

Development and promotion of a transparent European Pellets Market
Creation of a European real-time Pellets Atlas

Pellet market country report

UK



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December 2009

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This report is available at the pellets@las website at www.pelletsatlas.info

The pellets@las project is supported by the European Commission under the EIE programme (EIE/06/020/SI2.448557). The sole responsibility for the content of this report lies with the authors. It does not necessarily reflect the opinion of the European Communities. The European Commission is not responsible for any use that may be made of the information contained therein.

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1. Summary

In the UK it is estimated that the majority of pellets manufactured and imported are co-fired for the production of electricity. However, data on this is very hard to come by, as it is of a commercially sensitive nature. What we do know is that there are increasing numbers of individuals and organisations who are using pellets as their main source of space heating. For those wanting a low carbon heating solution from a boiler with a heat output of less than 40 to 50kW pellet heating is an obvious solution, particularly for an existing property. Over 40 to 50kW one might look at a woodchip heating system, although pellets might still be the preferred option due to the higher calorific value of pellets (meaning less storage space is required) and reduce maintenance requirements (e.g. because pellets produce far less ash).

2. Introduction

Having started in the late 1990's the pellet market in the UK is beginning to reach a developed stage, with approximately 68 suppliers of pellets and 13 manufacturers (the first of whom started manufacturing in 2002). Pellet production and use remained relatively small in the UK until the commissioning (in 2005) of the Balcas Ltd pellet plant at Enniskillen in Northern Ireland with a production capacity of 50,000 tonnes (now increased to 55,000 tonnes p.a.). This combined with the introduction of a number of grant programmes (and an increase in public awareness of the importance of renewable energy) has meant that the pellet market really started to gain momentum in the UK from 2006 onwards.

It is notable that there has been an increase in the last couple of years in the number of suppliers who list prices on their website and have the facility to accept online sales. Consumers now have the ability to choose between a number of different suppliers of at least bagged pellets, with many suppliers selling both large and small bags of pellets (usually by the pallet load – approximately one tonne per pallet). The main issue for consumers wanting bagged pellets is the cost of transportation, with some suppliers charging by the mile and others charging a flat fee within a certain radius. The consumer can find out whether their address falls within that radius by submitting their post code.

What are not so readily available are blown loose pellets for small scale consumers. Only a few companies have the necessary blower lorry for such deliveries, with the distance between potential customers (apart from in some locations, such as Northern Ireland) making delivering pellets in this way financially unviable.

Pellets manufactured in the UK are generally made from sawdust, clean waste wood (diverted from landfill), energy crops (such as willow grown on short rotation coppice) and forest thinnings. As discussed later in this report, it is considered likely that the potential for growth in the number of manufacturers producing pellets from sawdust is limited by competition for the raw material (and subsequent cost). Perhaps the biggest potential for growth is the manufacture of pellets from forestry thinnings although there must be a economic case (where there is a large local consumer, such as a power plant dedicated to the use of biomass) for using some of this material in the form of woodchips (instead of converting it to pellets).

Consumption of pellets in the UK occurs on both the large and small scale, with little ground in between. On the small scale pellets are consumed by householders and on the large scale they are co-fired in power stations for the production of electricity. What pellets are not generally used for in the UK is the production of heat and power in Combined Heat & Power Plants and for the production of heat in District Heating schemes, both of which are relatively rare (especially fuelled by biomass) and are more likely to be powered by woodchips than pellets, where they exist.

3. History of market development

Wood pellet production in the UK commenced in 2002 with the establishment of the Wales Bio-Fuel Centre run by Groundwork Bridgend & Neath at Port Talbot with a ERDF (European Regional Development Fund) grant of just under quarter of a million pounds. From the Wales Bio-Fuel Centre Welsh Biofuels Ltd was developed with a wood pellet production capacity of c10,000 p.a. The pellets were made from wood that would otherwise have gone to landfill, such as old pallets, sawdust, shavings and off-cuts from furniture factories and other wood-working businesses. Unfortunately, this company ceased to trade during 2008 due to financial difficulties.

Another early starter (again in 2002) was Premier Waste at their waste recycling site near Durham in the north of England which again used wood that would otherwise have gone into landfill to produce wood pellets in their 3.5 tonne per hour pellet mill. This was part of an initiative to switch the heating systems of several local schools from a fossil fuel (coal) to a renewable energy source (pellets). In most cases the schools existing underfed boilers were converted so that they could accept pellets rather than coal. Following a management buyout the wood pelleting business of Premier Waste was passed to Wood Pellet Energy UK Ltd.

As mentioned in the Introduction, the next big step was the commissioning of the pelleting plant by Balcas Ltd, at Enniskillen, Northern Ireland in 2005 (with the first sale of pellets early in 2006) with a production capacity of 50,000 (now 55,000 tonnes p.a.). These pellets are produced from sawdust from Balcas' timber operations onsite. Balcas Ltd initially exported pellets to UK power stations for co-firing. Balcas Ltd now has a supply network across Ireland (north and south) and a distribution centre at Cork. Loose pellets are sold directly by the company, whilst bagged Balcas Brites are sold through a network of independent distributors across the whole of Ireland and the UK. Balcas Ltd benefited from assistance from the UK Government to set up their CHP plant and from two grant schemes (Reconnect in the north and the Greener Homes scheme in the south) which encouraged householders both north and south of the border to install wood pellet boilers (and other renewable energy systems).

