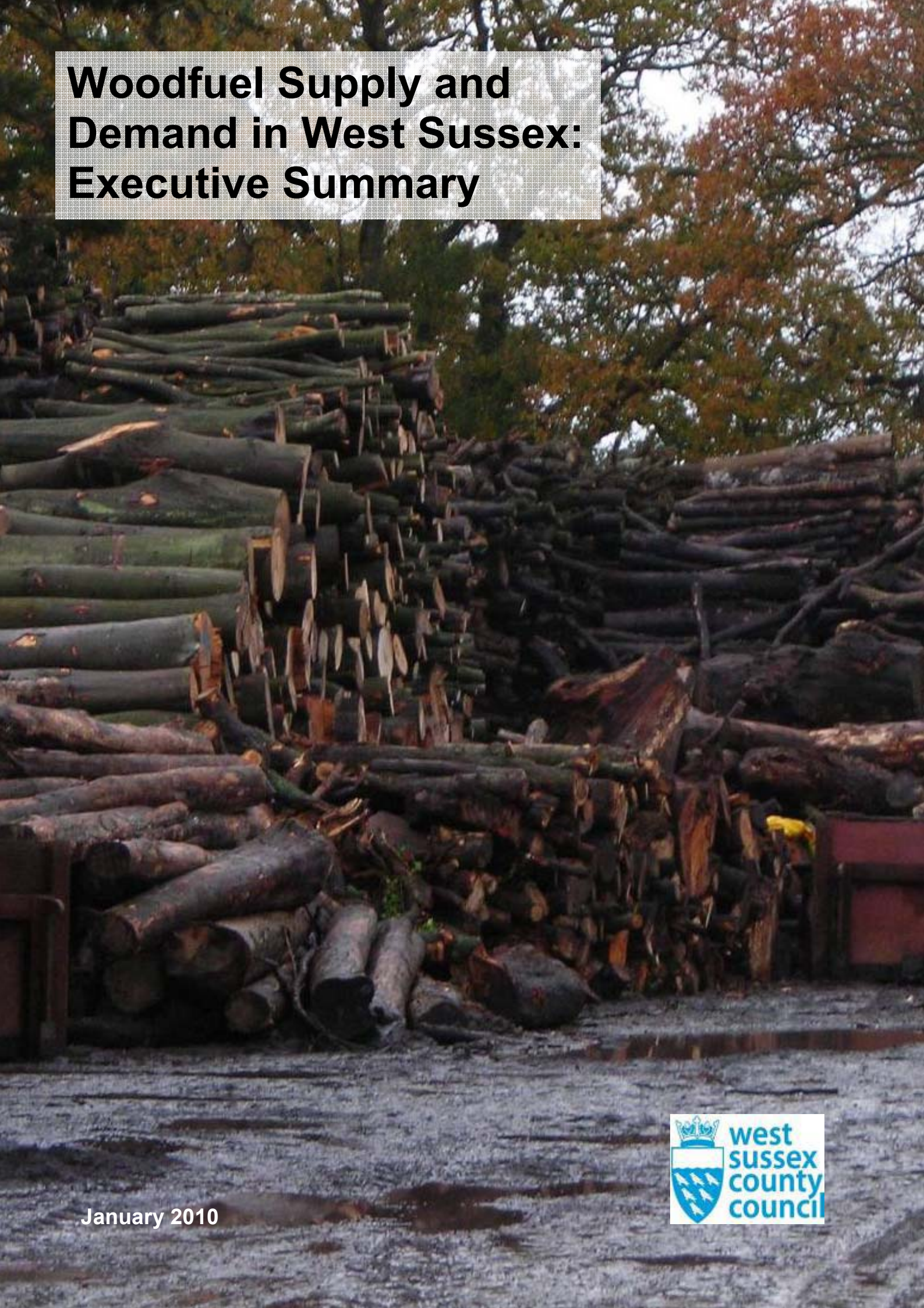
Woodfuel Supply and Demand in West Sussex: Executive Summary



