

## H Responses to questionnaire

A number of stakeholders within the industry were interviewed for this report – their responses follow:

Question 1: The demand for wood seems be moving towards commodity - delivered to port-side and at the same time branded moving to fire-side. Do you see an infrastructure of bulk imported product to power stations and a more localised solution for domestic and small commercial users of wood fuel? Or is it more complicated?

Responses: There will be a mix.

It's more complicated but yes; part of the power station demand could be imported but where from and at what cost, both economically and politically. Moving timber a long way will inevitably offset part of the carbon saving.

In simple terms I would say yes to the question (although it probably is more complicated!). With regards to the domestic and small scale commercial users it will be/is price sensitive esp. when it comes to wood pellets. As wood pellets are best suited to replace oil in domestic and small commercial settings their price depends on world markets as it is a global tradable commodity. If there is going to be large bulk deliveries of imported pellets to power stations this would affect the cost of pellets to the domestic sector unless we develop a healthy local market for local/UK produced pellets. The other alternative for domestic sector is logs. This is a more realistic chance of a more localised solution for the domestic sector, again depending on price and ease of availability. With regards to wood chip this would be better suited to small commercial users and can be part of a more localised solution to supply.

Generally this statement is correct; power stations will be pulling in fuel from all over the world. Including the Americas and the ability to guarantee the sustainability of this material is yet to be proven. The comparison with food is interesting – commodity versus something more local, branded and ethical. Work going on with RDI and Leader Northumberland Uplands to get a branded local product – charcoal has gone down this route

For large scale users i.e. Lockerbie, Wilton, co-firing and the new proposed biomass plants (Teesside etc) then bulk imported product delivered to port-side is the logistical and most economical way forward. For small and medium scale users then the domestic supply chain should be able to supply the bulk of this material which provides a market for local supply from both

agricultural and forestry enterprises.

Yes the bulk fibre market works and the UK has for some time been a big importer of carcass timber that is split out for various utilisation chains. Tilhill looks after several large contracts.

Commodity, yes it is and behaves as such

I would agree that that seems to be the trend. If the current capacity of potential biomass power stations is fulfilled, we will see the feedstock become a traded commodity. The demand cannot be serviced from UK sources. This then raises questions as to price volatility and the effect that that would have on project financial viability.

Question 2: In many scenarios organisations with land and heat and or energy needs could grow their own:- rural estates; commercial property estates; eco-towns; local authorities. Why is this not being done?

Responses: In some cases it is, but most cannot grow enough to keep them going.

Obviously not enough incentives and a reluctance to invest in new equipment.

I think that the case for the commercial and environmental benefits are not made strongly enough. Plus there may not be enough incentive to help set up such schemes if they are going to be capital intensive. There are examples of good practice which could be made more of.

Knowledge is the main issue for landowners, if they understood the dynamics of the woodland, the energy needs of their site, the availability of the equipment, the companies to install and maintain that equipment and that the economics were sound for the life of the equipment and the woodland then more would be doing it. Case studies are needed, especially for land managers/rural estate owners. There is a local solution available

Mostly economics if you are looking at SRC or Poplar then the economics don't stack up compared with arable crops as an alternative use of land. In addition the long term commitment to putting land into this use e.g. 25 year life-cycle deters many practitioners from a change in land use.

There are barriers yes, the economics of your own fuel is fragile, 12-15 year commitments required, so real and perceived risks. Also oil is a very visible commodity c/f to wood. Mass media issues. UK is a traditional market and there are cultural issues.

Capital is the main barrier. It makes sense when you understand the issues but most people don't get it, yet.

Basically, I think it's because there are easier ways of providing heat - gas, coal, oil, electricity. Some places are different, of course, eg Buccleuch estates.

Question 3: Should a supply chain of wood be a public, private or third sector domain?

Responses: It doesn't matter, and we already have public (Forestry Commission) and private.

Private/third sector....but there will be a public input because of Forestry Commission resources. the outcry at privatisation of forests is unimaginable.

Depends on the context in which the supply is set up. By this I mean: There is room for social enterprise to set up and manage an ESCO (to install and maintain boilers as well as supply logs) if say a number of people in an area wanted to install log boilers but did not want to be involved in loading, maintaining them and finding logs. People could pay either using a heat meter or a subscription to the service. That way money could be kept local and develop local supply of logs. A private supply of wood could be used in either the form of brokerage (one person securing a good price from different supplies, like New Fuels I suppose) or direct supply. But the price of wood would be affected by the profit margin that a private supplier would want to keep the business going.