Table 1: Development of the UK pellet market between 2005 and 2008

Year	Total production capacity [tonnes/year]	Total production (estimated) [tonnes/year]
2008	218,000	125,000
2007	104,000	
2006	83,000	
2005	25,000	

Information on UK pellet producers and suppliers can be found on the LogPile website (managed by Pellets@las partner The National Energy Foundation - NEF) at <http://www.nef.org.uk/logpile/fuelsuppliers/pelletsuppliers.asp>. Of the 75 companies listed, 13 are UK based pellet producers. It is notable that since the start of the

Pellets@las at the beginning of 2007 there has been a substantial increase in the number of companies supplying pellets across the UK with a number of companies (such as Forever Fuels) investing in specialist lorries to facilitate bulk deliveries of blown pellets, the cheapest way for consumers to buy pellets. Whilst the growth in the number of pellet plants and the development of a more developed pellet fuel supply infrastructure in the UK is welcome, the pellet market is still in developing with market failures as well as successes.

4. Pellet production

2008 was an exciting year for the production of pellets in the UK, with several new plants opening, namely Forest Bio Products in Perth, Scotland (estimated capacity between 40 and 70,000 tonnes p.a.), Clifford Jones Timber at Ruthin in Wales (estimated capacity 30,000 tonnes p.a.), the Briquette and Pellet Company at Lowestoft in the East of England (estimated capacity 6,000 tonnes p.a.) and Puffin Pellets Ltd at Boyndie, Scotland (estimated capacity 25,000 tonnes p.a.) as well as some smaller manufacturers. A variety of companies produced wood pellets. Two of the largest manufactures, Balcas Ltd and Clifford Jones Timber (as well as the smaller Ecowood Fuels – an initiative of Brookridge Timber) have production plants alongside existing timber operations, meaning that they have the raw materials for the production of pellets on site. Another company with raw material on site is the Briquette and Pellet Company which is based on the site of Jeld-Wen Windows and Doors. Here the sawdust produced during the manufacture of the company's windows and doors can be used on site to produce pellets. Puffin Pellets Ltd on the other hand is an initiative of Harpers, a transport and wood processing company.

On the whole, the larger companies appear to be dominating, with market conditions being difficult for smaller operations, perhaps due to the cost of purchasing and transporting the raw material (where necessary) and the increased cost of production due to the large increases in the cost of electricity especially during 2008. Unfortunately, 2008 saw the end of production by Welsh Biofuels and the smaller Fast Forward Energy, both based in Wales.

With Balcas due to start manufacturing pellets at Invergordon in 2009 (capacity 100,000 tonnes p.a.) the UK's pellet manufacturing capacity is set to increase substantially from the current estimated capacity of 218,000 tonnes, of which an estimated 125,000 tonnes is used.

In general terms it is notable that the majority of pellet manufacturers are situated where there is a good supply of timber and existing sawmills, with the largest existing and potential capacity in Scotland. The new Balcas Ltd site at Invergordon is being built on a former industrial site in the Highlands of Scotland and location was chosen by the company for this reason and its close proximity to the raw material (wood fibre and residues). It is also notable that Scotland has a higher renewable energy target than England. In Scotland the target is for 50 per cent of electricity from renewables by 2020, with an interim target of 31 per cent by 2011. This compares with a target of 10% for England by 2010, with an aspiration of 20% by 2020.

As highlighted in the International Energy Agency (IEA) Bioenergy Task40 report for the UK on [Sustainable International BioEnergy Trade: Securing supply and demand](#), it is difficult to obtain detailed information concerning the level of bioenergy imports into the UK since information at a company or sectoral level is commercially sensitive in nature. At the same time, international trade statistics often do not classify products (such as wood pellet) in sufficient detail. Much of the material imported is for co-firing or use in pelletised form. It is difficult to determine trade patterns for co-firing

since imported feed stocks are typically purchased on spot markets and operators have the ability to switch between different suppliers and different feed stocks to pursue best value for money.

There is no national standard for the production of pellets in the UK. Instead many producers and retailers in the UK (e.g. [Balcas Ltd](#) and their many distributors) describe their pellets in accordance with the European Technical Standard CEN/TS 14961: 2005 which sets out the fuel specifications and classes for all solid biofuels and defines certain parameters and property classes. Further information on this technical standard can be found on the website of the [Biomass Energy Centre](#)

For a couple of years, until May 2005 there was a trade association representing the interests of the UK pellet industry, known as the British Pellet Club. It then merged with the [Renewable Energy Association](#) which now represents the interests of the whole biomass sector and other many renewable energy industries.

5. Pellet trade and logistics

Data collected as part of the Pellets@las project by NEF show a total estimated storage capacity of 56,848 tonnes for 2008 with 1195 tonnes stored as at January 2009.

Loose pellets are generally sold by the manufacturers direct or through one or more agents. Not all producers have the logistical equipment with which to transport loose pellets, instead preferring to sell their pellets in small and large bags. At least two producers have now set up a network of traders for the sale of bagged pellets. Small bagged pellets are generally sold on pallets and transported to customers by van or lorry, often belonging to a third party.

It should however, be noted that none of the large scale consumers of pellets (i.e. the power plants) responded to the questionnaires sent out by NEF (several felt the questions too commercially sensitive to reply) so that these figures may be dwarfed by imports of pellets from countries other than those stated here. Pellets have an ICN Comcode of 4401 30 20 but no data on how many pellets were imported or exported could be found on the UK Trade Info website (<https://www.uktradeinfo.com/>). The [July 2006 discussion paper](#) of the Wood Energy Action Group based in Scotland states that 'There is a strong importing base across the entire eastern seaboard of the UK with pellets coming into Port of Blyth ([Transped](#)), Teesside (Talloil), Hull and others. These pellets are coming principally from Germany, Sweden, Finland, Denmark, various Baltic States, Russia and France.'

In 2005 the Swedish biofuels producer TallOil was reported to have opened a 7000 tonne storage and distribution centre for solid biofuels on Teesside with the capacity to handle 100,000 tonnes in its first year of operation. However, TallOil are now understood to have been bought by Perstorp AB and no further information on this development can be found.