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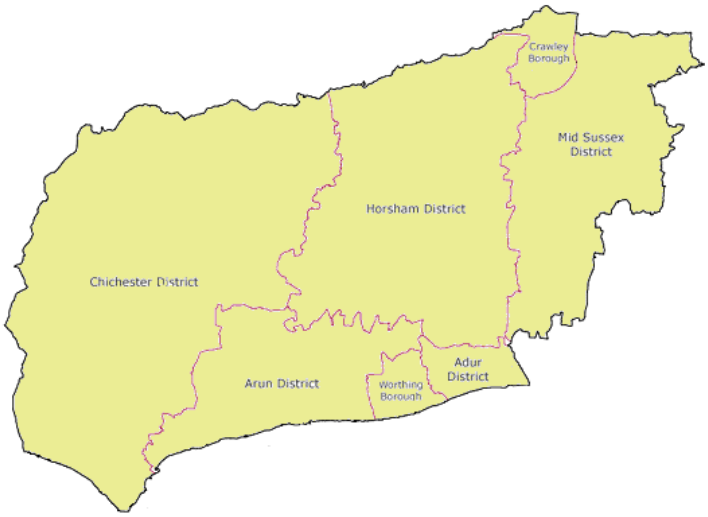
west sussex county council

This study investigates the woodfuel market in West Sussex in terms of supply and demand, now and up until 2026 in line with the South East Plan. Research and analysis have revealed that there is the potential for over 200GWh of energy to be obtained from different sources of woodfuel within the county. At 2007 gas consumption levels, this represents around 2.7% of the county's primary heat requirements. In addition to this around 37,000 tonnes of CO_2 could be saved and the revenue from fuel sold would be in the region of £4.5 million.



The study area focuses on woodfuel demand and supply within the borders of West Sussex, comprising seven district councils (DC) and borough councils (BC): Chichester DC, Arun DC, Horsham DC, Worthing BC, Adur DC, Crawley BC and Mid Sussex DC. According to the 2001 census, the county has a population of over 700,000 and several areas are featured for substantial development under the South East Plan.

The report aims to provide information for West Sussex County Council, showing the extent to which woodfuel can provide energy, reduce carbon emissions and contribute to the local economy. The report will also be of interest to woodland owners and managers, and other companies who could potentially supply woodfuel or energy from woodfuel. Potential large scale consumers of woodfuel will also find the study to be of interest as any decision to invest in woodfuel technology as a heat source will require investigation into the sustainability of the supply chain.

- The report provides a brief overview of woodfuel including the main benefits arising from its use, the types of fuel used in woodfuel boilers, policy context and key issues within the industry.
- The potential wood resource from woodland, sawmills, tree surgery and waste streams in West Sussex is researched.
- An assessment is undertaken of potential demand from new developments and existing public buildings where woodfuel is likely to be suitable as a source of heat or electricity.
- The results of the supply and demand research have been compared graphically and spatially to identify trends and local 'hotspots' within the county.
- A set of 6 strategic recommendations has been produced to maximise woodfuel market growth and benefit to West Sussex.
- Three operational case studies have been compiled to demonstrate examples of suitable sites and applications of woodfuel technology that are likely to be particularly applicable within West Sussex, including plant nurseries, a 16th Century Grade 1 listed government-owned property on a private woodland estate, and a primary school.

Introduction

Despite it being recognised that without the widespread use of biomass and woodfuel heating the UK will fail to meet its renewable energy targets[1], development of the industry has been slow in some areas. Rate of industry growth in an area does not necessarily correlate directly with woodland cover but is linked to a number of factors.

Two of the most commonly quoted factors are the 'chicken and egg' situation referring to the influence that the absence of one side of the industry has on the other, and the 'lack of understanding' by those not intimately connected with the industry. The purpose of this study is to simultaneously quantify both sides of the woodfuel market - supply and demand - and to develop a strategy for ensuring the effective development of the industry within West Sussex. The project also addressed the lack of understanding through working directly with a number of businesses and through the development of successful case studies.

This report provides a detailed analysis of how much of West Sussex's energy needs could be met by woodfuel from all potential local sources. It quantifies the amount of available local resource for woodfuel, and estimates how much of the county's energy needs this could meet. This is set against potential demand from new and existing development until 2026 in line with the SE Plan.

The report was commissioned by West Sussex County Council but is aimed at the following audiences:

- The seven district and borough councils within West Sussex: the report has relevance across a wide range of policy areas including strategic planning, development control, economic development, climate change and renewable energy and sustainable land management
- Estates and property managers looking to reduce the carbon footprint of their buildings and reducing fuel costs
- Woodland owners and managers
- Other companies and organisations who could potentially supply woodfuel and/or energy from woodfuel such as tree surgeons and sawmills

Analysis of potential woodfuel supply and demand

This study has revealed that the theoretical maximum supply of woodfuel products from within the study area is estimated at 65,000 tonnes or 211GWh of energy from various sources including sustainable forestry yields, sawmill by products, tree surgery arisings, and clean waste wood. Each of these sources produces different woodfuel products – high quality (HQ) or low quality (LQ) wood chip or wood pellets. Quality and type of woodfuel are important distinctions to make both because the supply chains are different and because the different types of woodfuel suit different kinds of boilers and applications. It is important to recognise that the calculated resource is not the size of the market at present as that is limited by current demand. Nor is all of the resource currently available, as that is restricted by competing markets and immature supply chains. The calculated resource really represents the *potential* for the development of the woodfuel market within West Sussex.