A public supply of wood would be the best way to divert wood from land fill. Public bodies (LAs) collect woody waste which they could resell to the public at low cost.

Private sector should once market is established; profit motive should be the driver although that should not stop the third sector making a surplus for their own ethical and social purposes. Clearly in the initial stage there have been significant interventions to make things happen

Private and this is where security of supply becomes an issue

Intuitively private but saying that most countries have state owned forests and it all works just fine. In the UK there have been cross-over links ie timber for pit props 30 years ago. Private sector well placed but because of the strategic nature, land use element, eco-services and long term nature of the industry then Government will be involved.

Private

It has to be private sector in my view. I don't think the public sector can contribute anything useful.

Question 4: If there isn't a dynamic market for woodfuel yet do we wait? Or will a renewable heat obligation and rising oil prices - as well as carbon reduction being a tradable activity - solve the catch 22 scenario?

Responses: The level of enquiries for UK supplied biomass wood fuel currently exceeds 10 million tonnes, with at least another 10 million planned from overseas as UK obviously cannot meet the demand. There is already a dynamic market!

No don't wait even if you are only plodding forward. be at the front when the going gets easier and you'll have the head start.

No we should not wait. The danger is that the wood may be taken up by a different market sector and leave less for production of heat. It makes sense to use wood now so that we can take best advantage of the future financial and other incentives that will be coming on line.

There is in some areas, but further work is required, the renewable heat obligation due in 2011 is the obvious milestone that may speed up the market growth. The Bioenergy programme has also gone some way to making the market work. RDPE is very much attuned to helping primary producers/woodland owners enter higher areas of their supply chain. Firewood production is a good example of this, stove sales in non mains gas/tourism areas are rising very rapidly and owners are minded to buy locally.

I don't see a dynamic market developing on its own unless the price of oil was to hit \$200 a barrel. A Renewable Heat Obligation will help but we will still have the problem of high capital costs from installation. The Bioenergy Capital Grants Scheme will help with this but it won't have the funds to provide

large scale roll out and still only funds 40% of the difference will a fossil fuel installation.

Everybody would like stability, clarity over 5 to 10 years would be good. Elements are dynamic. 90% of timber comes in to the home market is small and . Tilhill cater for two contracts one 250k tonne and the other 400k tonne. Delaying timber felling or not thinning is possible but there are dangers, windblow insurance protection becomes impossible after a certain number of years.

It is an issue but generally it all works

I think the market will arise through long-term supply contracts between biomass suppliers and developers of well-structured projects. The banks will want to see fuel supply security over 12 - 15 years at least before they will lend to a project.

Question 5: For local use would a branded product with the same provenance claims as, say, local food be an area of the market you can see growing?

Responses: Yes a branded product, backed by good service is the best defence against cheaper imports.

Yes

Maybe, it depends on what premium cost is placed on the product for the 'privilege' of coming from a local well managed wood source. Local food is appealing because of the quality, taste, uniqueness etc. With wood this could be a little more difficult as it is just burnt! A local brand would have to built heavily on the fact that the wood is from a sustainable source, best quality in terms of moisture content, secure supply for the future and, dare I say it, lowest price fixed for x (not the Roman 10 but an period of time) years!!!!

Useful, different for chip, log and pellet but all can benefit from provenance, Northumberland Uplands project with logo etc

No definitely not. Don't see any mileage in this one. It works for food to a limited extent but mostly at the higher price end of the market. In the case of wood I can't see the buyer being interested in the source of supply unless he has green business credentials or a green image to maintain. Cost and quality will be the main drivers.

Buying local is a choice, wood as architectural display. A number of niches are available

Aesthetic role. Local authority will want to have local LM3 type approach. Price sensitive all the same

Probably in relation to domestic or small commercial biomass stoves and boilers. I don't think anyone with a >50 - 100 KW boiler to feed would place any premium on a local product.

Question 6: What is the biggest opportunity around woody biomass?

Responses: Prices in excess of £60.00/tonne for chips.

District heating, business and domestic.

I see the biggest opportunity is in the heating sector to displace oil. LPG and electricity as the main heating fuel. Composting or use in anaerobic digestion could be a side line but best to burn it!

