

# Fuel supply and sustainability issues in Biomass Projects



## Introduction

Biomass is set to be one of 2012's hot topics in energy infrastructure. As many jurisdictions aim to increase their use of renewable energy but are faced with a standing stock of thermal plants, developing a diverse mix of energy sources will underpin security of supply. With resistance from lenders to fully embracing the wind market and with wave and tidal technologies still being in their infancy, biomass is sure to provide a big part of the solution over the coming years and in the longer term. Consequently many developers are taking a renewed interest in biomass projects which, contrary to conventional wisdom, may prove one of the most economical of all renewables technologies.

## Key issues

- Securing a sufficient and sustainable source of biomass fuel is critical to the success of any project but an immature supply chain and the credit rating of suppliers may mean that more flexible solutions are necessary.
- Substantial amounts of biomass fuel will be imported. Developers should avoid being exposed to currency fluctuations and a hedging strategy will be crucial to securing finance.
- Commercial decisions will need to be made at an early stage regarding the number of suppliers as well as term and price to satisfy funders and allow flexibility in the face of a changing regulatory landscape.
- A multi-supplier strategy and having sufficient storage capacity may mean that one-off breaches relating to delivery or fuel quality may not be significant. Wilful breaches of contract by suppliers could have serious implications for projects and contractual remedies should address this.
- Mandatory sustainability criteria do not exist in all jurisdictions, although are inevitable in future. A detailed analysis of a project's greenhouse gas emissions savings will be critical.

**Currently, projects in Europe being considered include new build dedicated biomass plants (with or without combined heat and power), conversion of existing coal plants and co-firing in existing coal plants. This briefing, together with our separate briefings on "Regulatory Issues in UK Biomass Projects" and "Construction Issues in Biomass Projects", considers some of the key issues faced by stakeholders in developing biomass projects.**

One of the key challenges to biomass-based power generation is securing a sufficient and sustainable source of biomass fuel. Whilst virgin wood, agricultural residues, municipal solid waste, sewage and industrial waste are readily available, their quantities are severely limited. Energy crops grown specifically for use as bioenergy sources are more expensive and require large amounts of good arable land, but can be produced in much larger quantities. A lack of available land is likely to lead to large quantities of biomass (in particular woodpellet and woodchip) being imported from places like North America and Brazil; the resulting environmental and economic implications, as well as the methods of storage and transportation, will need to be taken into consideration. All this is set against a dynamic regulatory framework which is analysed in the second part of this briefing.

## Key Issues

### Security of Supply – exclusivity or pooled approach?

Developers will need to satisfy themselves that the project is underpinned by secure fuel supply arrangements. Typically in power plant projects financed on a limited recourse basis, a long term fuel supply contract with a term at least matching the tenor of the debt, would be required to make the project bankable. It may be possible, in some instances, for biomass projects to follow this template, but given that, (i) the relative immaturity of the supply chain means there is currently significant uncertainty as to long term price trends and, (ii) the credit rating of most biomass fuel suppliers is unlikely to provide adequate protection against the potential losses to the project upon a breach of contract, it is not a complete solution for biomass. Developers, regardless of whether they are seeking long term financing, will instead be keen to get comfortable through market studies that over the longer term there is sufficient supply available to drive the project and that competition in a growing market will help to keep prices within an acceptable range. Concerns over shorter term interruptions to supply can be mitigated by, (i) the establishment of a fuel strategy based on a pool of suppliers with contractual obligations to supply fuel from different sources<sup>1</sup>, (ii) adequate storage capacity at the site of the project and, (iii) the installation of flexible boiler technology capable of burning a range of feedstock types<sup>2</sup>.

### Hedging

In the UK, for example, DECC estimates that 90% of biomass feedstock required to drive large-scale power generation will be imported. This exposes developers to currency risk against a backdrop of a volatile market. Developers will need to consider hedging their exposure to currency fluctuations and price escalations based on indices other than the national wholesale power price. This is a particularly difficult issue in the context of deals that require the use of limited recourse project financing. The debt tenors currently available in the market tend to be of the order of 7 or 8 years but with the debt assumed to be only partially amortised at that time. Borrowers need to show their credit committees that the debt will be fully repaid within, say, 12 or 13 years and so need to show the effort of exchange rates over that longer period. On the other hand, hedging US Dollars to provide a fixed sterling price is currently looking expensive for developers beyond 5 or 6 years.