Balcas state that they have regional depot near Brentwood, with others near Bristol (at Avonmouth) and the Humber Estuary to follow. The Brentwood plant has a screening plant to remove fines and is servicing the market as far as Exeter, South and West Wales, the Midlands, South East and East Anglia. The company states that the regional depots will be supplied by Invergordan pellets from coastal tankers to minimize carbon emissions and costs. Furthermore, the company states that they are growing their network of more than 60 bagged pellet retailers in the UK mainland – focused on the sub-4 tonne market.

The eastern seaboard is favoured by many companies due to the close proximity to large coal fired power plants such as Drax.

6. Pellet consumption

The total consumption of pellets in the UK, based on the total estimated to have been manufactured (125,000 tonnes), plus imports (of 51,000 tonnes) is 176,000 tonnes. The main quality standard in use is CEN/TS 14961, although some pellets manufactured to the German DINplus standard are used.

As part of Pellets@las weighted UK price data NEF has collected quarterly price data since July 2007, with the last data collection being undertaken in October 2008 (see the graph below). It is notable from the graph (which is based on a delivery of 5 tonnes including the cost of delivery up to a 50km radius and VAT at the domestic rate of 5%) that the price of loose pellets over the last year has been fairly stable at around £150 a tonne. Although there will be regional variations in prices not shown by the weighted average, it is worth noting how much more stable the price of pellets has been compared to fossil fuels, such as oil or gas. At £150 a tonne the cost of heating with pellets is 3.13p/kWh (based on pellets at 4,800kWh/t), substantially cheaper than heating with oil or LPG (but not cheaper than gas which for most UK households cost in the region of 3p/kWh).

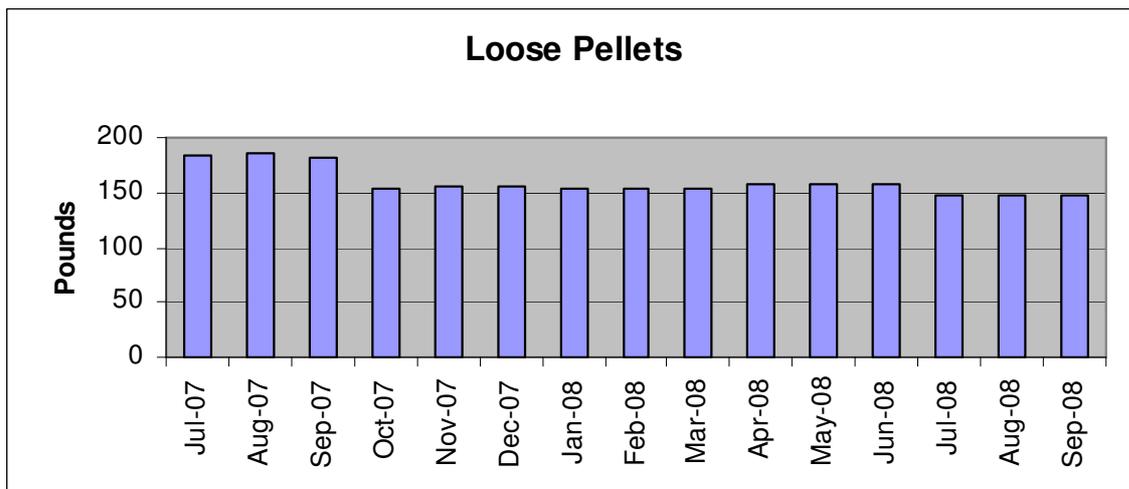


Figure 1: Price of loose pellets

In 2008 the National Energy Foundation conducted a survey of all known UK pellet equipment suppliers (boilers and stoves). Of the 40+ companies surveyed, 10 replied including those most active in this area. The results are set out below:-

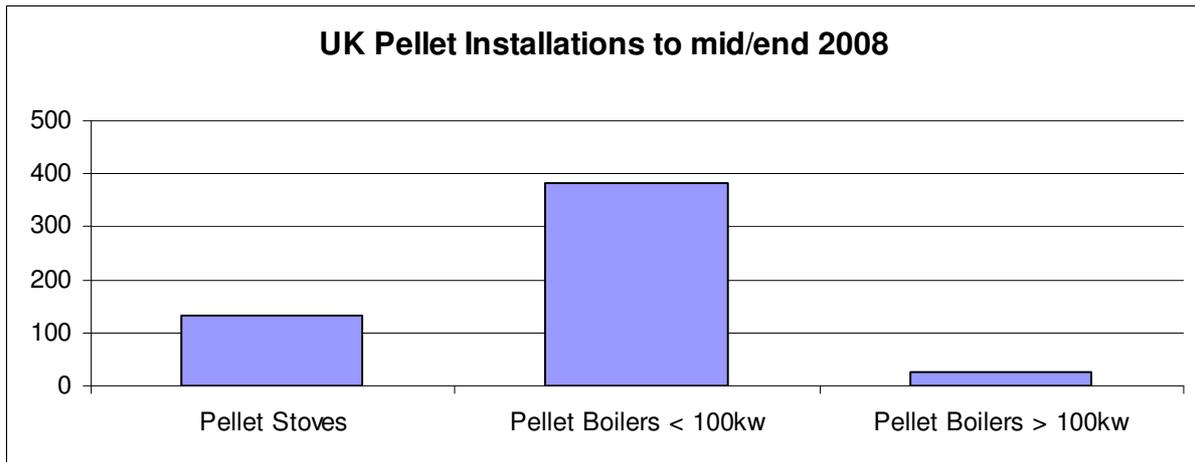


Figure 2

These results are shown to mid/end of 2008 as the companies gave their responses over a period of time spanning mid to end of 2008. The total number of installations given was 538, with the majority of these (381) being pellet boilers less than 100kW.