Based on assessments undertaken in other parts of the UK, it is estimated that it would be technically feasible to convert around 10% of existing public buildings within West Sussex to utilise woodfuel energy. The proportion of new developments that are selected to adopt woodfuel is very much dependent on the policies which are in place but the total maximum demand from public buildings and new developments could realistically be expected to be as high as 158GWh by 2026.

Figure 1, below, clearly illustrates the potential supply as a flat resource across each of the four five-year periods analysed. The demand, on the other hand, grows steadily throughout the study period. By 2026, the predicted demand is still someway below the potential supply. It is important to note that the levels of supply illustrated below represent total potential supply but this wood cannot be considered immediately available – firstly because the demand does not presently support this level of supply, and secondly because there is a lead time in accessing much of the material.

[1] Biomass Task Force report, 2004

As well as this time lag between demand and supply there are many more factors preventing the supply of woodfuel reaching its maximum potential. Two barriers worthy of note are the lack of woodland management in some areas and the competition from other markets, such as the chipboard industry.

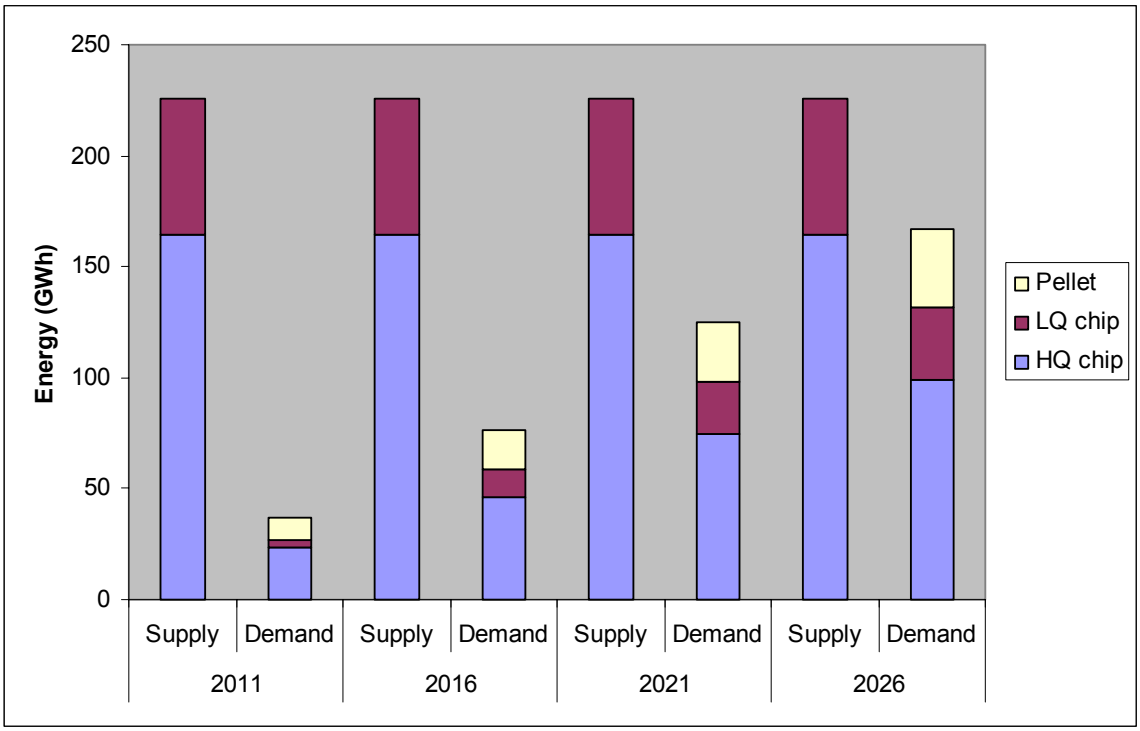


Figure 1 Comparison of potential supply with projected demand by year and fuel type

With reference to Figure 1, it is interesting to see that there is a projected demand for wood pellets but no projected supply. This lack of supply is due to the small nature of the sawmill industry in West Sussex and the associated small volumes of sawdust (the ideal raw material for pellet production). However, wood pellets can be produced from other forms of timber, such as wood chip and so the type of woodfuel produced from the available material is – to some extent – interchangeable. However, the lack of local pellet production is not, necessarily a problem since the transport of wood pellets between regions does not have a significant negative impact on the carbon balance of the fuel.