Whole chain is under-exploited, many opportunities in the 1,000 - 10,000t range. From forests to delivery, some companies will want to manage the whole chain, others part of it

In the past I would have said the small to medium scale heat market but if you look at recent developments then there are a number of large scale wood burning power stations coming on stream which is becoming the major market mover for biomass. A largely untapped growth area is in small to medium scale CHP but again here the limiting factors are very high capital costs and demonstration facilities to show the benefits of such a system

Big users of material, especially around the wood re-use market.

More of the same, adding value to the supply chain where companies see opportunities

If the biomass is fairly homogenous and of good technical spec, probably in relation to gasification with the gas feeding a recip engine driving an electricity generator.

Question 7: What is the biggest threat to this fledgling industry? - i.e. installing wood fuelled boilers/stoves/combined heat and power systems, selling fuel and linking to other renewables.

Responses: General lack of knowledge of the market - keeping some players out.

Funders are ignorant and therefore wary.

Being blocked or even absorbed by traditional utility suppliers I think security of long term supply and reasonable cost of feed stock is essential. The installation of boilers/stoves etc will drive this and the upfront capital cost of equipment needs to be made more palatable to the public. This means looking at sound financial models to get plant (not trees) in now to defer upfront cost to the public. Replacing ones heating system is a stress purchase i.e. you turn it on in the winter to find it is broken and needs replacing so money has to be found now. When this happens the person has to have enough information to make a decision to replace with biomass rather than like for like.

Installation of boilers, risk that local companies are diversified plumbers learning as they go or national companies struggling to give high quality service at a reasonable price on the ground. If the market takes off there will be a significant shortage of players to step up to high volumes of sales and installations

Ending of the Bioenergy Capital Grants Scheme

Uncertainty or put another way a lack of certainty!

It's what you make of it but patchy opportunities. All schemes so far contribute to getting a market moving

Competition with the cost of oil, and the convenience of some, of the alternative heat sources.

Question 8: Is enough grant funding going to the right players?

Responses: Yes.

Of course not

No. There is not enough grant to the domestic sector to replace boilers. I can't speak for growers but I guess they do get some grant/subsidy. However it would be best not to rely on grants to drive the industry as when they come to an end they industry

will falter unless there is a sound financial model in place to take over. The new renewable heat obligation may help in this aspect. Driving down the cost of equipment without grant assistance should be possible through bulk purchase and lower mark up to customer, not endangering one's own business.

Supply side yes. Through RDPE, Bioenergy and feed-in tariffs the markets have begun to move

No but never sure how you ensure that funding gets to the right people.

Energy crops market still very clunky

Generally ever thus

Probably not – as ever was thus!

Question 9: Any other thoughts on the supply chain of wood for energy?

Responses: The little guys are sitting around waiting for something to happen. Meanwhile the big guys have already got it sown up.

Local wood supply (reduced carbon in transport); Secure long term supply (reliable delivery like oil/lpg); Reasonable cost (compared to oil and not profiteering from linking cost of wood to cost of oil, although I suppose they are linked when it comes to growing and harvesting); Building up demand through increased installation of boilers/stoves; Looking at a viable financial package to take the sting out of upfront capital cost of equipment.

One final thought is that if the ESTac is providing advice to the public on biomass (and other renewables) as well as raising awareness then we need a good supply chain to feed referrals in to, confident that the customer will get a good service at a reasonable price!

Fragile but has potential for mainstream, especially here in the north east

The industry does contain motivated and intelligent people of high calibre, they do need to get to better times but hang on in there. It is diverse and a bit stop go at the minute. Over time the change of hydrocarbons from oil to wood may happen

Future energy Yorkshire seems to be a good way of funding activity. Sticks can be as important as carrots and sometimes limits – such as boiler – size can twist normal decision making.

The use of wood as a fuel in certain locations (eg I'm still not clear as to where we stand on 'clean air' issues in urban areas) is an opportunity for the taking with the right products (including boilers and stoves) and with good marketing. Study the Scandinavian situation!

## *1 Business Case for Sustainable Heating Solutions UK Ltd and Northumbrian Woodfuels*

The attached report has set out a market where the SWOT and PEST analysis show that the market for wood as a fuel is growing in the UK and especially in the north east. The north east is well placed to grow and import the wood and indeed climate change makes this more likely rather than less. For Ian Brown and the two companies he has recently set up you could find no other conclusion than that there is an opportunity which is ready to be filled.