So for those seeking project finance debt, some of the techniques used in merchant power financings may become relevant. This could include the need for rolling hedge programmes and lock-ups or sweeps where the rolling programme fails to deliver appropriate coverage ratios.

For those who are not seeking project finance debt, these hedging issues are clearly still relevant to the viability of any investment.

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<sup>1</sup> See also the Paragraph below headed "Sustainability".

<sup>2</sup> See also our briefing "Construction Issues in Biomass Projects" (March 2012).

## Term and Price

Allied to the hedging issue is the concept of the ability to persuade suppliers to lock into a long term contract with a fixed (albeit indexed) price. This is clearly an important factor to be considered. Flexibility may seem attractive but with the power and ROC price disassociated from feedstock prices (probably imported feedstock), there are some difficult business discussions to be made at an early stage regarding term, price and flexibility.

## Remedies for Breach

By pursuing a multi-supplier strategy and by ensuring sufficient storage capacity, developers (and, therefore, lenders) may be able to take a relaxed approach to one-off breaches of delivery or quality obligations. Attempts by developers to pass project risk onto suppliers by imposing liquidated damages regimes will drive up price, a cost which may be unnecessary in a good fuel strategy where alternative supply and stored fuel are available. Typical remedies that developers should negotiate are, (i) (if the fuel is still usable), a downwards price adjustment to reflect the deterioration in calorific value and, (ii) a rejection right, if the fuel cannot be burned. It is key that supply contracts contain clear and workable regimes for establishing quality standards and for testing the cargo against those contractual standards. Rejected fuel should, in a well negotiated contract, still count towards any minimum annual offtake obligation.

Developers will, however, need to penalise wilful breaches of contract with robust damages regimes applying to suppliers who default because they see a better deal elsewhere. This will only be as good as the underlying credit of the supplier, and the quantum of any claim for wilful breach of a long term contract may test the robustness of that credit.

## Transport and Handling – Holistic Supply Chain

Logistics issues are as important as supply issues. Successful fuel supply strategies will look at the entire supply chain, not just the supply contracts themselves. Point of delivery is an important factor - typically with biomass, suppliers will pass title to developers at point of export and developers will then be responsible for the shipping process and, consequently, insurance. Some developers will prefer to own or charter dedicated supply vessels; others will prefer to spread the risk by entering into long term shipping contracts. Either way, a coherent and secure solution will be required to persuade lenders that a sustainable holistic strategy has been developed. Lenders should also look at cargo handling and berth agreements agreed with the ports; in particular, developers will want to secure priority rights over the relevant berth to secure an uninterrupted supply chain and reduce demurrage risk. Ports are usually agreeable to fixed handling prices per tonnage and minimum speed of discharge rates, but typically these would be dis-applied for poor quality cargo (increasing cost and risk of demurrage) and developers should back off this risk into supply contracts.

## Sustainability

One of the key challenges for biomass powered generation is overcoming fuel sustainability concerns and preserving its 'renewable' or 'green' credentials. In recent years, for example, a lack of biomass fuel in the UK has led to large quantities of biomass being imported into the UK, particularly from North and South America, as well as the EU, which has caused concerns for some environmental campaigners. Some countries have attempted to reduce the long-range transport of biomass products by providing higher incentives to generators who use locally sourced fuels.

To date, there have been few, if any, international standards on biomass sustainability, although such standards are almost certain to be set in future. The European Commission has not yet imposed mandatory sustainability criteria for solid and gaseous biomass. This is an area which is being closely monitored and binding sustainability criteria are widely expected, not least as the EU has set binding sustainability criteria for biofuels in the 2009 Renewable Energy Directive. As a result, Member States are currently free to impose their own sustainability standards for biomass, although the Commission has previously made recommendations as to criteria which Member States could adopt in order to avoid obstacles for the functioning of the internal market for biomass. Those recommendations are:

- a general prohibition on the use of biomass from land converted from forest, other high carbon stock areas and highly biodiverse areas;

- a common greenhouse gas calculation methodology to ensure that minimum greenhouse gas savings from biomass are at least 35%, rising to 50% in 2017 and 60% in 2018 for new installations (compared to the EU's fossil energy mix);
- the differentiation of national support schemes in favour of installations that achieve high energy conversion efficiencies; and
- monitoring of the origin of biomass.