Suppliers and installers were also asked to give their projected installations to the end of 2008, although one company gave figures to the end of April 2009 as this was the end of their financial year. It was notable that most companies reported an increase in installations year on year, particularly one company that was particularly optimistic about the number of installations that would take place in Northern Ireland (504) during 2008/9. If all the projected installations for 2008 took place (783 in total), this would have more than doubled the total number of systems installed in the UK.

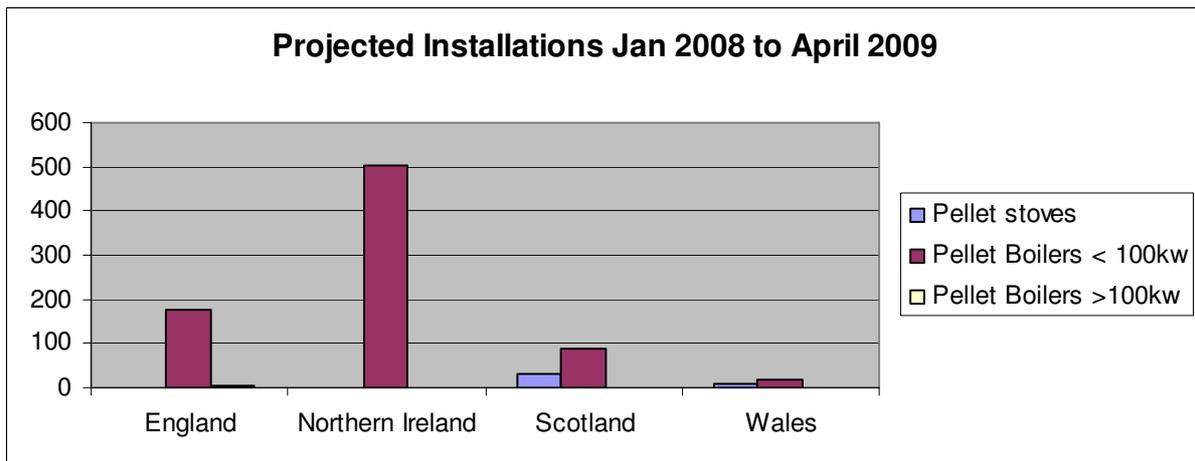


Figure 3

This optimistic forecast of the number of installations in Northern Ireland ties in well with the information given by Balcas Ltd in the Autumn of 2008, that they had 2500 domestic customers and 100 commercial customers across the **whole** of Ireland.

Other potential sources of information on the number of pellet installations in the UK are the various grant programmes that have been in operation across the UK, particularly the Low Carbon Building Programme (the LCBP). Phase 1 of this programme, which was launched on the 1st April 2006 (and is due to run until June 2010) is aimed at householders.

[Statistics](#) from the LCBP Phase 1 (to 14/4/09) show that 36 grants have been offered for a wood pellet stove/room heater (with 10 grants paid); in addition 460 grants have been offered for wood fuelled boiler systems (with 321 paid). Some of these wood fuelled boiler systems will be log fuelled boilers. None are expected to be woodchip systems, which are unlikely to be installed in the average house.

Phase 2 of the LCBP is aimed at installations in public sector buildings (including schools, hospitals, housing associations and local authorities) and charitable bodies. It runs until June 2009 and offers a 50% grant for both pellet stoves and wood fuelled boilers (logs, pellet and chip). The [operational statistics](#) from this grant programme to 14/4/09 show that no grants were offered for pellet stoves and that 29 have been offered for wood fuelled boilers (with 13 paid). There is no break down of how many of these installations are of pellet boilers.

The trade association for the biomass industry, the Renewable Energy Association (REA) has available on its [website](#) a map of biomass heating installations across the UK. This gives the name of the installer and the postcode of the installation, but no other detail as to size or type of fuel. Altogether 1221 biomass heating installations are shown. Some of these will of course be pellet systems. A separate search for pellet stoves shows 125 installations across the UK.

On the basis of the information collected by NEF and the REA, and the number of LCBP grants made it is estimated that there is in the region of 750 to 1000 pellet boilers and 200 pellet stoves installed in the UK to April 2009. If each of these boilers (if there are 1000) used an average of 10 tonnes p.a. and each stove 1 tonne then the total demand for pellets in the UK (not including that used for co-firing) would be 10,200 tonnes – a relatively small amount compared to the potential production capacity now available.

NEF is aware of 43 suppliers and installers of pellet boilers. These companies are [listed](#) on the on the LogPile website, a site managed by NEF. Not all these companies are very active in the installation of pellet boilers. The [Microgeneration Certification Scheme](#) (as at 15/4/09) lists 45 companies as having met the standard required for their customers to obtain a grant for a wood fuelled boiler under the LCBP. Although this number has grown steadily over the last few years, it is still the case that many potential consumers, particularly householders will struggle to find an installer close enough to them for them to have confidence that someone will be on hand in case of any difficulties.

The Energy Saving Trust (EST) on the LCBP website states that the capital costs 'depend on the type and size of system you choose. But installation and commissioning costs tend to be fairly fixed. Stand alone room heaters generally cost around £2,000 - £4,000 installed. The cost for boilers varies depending on the fuel choice; a typical 20kW (average size required for a three-bedroom semi-detached house) pellet boiler would cost around £5,000 - £14,000 installed, including the cost of the flue and commissioning'. These cost estimates from EST on the cost of having a pellet boiler installed are perhaps on the low side – others would say that the starting cost is somewhere over £10,000. This compares with a cost in the region of £1500 and £2500 for a new condensing gas boiler, installed – and perhaps £2000 to £3000 for a new oil boiler, again installed.