In summary although the supply appears to far exceed demand, as the level of demand grows to that indicated for 2026, the supply side of the market will have to work harder to continue meeting that demand. The resource is certainly there, but accessing it will require the supply chain to mature significantly.

Geographical Analysis

Figure 2 and Figure 3 below show the spatial distribution of supply and demand for high quality chip and low quality chip respectively. The potential resource for higher quality material broadly follows the distribution of forest around the county. This does not correspond particularly well with the areas of high demand (densely populated areas). In particular, the Sussex Coast region has a relatively low resource for high quality chip production but the highest density of demand due to the area being more densely populated. This is not a serious problem to the supply of wood chip since the distances involved to transport wood from around Midhurst (where there is a higher density of resource) to the Sussex Coast are quite reasonable.

One way of overcoming the issue of supply to the Sussex Coast region would be to establish a high quality chip production and storage depot within the region for undertaking local deliveries. Wood could be delivered to the depot in bulk either as roundwood, arboricultural wood or even woodchip produced elsewhere. Woodfuel could then be delivered locally from that site.

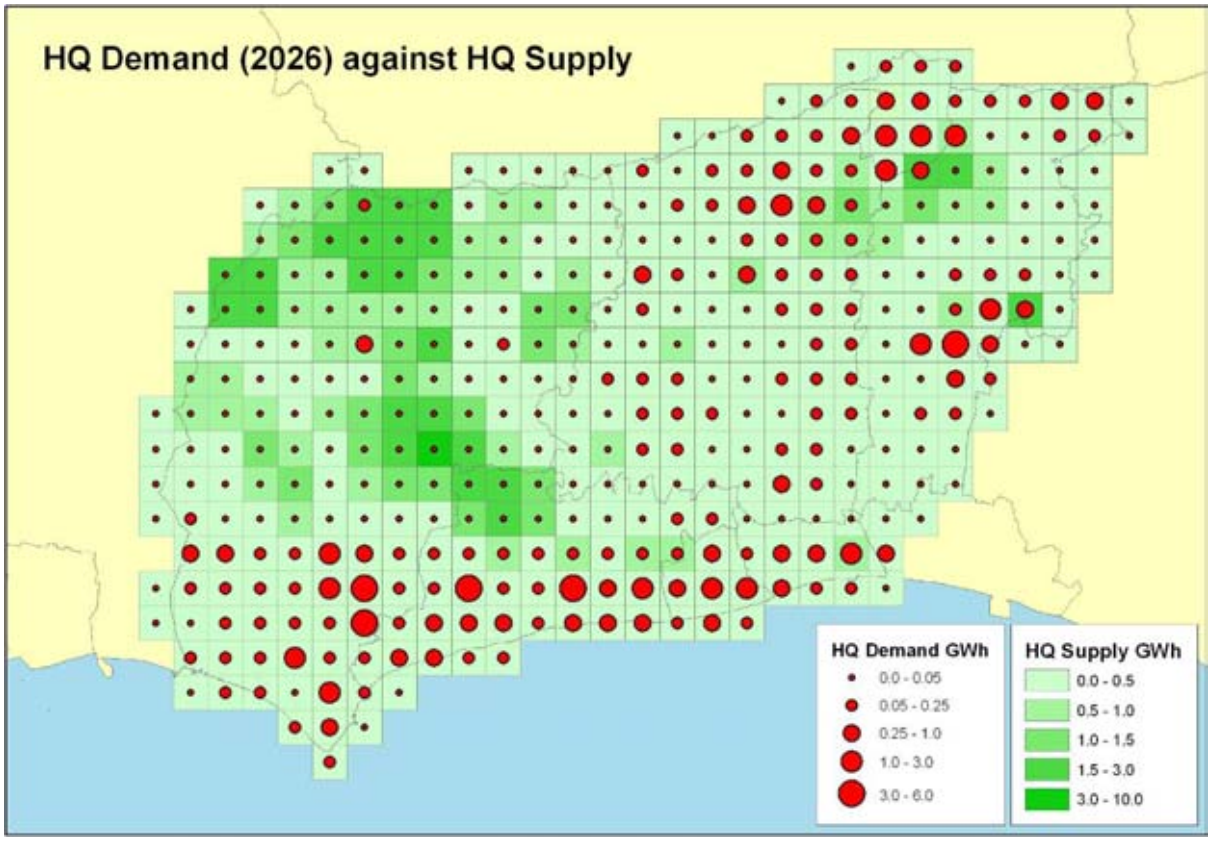


Figure 2 Map to compare the potential supply and demand of high quality wood chip in 2026

The supply and demand of lower quality wood chip appears to be more evenly matched. The majority of demand comes from horticultural growers along the south coast and there are some concentrations of supply from clean trade waste wood collected at two sites near Chichester and Arundel. There is also some demand from larger developments due to take place around Burgess Hill and Crawley and these sites correlate somewhat with a few of the larger tree surgeons.

