reducing waste going to landfill."

Minister, we couldn't agree more.

There's more information on anaerobic digestion at:

- www.biogas-info.co.uk
- www.defra.gov.uk/environment/waste/ad/



Sustainable Youlgrave is an entirely voluntary body run by local people and has no income other than donations and grants.

Please consider becoming a FRIEND OF SUSTAINABLE YOULGRAVE and through a modest payment of as little as £5 a year help us make our community resourceful and self-sufficient. For this you will receive regular newsletters, invitations to events and earn our undying thanks!

Contact Lucy on 01629 630315 or email stirlinglucyb@hotmail.com for more details.

SY study aims for energy efficient public buildings

*A newly-published SY **Energy and Water Survey** of seven local public buildings has suggested a raft of measures for making the buildings greener and cheaper to run.*

The study was commissioned by Sustainable Youlgrave and paid for by the Peak District National Park's Sustainable Development Fund. Consultants Encraft carried out detailed surveys of seven well-used local public buildings: the Wesleyan chapel, Middleton Village Hall, Reading Room, Scout & Community Hall, both parish churches and Youlgrave School. It assessed current energy use, what energy-saving measures were already in place and what improvements could be carried out, including the possible introduction of renewable technologies. Among the recommendations were improved insulation, replacement of old and inefficient lighting and the installation of pre-set timer heating controls. Renewable energy options included solar hot water heating, solar photovoltaics (PV) panels, wood chip boilers and an air source heat pump. These will now be considered by the various management committees, but already one venue has indicated that they want to go ahead and carry out many of the recommendations, including fitting better insulation, changing all their light bulbs and installing solar panels. SY hopes to meet them very soon to discuss their options and offer further help.



NATIONAL PARK AUTHORITY
Supported by the Sustainable Development Fund

Youlgrave farmer also farms the sun – and his compressor!

Progressive Youlgrave farmers, John and Christine Eley, are putting their money where their minds are and conserving their savings and the environment.

Not only does their farmhouse roof now support a 4m² solar panel to provide them with free domestic hot water, but the dairy refrigerant compressor that cools the milk also provides 'free' hot water for washing the plant and making up the calves feed. Last January, determined to take action to reduce the £8,000 cost of their farm's annual electricity bill, John spent half that amount getting Bayley Dairy Engineers of Hulland Ward to install a new insulated water storage cylinder, which has an internal heat exchanger coil to recover the waste heat from the refrigerant compressor. Two associated fans also had to run on the radiator to cool down the very hot compressor! Now, each day as the 5hp compressor runs for 4 hours to cool down the milk from his prize herd of Friesians, the waste heat is circulated through the large storage tank to heat cold water from 7° - 45/60°C (80° in summer), instead of having to rely previously on an off-peak immersion heater. The financial outlay is expected to pay back in 3-4 years and should provide about

50% of dairy hot water annually. Since January, the new system has recovered (saved) about 2,451kWh of heat, equal to nearly £200 of electricity. John is eagerly awaiting the promised government feed-in heating tariff payments next April to recover more of his financial outlay.



Then in the summer John and Christine spent a further £4,000 commissioning Mycocks Plumbing of Chelmorton to replace the old electric off-peak storage heaters in their farmhouse with a new oil-fired boiler and wet radiator central heating system, plus two roof-mounted, solar water heating panels. The central heating and hot water storage cylinder has a second heat exchange coil which the heated water from the solar panel is pumped through to pre-heat cold water before topping it up with the oil boiler. Previously, by the time they were able to sit down in the evening and relax, the electric storage heaters were already cooling down!

The farmhouse roof faces almost due south and in the first 24 hours following installation on 20 July, the solar panels generated 13.5kWh of heat from the cold water fill, and by mid-November the system has totalled 442kWh of savings – equal to £36 of hitherto off-peak electricity. On the day of my visit, on a sunny November afternoon, the control panel was registering a water temperature of 37°C. The expected payback on the solar installation is 7-8 years and should provide over 50% of domestic hot water requirements.

