

SO YOU WANT TO... PROFIT FROM WOOD FUEL

Don't let stronger wheat prices overshadow the potential that supplying wood fuel can offer.

Kevin Lindegaard reports

There has never been a better time to get into wood fuel. Local authorities and other public sector bodies have been tasked with meeting stiff carbon reduction targets while also cutting fuel costs. For example, Barnsley metropolitan council has replaced most of its coal-burning boilers in schools and council flats with boilers fuelled by woodchips and wood pellets.

In this way, the council has reduced its carbon emissions by about 3000t of carbon dioxide each year. Furthermore, it is now on course to meet the government's target to cut CO₂ emissions by 60% by 2010.

Of the renewable energy technologies on offer, biomass – plant matter that can be burned to generate energy – is way above the competition in meeting these goals.

All over the country, communities and local authorities are waking up to the benefits of biomass as a replacement for fossil fuels like oil and coal and its potential is limited only by the amount of wood fuel available. As so much of this resource is on farms, the clamour for biomass offers farmers an interesting – and profitable – diversification option.

What markets exist and for what types of wood?

* Most farms have some areas of woodland and routine management will produce different quality wood fuel products. Virgin wood, stored in the round, is preferred, producing the best quality woodchip and logs. But remember to check with the Forestry Commission whether you need a felling licence before you start cutting.

The brash from trees – thinner branches and twigs – produces a much poorer quality chip, which is accepted by some boilers, but

attracts a much lower premium for producers. Nevertheless, many councils are installing boilers to deal with such rough-and-ready fuel produced from their own management of parks and urban trees.

Some farms will be producing wood-fuel assets without realising it. Straw from combinable crops or spent meal from processed oilseed rape can be turned into fuel pellets. This is particularly attractive at the moment, as they are much cheaper to produce than wood pellets.

It has become popular in recent years to grow dedicated fuel crops such as short rotation willow coppice (SRC) and miscanthus on set-aside land. Willow produces an average quality woodchip, but can alternatively be harvested as a "billet" and then reprocessed into a high-grade granule or pellet. Miscanthus – elephant grass – can be baled and used for large, batch-fed boilers or turned into pellets.

Some farms might be able to link up with a nearby sawmill and together create a market for sawdust and wood shavings in the form of wood pellets.

Who can I supply?

* There is no shortage of potential markets for wood fuel, particularly in rural areas where properties tend to be heated by oil and electric heating. Logs and woodchip are much cheaper while pellets cost about the same as oil. Logs and pellets tend to be the fuel of choice for domestic properties and other buildings with moderate heating requirements, for instance primary schools and youth hostels. Woodchip is bulkier, but much more cost effective for larger users such as big estates, hotels, secondary schools, hospitals, factories, offices, care homes and glasshouses. Where possible you should be looking



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for a local market, because the further you transport your wood, the more you will be eating into your profit margin. Logs and pellets are much denser than chips, so can be transferred further more economically.

What price can I get for wood fuel?

* You should be able to command £55-75/t for good quality woodchip, although nowadays many woodchip customers tend to buy heat/energy units rather than tonnage of

Co-firing biomass with traditional fuels like coal provides real and promising opportunities for farmers.

woodchip. Many boilers stipulate a good quality chip specification and UK and EU standards are being developed.

Logs are worth between £80 and 100/t delivered at 25% moisture content. For bagged fuel you could get £2.50-£5 a bag, equivalent to £500-£1000/t. But the extra machinery and labour add significantly to

costs. Neil Harrison of renewable energy firm Northwoods suggests that farmers should approach the bagged market with caution "unless they intend to get into log production in a very big way".