As stated previously, the large scale consumers of pellets in the UK are the companies that co-fire biomass for the production of electricity. It has not, however, been possible to obtain any data from them.

7. Mixed biomass pellets

The MBP market in the UK is small. The market in the UK for MBP is in co-firing in coal fired power stations. The pellets are crushed prior to co-firing. The burning of biomass in coal fired power stations is very price sensitive – with power stations opting for the biomass fuel that is most economical for them to use – which might be wood chip or olive stones rather than a manufactured pellet. Agripellets Ltd advertises straw pellets on their [website](#) at £100 per tonne (for a three tonne delivery) excluding VAT and the cost of delivery (price accurate as per April 2009). This is similar to the price for wood pellets manufactured for industrial use.

There are two straw pellet manufacturers known to be in production in the UK - Charles Jackson with a relatively small production capacity and as already referred to, Agripellets Ltd, capacity unknown. Agripellets state on their website that they primarily produce Agri-Straw Pellets which are sold in bulk to the electricity power generation market to be co fired alongside coal. They state that they have supplied Scottish and Southern Energy plc and that their main customer is E.ON UK plc with whom they have an ongoing contract. Agripellets also state on their website that they are developing a new range of high quality straw based hybrid fuel pellets which combine wheat straw with other agricultural crop by-products and natural additives. Agripellets also produce 10mm miscanthus pellets, which are primarily produced for the co-firing market.

Miscanthus cubes, approx 2.5cm in diameter are also produced for co-firing – by a company known as Bical Ltd. However, these are too large to fall within the definition of a pellet.

8. Legal framework & Policy

The UK's target under the EU's Renewable Energy Directive is that 15% of all energy consumed should come from renewable sources. Prior to the UK Government signing up to this Directive, the main focus was on the production of electricity from renewables (10% by 2010 and 20% by 2020 – although as previously mentioned some regions of the UK, for example Scotland have higher targets). The main driver to the delivery of the production of electricity from renewable sources has been the Renewables Obligation, which requires licensed electricity suppliers to source a specific and annually increasing percentage of the electricity they supply from renewable sources. The current level is 9.1% for 2008/09 rising to 15.4% by 2015/16.

The Obligation is enforced by an Order (Statutory Instrument) made under the terms of Section 32 of the 1989 Electricity Act. The Renewables Obligation Order was introduced in April 2002.

The Obligation requires suppliers to source an annually increasing percentage of their sales from renewables. For each megawatt hour of renewable energy generated, a tradable certificate called a Renewables Obligation Certificate (ROC) is issued.

Suppliers can meet their obligation by:

- acquiring ROCs
- paying a buy-out price rising each year with retail price index; or
- a combination of ROCs and paying a buy-out price.

When a supplier chooses to pay the buy-out price, the money they pay is put into the buy-out fund. Following the end of an Obligation period, the buy-out fund is recycled to electricity suppliers presenting ROCs.

It is the Renewables Obligation that encourages the co-firing of biomass in coal fired power stations. It is proposed that a new Renewables Obligation will come into effect in 2009/10 which will reduce the Renewables Obligations Certificates (ROCs) for the co-firing of non-energy crops biomass to 0.5 ROCs/MWh (but leave the ROCs for energy crops biomass at 1 ROC/MWh). Energy crops include miscanthus and willow and poplar grown on short rotation coppice. This leaves the post 2009 market for non-energy crop pellets in the balance – certainly they will need to be cheaper than energy crop pellets to compensate for the reduction in the value of the ROCs produced. The average price of ROCs on 7th April 2009 was £52.65 per MWh. For the latest data and price trends go to <http://www.e-roc.co.uk/trackrecord.htm>

The UK Secretary of State for Energy and Climate Change Ed Milliband announced on 16 October 2008 that the UK would implement a electricity feed-in tariff by 2010 in addition to the Renewables Obligation. It is likely to be for small-scale generation up to 5MW p.a. and be funded by a levy on fossil fuel suppliers. In addition a Renewable Heat Incentive (RHI) was announced. Although details of this financial

support mechanism are not likely for at least 18 months (whilst details are worked out) this is likely to act as an encouragement thinking of installing a wood pellet heating system.

Already at least one energy supply company ([Good Energy](#)) is acting in advance of the introduction of the RHI to offer a financial reward to its customers who generate heat from a renewable resource. Their HotROC scheme was launched in February 2009 and is currently limited to customers who generate heat from solar thermal. The company state that they have plans to extend the scheme to those who generate heat from heat pumps and biomass next. Payments are made at the rate of 4.5p/kWh and are based on assumptions about the heat generated rather than the installation of a meter.

Emission thresholds, sustainability criteria

Regulatory authorities are involved in controlling heating installations (whether biomass or otherwise) if the rated output of the plant is greater than 0.4MW. Between 0.4MW and 3MW the local authority (i.e. Local Government) is the regulatory authority. If the plant is over 3MW the Environment Agency is the regulatory authority under the Pollution Prevention and Control Act 1999 (the PPCA). This is best illustrated by this very useful slide, from a presentation given by the Carbon Trust. Wood and MBP will fall into 2, Waste or Waste Derived Biomass.