Figure 3 Map to compare the potential supply and demand of low quality wood chip in 2026

Recommendations
In light of the research undertaken within this project – the resource and demand assessments, the spatial analyses, supply chain analysis and the market opportunity investigation, six strategic recommendations have been put forward for developing the woodfuel market in West Sussex.

1. Set internal policy to replace ageing boilers with biomass wherever possible
Through the review of what has worked to stimulate the woodfuel market elsewhere, this was seen to be the single most effective action. It requires cabinet level support and could potentially have a very high price tag when it comes to implementation on a site by site basis. In Barnsley and Suffolk, numerous biomass installations have resulted from their internal policy to replace, over time, all ageing boilers with woodfuel systems. The medium term impact on woodfuel demand would be significant and would certainly support early stage growth in the industry. As a knock-on effect, setting such a policy will provide confidence to woodfuel suppliers and encourage private sector investment. Finally, there will be direct benefits to the council such as improving the National Indicator and Carbon Reduction Commitment rating (with the associated financial reward and reputational benefits arising from good performance both individually and relative to other organisations that fall under CRC legislation).

2. Provide ongoing information and support to the private sector to encourage demand
As discussed within the "Drivers for woodfuel" section of the main report, there are a number of very good reasons to undertake woodfuel heating and CHP projects. The strongest financial driver is probably the new Renewable Heat Incentive (expected to come into force in April 2011), especially for large heat users. Unfortunately, many sectors that would benefit from using woodfuel technology are unaware of the benefits. Providing a low level of ongoing support to key sectors such as the horticultural industry, farmers, leisure centres and heat-using industry could have a significant knock-on effect in terms of achieving increased woodfuel demand.

3. Ensure good communication between the supply and demand sides of the market
Where the demand is created as a direct result of a public sector installation, this should especially be the case. The success in both Barnsley and Suffolk has been, at least in part, due to effective communication with woodfuel suppliers. Suppliers need time to make investments in machinery and to season timber. Through clear and early communication, the County Council and local authorities could strongly support the growth of existing suppliers or the diversification of businesses that are considering entering the supply market. An estimated 10GWh of tree surgery arisings are a result of council contracts (20% of the county total). The use of this material could be directed by the relevant authority to support particular projects as required.

4. Implement 'beyond 10%' policies within local development frameworks
Policy NRM11 in the South East Plan stipulates that all new developments over a certain size must secure at least 10% of their energy from decentralised, renewable or low-carbon energy sources. By legislating a higher percentage at the local level, the proportion of new developments opting for woodfuel technology would be significantly increased. This is due to the increasing difficulty of meeting higher percentages using only solar technologies. Ashford Borough Council implemented a 20% renewable energy policy in 2008 and matched this with an 'offset fund' for those developments that simply could not attain 20%. The fund is managed by the local development agency to support low carbon projects in the community.
Local policy should also be used to specify the use of heat meters with woodfuel boilers to ensure that developments do not rely solely upon backup boilers and to prepare the market for the likely metering requirements of the Renewable Heat Incentive.

5. Link the woodfuel development strategy with the waste management strategy
During the investigation of clean waste wood resource and subsequent supply chain analysis, CEN discovered that much of the uncontaminated waste wood in the county is being mixed with contaminated wood to improve the overall quality to make it acceptable to chip board manufacturers. This is effectively trapping clean wood that could be used for woodfuel. If the county wished to release this material, developing incineration (with energy recovery) for contaminated wood would release uncontaminated material for use as low quality (but clean) woodfuel. CEN is not recommending a particular solution, such as incineration, but it should be noted that as waste management is fundamentally linked to the supply of low quality wood chip the two strategies must be joined up.

6. Run a pilot project to aggregate small woodland management
Depending upon the County Council's priorities for woodland management and woodfuel supply, a small amount of seed funding could be allocated to run a pilot project to aggregate small woodland management for woodfuel production purposes. The project would be aimed at determining the wider scale workability of such a solution and would need to span across both supply and demand sides of the woodfuel market.

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