Fuel pellets produced from rape straw should sell for about £120/t, while wood pellets are fetching about £170/t when bought in bulk. Wood pellets can also be bought in 16kg bags for the domestic market. These cost about £4.30 (equivalent to about £283/t), but this market

CASE STUDY 1

Sam Whatmore

GRASCOTT FARM, DEVON

* Sam Whatmore has been at the forefront of wood fuel development for about a decade. As an experienced forest manager with a degree in forest management, he decided to cover his 75ha (187-acre) holding with 150,000 trees. In 2002 he installed a 150kW Binder woodchip boiler, which produces heat and hot water for his farmhouse, two holiday cottages and offices. He has looked at ways of linking wood fuel supply with boiler deployment and set up two businesses: Forest Fuels (which deals with wood fuel supply) and Wood fuel Solutions (a consultancy).

He supplies 2500t of woodchip and 150t of logs to councils, schools, offices, prisons and hospitals and has five wood fuel depots in the south west (Poole, Exeter, north Devon and two in Cornwall). He stores 1000cu m of round wood and chips to order with an Austrian Heizohack chipper costing £20,000, which can produce 40t a day. He is investing £50,000 in a larger model which can chip 300t a day.

Forest Fuels recently won the wood fuel support contract for Regen SW's (the south-west's renewable energy agency) Bioheat programme. This will enable Mr Whatmore to pass on his knowledge to other budding wood fuel providers through seminars and training days.



is much less well developed and, again, would require additional infrastructure and investment.

What equipment will I need?

* Mr Harrison recommends farmers scale operations to match their market. To create a viable business which warrants buying specialist equipment you should be looking to supply at least 200-300t of logs or 500-1000t of woodchip a year and the necessary equipment will require significant capital outlay.

Logs: To become a cost-effective supplier of good quality logs you will, ideally, need an automated conveyor-fed log processor which can saw and split timber. These can cost anything from £5000-50,000, with the top-end machines able to produce up to 50t of logs a day.

Chips: Felled timber should be allowed to dry naturally in situ and then chipped into an intermediate store, lorry or hook bin. You will need a specialised chipper to produce good quality woodchips. Most forestry chippers are unsuitable, as they produce inconsistent chip size. You should be looking to buy a drum or screw chipper, as these provide a more consistent product. Disc chippers need to be well main-

tained and are much less forgiving. A middle-of-the-road chipper processing 40t a day will set you back about £20,000.

Woodchip is much bulkier than logs or pellets, so you will need a bigger vehicle to transport it. Possible options include using a silage trailer for short distances or a 22t bulk tipper lorry.

Pellets: You can produce pellets from sawdust, wood shavings, energy crops, rapemeal and straw. But a small- to medium-scale venture will require the cheapest, best quality feedstock. Mr Harrison says: "You will need access to a large supply of dry sawdust and shavings and the ideal scenario would be forging a link with a joinery shop producing a significant supply of co-products each week. But small-scale pellet production is still largely unproven in the UK."

It is possible to buy small pelletisers to process miscanthus, willow, rapemeal or woodchip with an output of 300-1000kg/hour for as little as £5000. If your material is too coarse (greater than 3mm), then you should pass it through a hammer mill first. These cost between £1500 and £6000. If your feedstock has a moisture content higher than 15%

CASE STUDY 2

John Strawson

STRAWSONS ENERGY, RETFORD, NOTTINGHAMSHIRE

★ John Strawson is the largest grower of short rotation coppice (SRC) in England, with 330ha, and a leading light in the harvesting and processing of the fuel.

After the debacle of the failed ARBRE biomass power station in south Yorkshire, a government-backed power station project, Mr Strawson (below right) embarked on a Nuffield farming scholarship to learn lessons from Sweden and Austria. The big question that he was trying to answer was how to turn an SRC billet into a uniform, flowable product less than 10mm in diameter that would be suitable

for co-firing in power stations.

He hooked up with a British manufacturing company to create a processing machine capable of producing six grades of uniform wood fuel without any stringy bits. Strawson christened the product Koolfuel and his company, Strawsons Energy, has delivered 10,000t of these SRC granules to Cottam power station and other smaller heating projects such as his local school. They have also become the UK licensed retailer for Hoval boilers.