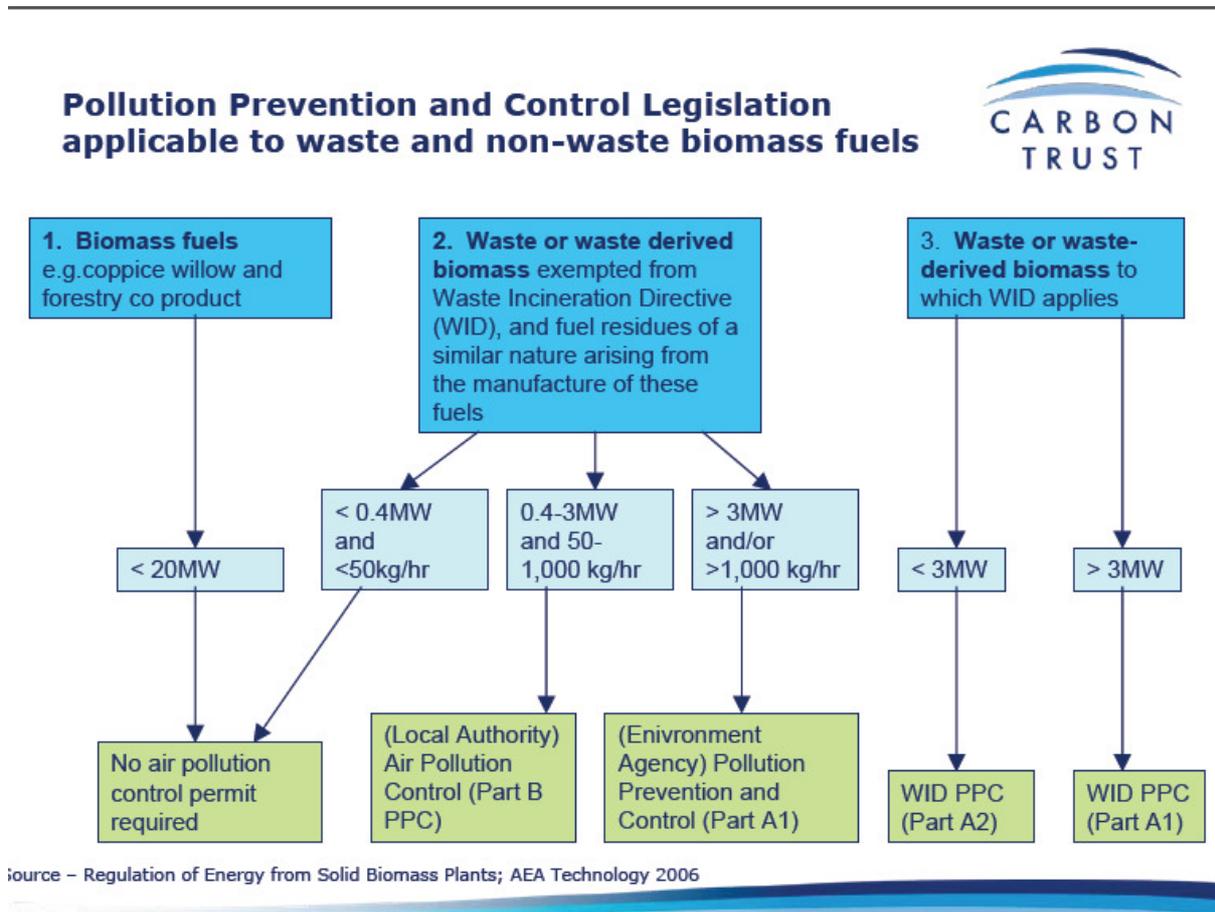


Figure 4

Under the PPCA the companies regulated require permission from either the Local Authority or Environment Agency to operate. This generally comes in the form of a permit, which usually requires the monitoring of emissions. Businesses either monitor their emissions all the time, known as continuous monitoring, or at times defined in their permit, known as spot tests or periodic monitoring. In both cases they must meet the quality requirements set out in the permit.

The revised Large Combustion Plant Directive (LCPD) is also important for companies wishing to generate electricity from biomass (and other materials) since this establishes emission limit values (ELVs) for new and existing plant, in addition to making further provisions for pollution inventory reporting in support of the European Pollutant Emission Register (EPER) requirements. Under this legislation, existing combustion plant must either observe lower emission limits, or achieve equivalent emission reductions via a national emissions reduction plan, by 2008, unless it is intended to close the plant after a further 20,000 operating hours between 2008 and the end of 2015. Plant that is upgraded to meet the Part A Emission Limit Values, defined in the Annexes of the Directive, is 'opted in'. Plant that is designate for eventual closure is 'opted out'. It is anticipated that many of the existing coal fired stations will opt out rather than invest in the technology that would enable them to meet the ELVs which will consequently have the effect of reducing the quantity of pellets co-fired in the UK.

As can be seen from the diagram above under 0.4MW (or 20MW in the case of Biomass Fuels) no regulatory authority is involved unless the plant is in a smokeless zone. It is an offence to emit smoke from a chimney of a building, from a furnace or from any fixed boiler if located in a designated smoke control area. It is also an offence to acquire an "unauthorised fuel" for use within a smoke control area unless it is used in an "exempt" appliance ("exempted" from the controls which generally apply in the smoke control area). Smoke control areas cover about 50% of the UK (mostly in urban areas which formally had a problem with smog formation as a result of burning coal).

Exempt appliances are appliances (ovens, wood burners and stoves) which have been exempted by Statutory Instruments (Orders) under the Clean Air Act 1993 or Clean Air (Northern Ireland) Order 1981. These have passed tests to confirm that they are capable of burning an unauthorised or inherently smoky solid fuel without emitting smoke. For a list of exempt appliances please go to <http://www.uksmokecontrolareas.co.uk/appliances.php>. A list of authorised fuels can be found at <http://www.uksmokecontrolareas.co.uk/fuels.php>. Authorised fuels can be used in a non exempt appliance in smoke control zone, however pellets (MBP or otherwise) are not an authorised fuel – most of the authorised fuels are coke, briquettes for fire logs made by one of a number of manufacturers.