However in business there are millions of opportunities that fail to be taken up and fully utilised so how can Susheat and N'brian Woodfuels plan for success using this report as the springboard for this aspiration

Milestones and ambitions for each company:

### **Sustainable Heating Solutions UK Ltd**

Exhibit at Ignition 09 – main sponsor	completed
Website <a href="http://www.susheat.com">www.susheat.com</a> to exhibit 1 stop shop	completed
Assess market and do business case for spin out co' 2009	completed by August
Carry out wood supply report 2009	completed by July
Do new business plan for funding September 2009	completed by
Form association of renewable experts December 2009	completed by
Take on 3 staff; sales, installation and administrative 2010	completed by Spring
Become no 1 ne agency to install biomass equipment	completed by 2012

It is worth saying that with local government re-organisation there are a number of opportunities around owning the heat supply equipment through leasing and charging the recipient on a standing charge and unit price. This model is being practised in Scotland and elsewhere.

The aim is to carry out trade missions to Sweden and Denmark in August 2009 to see if exclusive importation rights can be negotiated on biomass boilers and other renewable equipment.

## Northumbrian Woodfuels

IE & JM Brown have farmed Lee Moor Farm since 1987 and previous family members since 1950. The setting up of Northumbrian Woodfuels is a good example of farm diversification leading to a standalone business which is involved with the growing, trading, processing and retailing wood fuel of all sorts

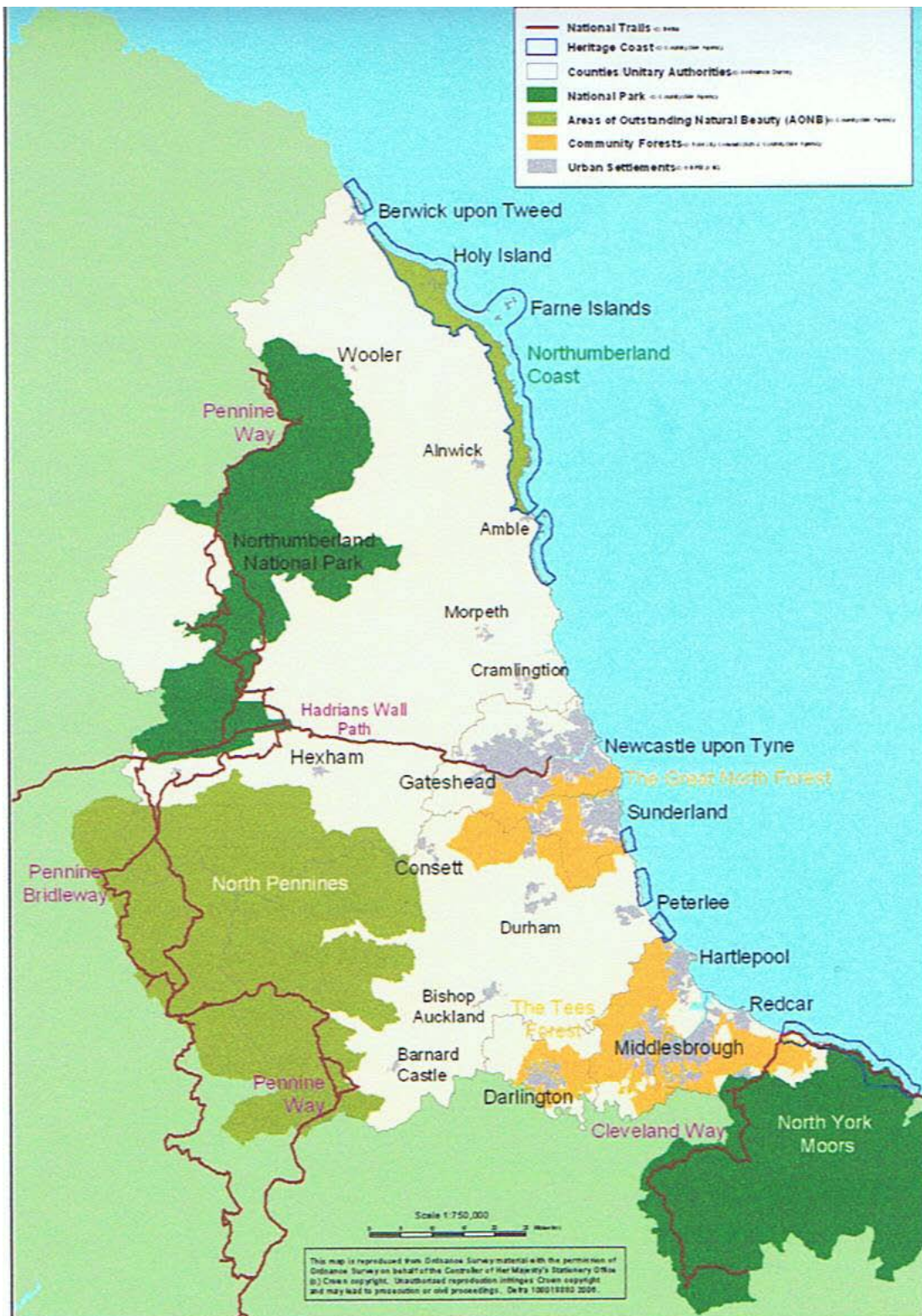
Supply fuel to own farm/business park onwards	completed 1999
Sell to others including Defra onwards	completed 2007
Set up and propose wood hub	completed Ignition09
Business plan with help of Business Link September 2009	completed by
Negotiate wood supply deal with N'land Estates 2009	completed by July
Apply for funding to convert building for woodfuel Late September 2009	completed by
Shed selling pellet, chip, kindling and logs December 2009	completed by
Full retail offer, willow baskets, sawmill products 2010	completed by spring
Network of similar hubs across the UK through LEAF heat season 2010	completed before