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you will need extra drying using a big tumble dryer, such as that used to dry horse bedding. All this costs money and requires a great deal of energy. For instance, a hammer mill with a maximum throughput of 7500kg/hour would use 22 kilowatt hours, more than twice the power consumed in a typical house in one day.

Quality issues

★ Your customers will not be impressed if they frequently find themselves cleaning out their boilers’ intake as a result of stringy chip. Quality is imperative and achieving the desired product can be time consuming. Seasoning a log might take 6-18 months depending on where you are in the UK and the required moisture content, says Mr Harrison.

Sam Whatmore of Wood fuel Solutions (see previous page) says it is important that suppliers work with clients to make life easier for both parties. He feels the quality of wood fuel stores is as important as the fuel. It is really important to be able to deliver fuel quickly and efficiently and he describes some stores designed by architects as “complete non-starters”. Mr Whatmore favours subterranean storage which can be tipped into from a lorry. “When you design a chip store you’re dealing with a difficult product. Whereas grain tips out like water, chip comes out like chip.”

What about energy crops?

★ It is getting easier to grow dedicated energy crops without having a power station on your doorstep. A company called Biojoule has just installed its first, semi-mobile pelleting facility at Sutton Grange Farm in Nottinghamshire. The company is looking for other on-farm pelleting sites with on-the-ground business partners. Biojoule requires a farmer or a group of farmers pro-

ducing up to 10,000ha of wood fuel a year (1000ha of SRC) who can provide a site and operate the facility. The company does not pay a rent for the site, but guarantees a price for the pellets produced.

By contrast, Strawsons Energy (see case study) produces granules from SRC on an adapted 22t lorry, which can be rented to process fuel in your area. Bical, the leader in miscanthus production, offers similar opportunities.

What funding is available to set up wood fuel co-ops or buy equipment?

★ Surprisingly little, despite the fact that it ticks so many of the government’s boxes for sustainable development and renewable energy.

It is likely there will be a second round of the Bioenergy Infrastructure Scheme soon. A first-round £3.5m was made available, but this was over-subscribed and made worse by the fact that it was supposed to cover both wood fuel rings and miscanthus producer groups. Northwoods was one of the lucky recipients, but only got £60,000 over three years, which paid for a part-time member of staff.

Another possibility would be funding through the Rural Development Programme for England, although this programme still hasn’t been finalised.

The Scottish Biomass Support Scheme is closed to applications, but further rounds are likely, as the tight timescales involved have led to many projects falling by the wayside, leaving more than £1m unspent.

The Wood Energy Business Scheme in Wales is providing grants of nearly 50% for the establishment of small- to medium-scale heat and power wood fuel markets in Wales. Eligible costs include wood fuel processing, storage and drying equipment, but the scheme must be in Objective 1 or Objective 2 designated development areas.

WHO CAN I CONTACT?	
Forestry Commission	— www.forestry.gov.uk 0845 3673 787
Biomass Energy Centre	— www.biomassenergycentre.org.uk 01420 526 197
EnAgri	— online information source for bioenergy production news www.enagri.info
Local wood fuel suppliers	— www.logpile.co.uk 01908 665 555
Northwoods	— www.northwoods.org.uk 01670 790 444
Yorwoods	— www.yorwoods.org.uk 01765 609 355
Rural Development Initiatives	— www.ruraldevelopment.org.uk 0845 226 2890
Wood Energy Scotland	— www.usewoodfuel.co.uk 01349 860 919
Wood Fuel Wales	— www.woodfuelwales.org.uk 0845 456 0342
Wood Energy Business Scheme	— www.woodenergybusiness.co.uk 01970 821 219
Regen SW	— www.regenSW.co.uk 01392 494 399
Bical	— www.bical.net 0845 450 1615
Biojoule	— www.biojoule.co.uk 01865 207 006
Strawsons Energy	— www.strawsonsenergy.co.uk 01777 248 749
Wood Fuel Solutions & Forest Fuels	www.woodfuelsolutions.co.uk 01409 281 977