Subsidy schemes, information campaigns, other supportive programs

There are several grant programmes in the UK which support the uptake of pellet heating systems, some of which have a regional focus. They are:-

The [Low Carbon Building Programme \(LCBP\) Phase 1](#). Under this grant programme householders (for all UK households) can receive a maximum of maximum of £600 or 20% of the relevant eligible costs of having an automated wood pellet fed room heaters/stoves installed, whichever is lower. They can also receive an overall maximum of £1,500 or 30% of the relevant eligible costs of having a wood fuelled boiler installed, whichever is the lower.

The [LCBP Phase 2](#) is aimed at installations in public sector buildings (including schools, hospitals, housing associations and local authorities) and charitable bodies across the UK. It runs until June 2009 and offers a more generous 50% grant for both pellet stoves and wood fuelled boilers (logs, pellet and chip).

Another grant programme for the installation of larger scale biomass systems in England is the [Bio-energy Capital Grants Scheme](#). The fifth round of the grant scheme runs until 30 April 2009. It aims to support the installation of biomass-fuelled heat and combined heat and power projects in the industrial, commercial and community sectors in England. There is no minimum grant in anyone application and the maximum grant is £500,000 per application. The grant rate is a variable and up to 40% of the difference in cost of installing the biomass boiler or CHP plant compared to installing the fossil fuel alternative. The UK Government hopes to deliver further rounds in 2009 and 2010.

In Scotland, the Energy Saving Trust jointly runs [The Scottish Community and Householder Renewables Initiative](#) (SCHRI) with the Highlands and Islands Enterprise (HIE). The SCHRI provides grants set at 30% of the installed cost of the renewable technology being installed up to £4000. [SCHRI](#) also offers grants to a range of community organisations to help with the installation of a variety of renewable energy technologies. Communities may apply for funding for technical assistance and capital grants for renewable energy equipment installation and associated costs. Under SCHRI there is no set grant funding for community organisations. The amount of funding awarded is determined on a case by case basis with the average grant being in the region of 50 per cent. The maximum grant is £10,000.

Also in Scotland is the [Scottish Biomass Heat Scheme](#) which has funding of £2m million from April 2009 to March 2011. The Scheme will provide grants for installation of biomass heating systems in business premises and district heating demonstrators. The Scheme will prioritise support for small-medium sized enterprises, and is restricted to heat-only biomass applications.

The Carbon Trust (www.carbontrust.co.uk) provides a number of monetary schemes to assist businesses financially in the implementation of renewable energy and energy saving schemes. These include Interest Free Loans which can be used by SMEs to replace/upgrade existing equipment. The Carbon Trust offers loans between £5000 and £100000. To find out more, including eligibility, see: <http://www.carbontrust.co.uk/energy/takingaction/loans.htm>

A financial incentive available to businesses who install wood fuel heating systems is an Enhanced Capital Allowance. These enable businesses to claim 100% first year capital allowances on their spending on qualifying plant and machinery. The general rate of capital allowances for spending on plant and machinery is 20% a year on the reducing balance basis. To qualify the plant and machinery has to be listed on the [Energy Technology Product List](#).

Information on other current grants and loans for the installation of biomass systems can be found on the Biomass Energy Centre [website](#).

Historically, it is also worth noting that from 4th July 2006 to 31st March 2008 there was an £8m grant programme specifically for Northern Ireland, initially called the Household Programme and subsequently called Reconnect. This offered the following grants to householders:-

Pellet stoves / room heater

£1,500 regardless of size, subject to an overall 50% limit of installed eligible cost (incl. VAT @ 5%)

Wood-fuelled boiler system

£3,250 regardless of size, subject to an overall 50% limit of installed eligible cost (incl. VAT @ 5%)

Householders in Northern Ireland can now apply for a grant under the LCBP Phase 1. It should however, be noted that this is a less generous grant programme than Reconnect. The existence of the Reconnect grants, the lack of mains gas and the presence of the UK's largest producer of pellets (Balcas Ltd) in Northern Ireland, helps explain why there is a cluster of installations in this part of the UK, particularly amongst householders.

9. Projections on future developments

Little information is available on the availability of sawdust for the increased production of wood pellets. Anecdotally, the impression is that there is significant competition for this raw material with the animal bedding and furniture board companies so that consequently the price is relatively high. The DEFRA report on [Waste Wood as a Biomass Fuel](#) – Market Information Report (Waste Infrastructure Delivery Programme of April 2008 – ‘the Report’) puts the price for what is referred to as Grade A waste wood i.e. clean wood, relatively homogenous with very few contaminants) at up to £150 a tonne, making the use of this raw material for the production of pellets unlikely to be economically viable in the UK.

Notably, the UK producers of pellets from sawdust (e.g. Balcas Ltd, Clifford Jones Timber, the Briquette and Pellet Company Ltd) appear to have their own supply. Other producers make their pellets from recycled wood (e.g. the Wood Pellet Energy UK Ltd) which has been diverted from landfill. There is an economic incentive to divert this material from landfill provided it is free of contaminants, as there are substantial costs associated with putting materials into landfill as highlighted in the Report which states:

‘Landfill costs are currently around £35 to £45 per tonne and likely to increase in line with landfill tax increases (£8 per tonne from 2008/09 to 2010/11). By 2010/11 landfill gate fees are estimated to be £20 per tonne and landfill tax at £48 per tonne, giving a total estimated landfill cost of ~£70 per tonne. Furthermore, landfill gate fees are likely to increase as landfill becomes more scarce.’