It is clear that there are large opportunities to use Lee Moor in an educational and sales way. To this end the farm will be applying for Higher Level Educational Stewardship and forestry access. It will be to the advantage of the business park to have a flow of people coming to learn and to buy.

## Field to radiator

Lee Moor is well placed to take people on the journey and to improve the site to a level where the integration of renewables and smart metering can be demonstrated on a single site. Funding will be applied for to make the site a destination, stoves, fuel, knowledge, art, inspiration being delivered around the central theme of sustainable heat.

## J The North East Region of England



**K Funding criteria matrix**

<b>Challenges - Areas of need and opportunity identified by rural evidence base</b>		<b>Appraisal of potential role of RDPE funding in relation to Rural Challenges in the North East</b>				<b>Appropriateness of RDPE funding</b>
	<b>Strengths</b>	<b>Weaknesses</b>	<b>Opportunities</b>	<b>Threats</b>		
ICT Development	Links well to many RDPE priorities	Limited funds would have little impact	Improving ICT may in some areas be key to rural development Able to target support at geographic areas or sectors	Other funds (Single pot) can be used	Not suitable for strategic regional ICT projects.	
Micro Businesses	Many RDPE measures can be used to help rural micro businesses	Risk of complex scheme application procedures	Strong links across economic, social and environ. axis	Risk of overlap with mainstream provision	Very appropriate, key area of opportunity in rural north east	
Life style businesses	Strong connection between econ and env. quality	May not be well connected to wider rural economy	Strong links across economic, social and environ. axis	Decisions to locate lifestyle business difficult to influence. Difficult to target/define	Not appropriate to directly focus on this group	
Sites and premises	Links to farm diversification	Limited funds might not impact on this area	Many potential sites on farms etc	Should be covered by mainstream funding	Not appropriate as a priority theme	
Retail and Distribution businesses	May be strong links to rural services	Limited funds may not impact on this area	Farm shops and haulage businesses	Covered by mainstream funding	Not appropriate as a priority theme	
Tourism businesses	Successful area for ERDP. EU approved tourism measure	Limited funds might not make a strategic impact on this area	Route to harness economic value of environment	Different approaches developing in urban and rural areas?	Appropriate – if targeted RDPE could make a difference in this area	
Sustainable Farming and forestry inc. diversification	Fits well with national programme and measures	Risk of complex delivery/ schemes – bureaucracy	Large number of businesses with potential to develop	Impact of changing economics & impact of urban factors	Very Good fit - RDPE designed to support this area	
Biofuels / climate change	Fits well with national programme and measures, links to	Biofuels driven by/ dependant on market pull? Not	Good potential for growth & developing	Overlap with other funding streams. Certain support could	Appropriate – important area of development for rural	



# BIOMASS INFORMATION

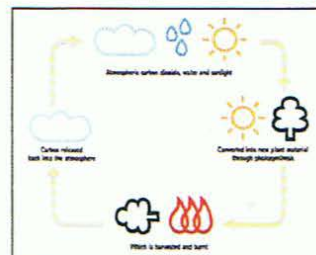
## Biomass for heating and electricity generation

Wood is one of the oldest forms of fuel known to man. Over the centuries it has been used to provide warmth, heat for cooking and hot water. Today the use of woodfuel is once again attracting interest - it can replace fossil fuels thus benefiting the environment and providing fuel security in years to come. Wood is increasingly being used efficiently for domestic, commercial and industrial heat and electricity generation. This leaflet concentrates on biomass heating.