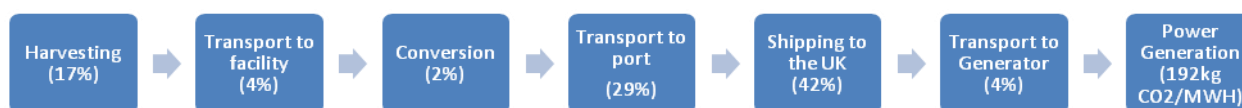
Please see our client briefing "Regulatory Issues in UK Biomass Projects" for details of the UK's approach to imposing sustainability standards in relation to projects in the UK.

In future, it is likely that there will be increased focus on avoiding indirect land use change, in other words – ensuring that land currently used for food production is not given over to growing biomass, and that forest, peatland and biodiverse lands etc are subsequently given over for agricultural purposes.

Assessing the sustainability of biomass in order to confirm that the greenhouse gas savings (as against fossil fuels) have been met, requires a detailed technical review on a project-by-project basis as the sustainability assessment must have been made from "forest to furnace". Detailed technical assessments of the greenhouse gas emissions arising during each stage of the fuel production and transport will therefore need to be made. For example, in the case of US woodchips exported to the UK for power generation, an assessment of the following stages of production/transport would be required:

- The physical harvesting of trees in the US;
- The transport, by road, of the logs to the wood chipping facility;
- The conversion of the logs to woodchips (note that for wood pellets, there would be an additional technological process whereby the woodchips are converted to pellets which may also involve additional transport);
- The transport, by road, of the woodchips to the port on the East Coast of the US;
- The transport, by ship, of the woodchips to the UK port; and
- The transport, by road, of the woodchips to the power station.

The graphic below (based on Ofgem's<sup>3</sup> Biomass Carbon Calculator) indicates the approximate percentage of total greenhouse gas emissions which arise for each element of the production and transport chain.



Clearly the greenhouse gas emissions would vary depending on a number of factors, including:

- the distances that the logs/woodchips are transported;
- the manner in which the transport is undertaken (for example by barge rather than by road);
- whether the trucks/vessels are only used for 1-way cargo transport, or returned empty, in which case the CO2 element of the return journey would probably need to be added to the calculation; and
- the efficiency and fuel choice of the trucks/vessels employed.

The graphic suggests that the overall greenhouse gas emissions could be approximately 192kg CO2/MWh for woodchips imported from the US to the UK, which would easily achieve the 60% greenhouse gas savings which the UK is likely to require from 2013 and which may be imposed uniformly across the EU in future.

Given the extensive verification and reporting obligations that generators will be subject to in order to maintain their compliance with sustainability criteria whenever imposed it will be critical to ensure that fuel supply contracts impose duties on suppliers and transporters to provide detailed information to enable generators and their consultants to assess the greenhouse gas emissions for their project.

<sup>3</sup> the UK regulator

Failure to meet the sustainability criteria could result in any financial incentives awarded by the relevant Member State government being suspended, or breach of an operating permit (which may, in turn, result in a operations being temporarily suspended. As a result, compliance with sustainability criteria is an issue that should be placed towards the top of the negotiation agenda such that Suppliers clearly understand the importance of this issue to Project Sponsors and robust contractually binding reporting obligations are imposed.

### **Clifford Chance**

The commercial impetus to develop biomass power projects, driven by the government incentives available, and the need to obtain energy from renewable sources means that the obstacles in developing more efficient and larger biomass power projects will be overcome.

Clifford Chance has the experience, expertise and innovative edge necessary to support the developers and financiers of these projects. Any of the contacts on the following page would be delighted to provide details of our capabilities.

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