However, there are challenges with producing pellets from such materials – particularly as a result of the need to sort the material to double check for contaminants (e.g. small pieces of plastic) and the additional processes involved e.g. the removal of nails and the hammering of the material into reduce the particle size. Furthermore recycled wood often contains little lignin meaning that the addition of an alternative binder is necessary. The end result is often a pellet that is more suited to a commercial boiler or co-firing than a domestic boiler or stove.

Another source of raw material is forestry residues or woodchips from short rotation coppice such as willow or poplar (which farmers have been given a financial incentive to grow through the Government’s Energy Crop Scheme). Biojoule, who have a mobile pellet plant producing up to 10,000 tonnes p.a., specialise in producing pellets from this source. This can be a good source of raw material, although the question of whether it would be better for this material to be chipped and used locally, rather than turned into pellets remains.

Currently, the main use of wood and MBP in the UK is for co-firing. From 2009 the availability of ROCS at a higher rate for pellets produced from energy crops such as miscanthus should stimulate the market for MBP from this source. However, the miscanthus be used in a form other than a pellet prior to co-firing. It is anticipate that

the use of non-energy crop pellets, whether wood or MBP might decline after 2009 (when the value of the ROCs obtained from generating electricity from them are halved) and/or by 2015 as some of the existing coal fired power stations in the UK close down rather than opting in to the Large Combustion Plant Directive. Some of their capacity might be taken up by dedicated biomass power plants. However, such plants are likely to be built near existing supplies of woody raw material and will burn woodchips rather than pellets.

Technological development

The main technical developments in the UK in the manufacture of pellets relates to the production of pellets from mixed biomass sources such as straw and a hybrid of straw and other biomass material. If these pellets can be produced and sold cheaply enough it seems likely that this type of pellet will continue to be co-fired even through the value of the ROCs for generating electricity from this source will halve from this year (2009). There is no evidence of any manufacturer in the UK considering the production of torrefied pellets.

Prospected price developments

Pellets are an internationally traded product and price development will largely reflect what is happening in the market place as a whole. With the increase in openness amongst pellet suppliers of the prices charged for their pellets, there is likely to be an increase in competition between suppliers that will bring down prices. However, it is still true that many customers do not have a high degree of choice between local suppliers, which many would wish to do in order to avoid high transport costs. In addition there are large regional variations, with the price for loose pellets in Northern Ireland (for example) being substantially cheaper than much of the rest of the UK – sometimes as much as 50%.

Other issues

UK customers can now be confident that they can have bagged pellets delivered to their home or premises almost no matter where they live. Indeed in many cases they will have a choice of supplier. What is more difficult is for customers to purchase loose, blown pellets so that in many cases they are having to pay more for their pellets and are not able to enjoy the convenience of having pellets blown into a store.

The use of quality standards is becoming more common, however many pellets are sold in the UK without reference to any established standard. Sometimes pellets are sold with a description of the main parameters upon which pellets are described (calorific value, density, ash content etc) or by the use of words such as 'premium'. Little information seems to be given by the manufacturers or suppliers as to what would be a suitable use of the pellets being sold and there is concern that customers may be purchasing (tempted perhaps by a cheaper price) pellets which are unsuitable for the burning appliance in which they wish to use them. There seems to be little public awareness of that not all pellets are suitable for every application.

10. Summary and conclusions

Drivers for market development

Historically, the driver for market development in the UK has been the Government's targets for the generation of electricity from renewable sources, as implemented through the Renewables Obligation. This will continue to be a driver for the use of pellets in co-firing although their use in existing coal fired power stations might start to tail off as the value of the ROCs from burning non-energy crop pellets reduce and existing coal fired power stations close down rather than implement the environmental reforms required by the Large Plant Directive from 2015.

Looking forward the main driver for market development is likely to be the Renewable Heat Incentive which has been proposed by the UK Government for implementation in 2010. Set at an appropriate rate, for a reasonable length of time, it should act as a major incentive to prospective customers for pellet fuel system as it will help compensate them for the additional costs involved in having such a system installed as against the cost of having a gas or oil boiler installed.

Barriers to market development

One of the main barriers to market development is the high capital costs in installing a pellet boiler or stove. Although this can be partially overcome by existing grant programmes, there are concerns about the effect of the gap between the end of grant funding for community groups etc under Phase 2 of the LCBP (which ends in June 09) and the start of the proposed Renewable Heat Incentive sometime in 2010. The uncertainty around this period may lead to stagnation in sales, whilst potential customers wait to find out what the financial incentive might be to install such a pellet or other renewable heat system.

Another barrier to market development is the lack of space for a pellet boiler and/or the pellets themselves as UK homes only rarely have cellars and outbuildings. Innovative solutions, such as underground storage tanks are required in order to overcome this problem, preferably installed from new build. Another barrier to the use of pellet stoves is that many of those on the market have heat outputs too high for the size of room in many domestic properties, with only a relatively small number being open plan. Pellet stoves may come into their own in new properties as they reach a level of insulation that means no central heating is required (as driven by the implementation of the Code for Sustainable Homes, which requires all new homes to be zero carbon by 2016) means that central heating is required.

Recommendations to stakeholders

Planning for renewable energy installations need to be considered at an early stage of a development. Substantial carbon savings can be made by installing renewable energy heating systems. To make the best use of this technology, planners, architects, project managers and developers need to ensure that new developments

include the additional space required for biomass heating systems and storage – whether this is on an individual property basis or a district heating scheme.

Policy recommendations

The proposed Renewable Heat Incentive is a good step in the right direction. However, the consultation document on how this is to work has yet to be bought out and should not be delayed further due to the risk of a long gap between the existing funding programmes and the introduction of the RHI. What is needed is a guaranteed rate of return that will encourage investment in pellet boilers (and other renewable energy heat installations) despite the far higher capital cost (and potentially higher running costs) over the long term.