The word 'Biomass' refers here to the use of sawdust, wood shavings, off-cuts, waste wood, chipped or pelletised wood, logs or straw as a fuel for heating systems and electricity generation.

## Advantages of using biomass

- Spending into local economy
- Security of supply
- Stable price
- Cost savings in many applications
- Saving CO<sub>2</sub> (diagram of carbon cycle courtesy of British BioGen)



## Heat and electricity

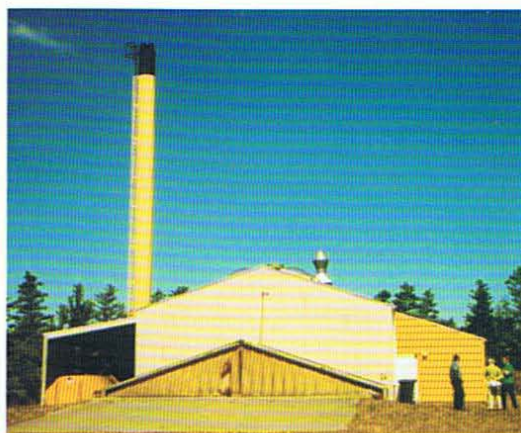
Biomass can be used to generate heat or electricity, however the technology for heat is the most developed and reliable. Biomass fuelled Combined Heat and Power systems are still under development but there are a small number of working prototypes in the UK, Europe and the USA.

## Biomass sources

The four main sources of sustainable biomass fuel in use in the UK are the management of forests and woodland, the coppicing of fast growing trees known as 'energy crops', waste wood from industry and baled straw.

## Biomass heating

Using biomass for heating is nearly as old as the hills, but using it to fire large automated central boilers is relatively recent. In Scandinavia and the USA it has developed over the last 25 years so that whole towns are now heated, via district heating schemes, by woodchips and straw.



Danish village heating plant

## Facts & figures from other nations

Biomass for heating is common in many European and North American countries. In Sweden around 13% of houses are heated by biomass. In 1996 in Germany 4% of new build houses were heated by biomass, heat pumps, solar energy and district heating schemes. The USA generates 3% of its electricity from biomass.

## ENERGY FROM BIOMASS

**Biomass fuels** – Wood fuel in its raw form and straw does not lend itself to easy handling. Logs, up to 50cm long and 15cm thick, are used in open fires, closed stoves and manually fired boilers. Straw is used in whole bales and handled with farm machinery.

**Solid wood** can be either chipped or pelletised to make it easier to handle using conveyors and augers. **Chips** range in size from 0.5cm<sup>2</sup> to 5.0cm<sup>2</sup>, they are rectangular and roughly cut, and are used in automatically fired boilers. Many boilers will only work to certain chip specifications, such as size and moisture content. It is essential to consult the boiler manufacturer before buying woodfuel.

**Pellets** range in size from 5 - 40 mm in length with a diameter of between 8 - 12 mm. They are produced by compressing sawdust and shavings at high pressure. Uniformity of size makes them easy to handle in automatically fired boilers. Care should be to obtain pellets containing only pure wood dust for boilers below 300kW. Dust from MDF or chipboard must be burnt in purpose designed equipment.

### Fuel drying

Moisture must be removed from wood before chipping or pelletising. Timber and energy crops must be air dried (seasoned) in lengths before chipping, or chips can be put through a dryer to reduce moisture to 25-35%. Pellets, manufactured locally at Coxhoe, County Durham, are usually 10-15%. Straw, used in whole bales, is 12-16% moisture.



wood pellets

### Biomass fuel storage

The size of the operation, the means of delivery and the fuel all affect fuel store design. All fuel should be stored in a well ventilated store or under breathable tarpaulin. Without good ventilation chips may compost and lose energy value. Moulds may also grow which can pose a health risk.