Still determined to do more, John and Christine are now investigating the economic feasibility of installing several m² of solar photovoltaic panels on one of their agricultural building roofs to generate electricity and further off-set their annual farming costs. This would also earn them around 40p for every kWh their panels generated. It's certainly paying them to think 'green'.

Brian Mallalieu


**YOULGRAVE VILLAGE
CHRISTMAS MARKET**



Saturday 11th December
10am - 12noon, Village Hall



FREE ADMISSION

**Fresh local food, locally produced crafts,
locally grown produce and plants.
Tea, coffee and mince pies served.**

Contact Lucy or Jeni on 01629 630315 / 636550



Sustainable Youlgrave

began in 2006 when a group of likeminded villagers in the Youlgrave area came together to discuss ways in which, by thinking globally but acting locally, we could do our bit to combat climate change and at the same time make our rural community fully sustainable. We are exploring a range of initiatives which covers renewable energy generation, educational and energy-saving projects, plus related themes such as local food promotion and bee keeping. Sustainable Youlgrave is an independent community group run by and for local people. To get involved contact Fred Baker on 01629 636768 or Andrew McCloy on 01629 636125, email sustainableyoulgrave@sustainableyoulgrave.org

Sustainable Youlgrave's free, quarterly newsletter is edited by Andrew McCloy.

Sustainable Youlgrave is a member of the Low Carbon Communities Network



Youlgrave Fruit Growers

A group has been active in cultivating the rest of the Coldwell End allotment, alongside the apiary site, where there is room for a small orchard of top fruit trees and soft fruit bushes. This is just the beginning. Everyone can be a fruit grower, from planting strawberries or blueberries in pots, to planting all sorts of things on a larger scale. One local garden of only about nine square yards (about 7.5 square metres) successfully grows 12 different kinds of fruit! There's nothing to match the taste of home-grown fruit, straight from the plant. No supermarket packaging, no wilting through storage, no air miles – just flavour and satisfaction.

Producing, picking, preserving, pruning... could we become a self-sufficient village, growing all our own fruit? Now, there's a challenge! If you would like to know more or get involved contact Glenys Moore on 01629 636477.*

**Who knows, if a local anaerobic digester gets going there may be enough heat as a by-product to set up a greenhouse to grow bananas – well, one can dream...*

SY BAG FOR LIFE

Sustainable Youlgrave's long-life hessian shopping bags are still on sale from local outlets, including Parkers and Hollands butchers in the village. 100% Fair Trade and just the job for eager shoppers like SY supporter Mark Goodwin, pictured here snapping up bargains at the SY Village Market. If you can't get hold of one call Lucy on 01629 630315.



Youlgrave Bee Group update

Youlgrave Bee Group is coming to the end of its first, and very successful, year of existence. Over that time a core of 13 beekeepers has been trained, an apiary established and three colonies of bees hived and cherished. The bees are now in their quiet winter state, eating the honey they've stored and surviving until nectar and pollen becomes available again next spring. Meanwhile, the bee group is preparing for a busy time in 2011, and four members of the group now have their own bee colonies to care for. The whole valley should soon feel the positive effects of higher pollination levels, but part of the Bee Group's aim is also that local residents should be encouraged to plant bee-friendly gardens, trees, hedgerows and fields to provide top quality bee food. In this way everyone in the Bradford Valley can be part of the Bee Group, and over the coming years the local environment can be improved for all sorts of useful insects to increase its bio-diversity. The added bonus is that by next summer, hopefully, there will be Youlgrave honey on sale at the Village Market! If you are interested in being part of this ongoing programme, either training for bee-keeping in 2011, or encouraging bee-friendly planting, please contact Jeni Edwards on 01629 636550.



Youlgrave Bee Group members inspect their hives.