wood chips

### Costs

	Wood Chips	Straw	Seasoned Logs	Wood Pellets	Heating Oil
<b>Energy density (kWh/kg)</b>	2.9 – 3.9 kWh/kg	4.1 kWh/kg	3.9 kWh/kg	4.7 kWh/kg	10 kWh/kg
<b>Energy content</b>	850 – 1,150 kWh/m <sup>3</sup>	389 kWh/m <sup>3</sup>	1,000 – 1,900 kWh/m <sup>3</sup>	3,300 kWh/m <sup>3</sup>	10,000 kWh/m <sup>3</sup>
<b>Cost of fuel per delivered kWh</b>	1.0p/kWh (at £30/tonne, 35%mc)	0.7p/kWh (at £30/tonne, 15%mc)	1.4p/kWh (at £45/tonne, 25%mc)	1.8p/kWh (at £75/tonne)	1.9p/kWh (at 17p/litre)

Boiler efficiencies of 90% are assumed for heating oil and pellets, 80% for chips and seasoned logs

**Biomass boilers** – Biomass fuelled central heating systems are best suited to those who have a regular demand for heat over long hours, have fuel available and good access and storage space. They can be applied in large domestic properties, schools, hotels, nursing homes, and hospitals. Straw boilers are particularly suited to rural locations because of the storage space required.

Most biomass boilers use conventional boiler technology adapted for the specific fuel. Some of them can be run in parallel with a fossil fuel source to provide for peak loads and back up. A large range of boilers is available, from domestic size up to several megawatts of heat. State of the art equipment, controls and remote monitoring can give 95% boiler efficiency.

Biomass central heating systems are almost as convenient and reliable to run as modern oil and gas fired boilers. The manually fed systems predominantly use logs, wood pellets or straw and include a hot water store. They require the operator to feed the boiler or fill the hopper once a day - possibly twice in the colder months. Automatic wood fired central heating systems run on wood chips or pellets from a hopper or a storage bin. Only intermittent supervision is needed. Automatic systems are more expensive than log burning boilers but need less supervision. Some log stoves and most pellet and chip equipment are compliant with smoke control legislation in urban areas.

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The Development Agency  
for the North East of England

September 2002

## **M** *Proposals for dissemination of report*

Sustainable Heating Solutions/Northumbrian Woodfuels would like to disseminate the contents of this report. As such we would be keen to carry out a number of stakeholder events across the 4 sub-regional areas within the region.

The purpose for this is

- Share (transfer) knowledge to practitioners
- Get the players from the woodfuel business together to share ideas and concerns
- To market Susheat and publicise what the company plans
- To get agreement on how dense a network of fuel supply hubs needs to be
- To network and get feedback on which parts of the infrastructure of support is working

### **Problem**

Most potential customers are not knowledgeable about woodfuel and its associated equipment. Plus boilers are big ticket items – not good in a recession. The consumer needs to learn a lot before they know enough to buy the product. Although there are a number of organisations out there to help it is still a very time consuming activity to get the information into the hands and heads of the customer. The boiler industry – through its sales and installation representatives - have responded by giving very poor customer service and only those who are very keen to buy make the effort and progress to satisfied sale. 9 out of 10 people who make an enquiry do not go on to buy a boiler. Those who do buy a wood boiler may have considered the purchase for a year, even 5 years.

Funding, certainty about the product, the fuel, servicing, warranty and many other areas of concern all need settled in the customers mind.

### **Solution**

Sustainable Heating Solutions UK Ltd and Northumbrian Woodfuels plan to set up a short one hour course for domestic and commercial users of wood – each would have a subtly different focus in order to save time to the supply chain.

It is felt that this would be a fundable activity as it will help both the clients and the supply companies. Courses could be about

1. The choice of fuel – the first decision matrix before buying a boiler/stove
2. The choice of equipment
3. How to improve the efficiency of your home/business
4. How to work a number of renewables in to a single building

Lee Moor Business Park is Keen to work with The Wood Heating Company and a number of other players in order to save them time answering the same old questions. The website [www.susheat.com](http://www.susheat.com) will also be at hand to provide a Frequently Asked Question (FAQ's) page. We are also considering using u tube and Twitter to give instant access to bespoke information as well as instant answers to questions about biomass heating.

For larger companies we would look to be part of a NEWHeat phase II - if funded - as well as offering our knowledge to more generic energy efficiency/resource efficiency audits which the Government is very keen to have available to companies.

The recession has increased the need to have all companies running efficiently and process industries have been a particular target in the north east - for example the MAS-NEPA programme

**Start date for this work is Autumn 2009**

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