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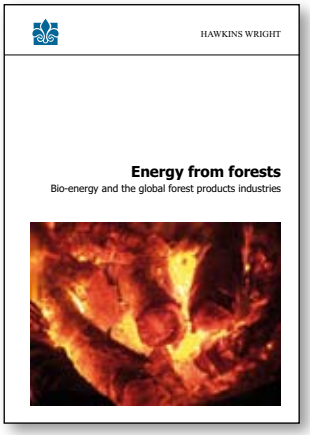
Energy from Forests

Bioenergy and the global forest products industries



In this prospectus

This multi-client study presents a uniquely detailed analysis of the rapidly expanding bioenergy industry and the **strategic implications** for companies in different parts of the forest products industry.

The study examines the **opportunities** that exist for those forest products companies that are correctly positioned to exploit them. It also highlights the many **challenges** that lie ahead for all forest products companies, particularly with respect to biomass feedstock availability and cost.

The study equips **decision-makers** with an understanding of the energy policies, trends, technologies and markets that are shaping the future prospects of their businesses. As such, it provides a roadmap that will assist forest products companies – as well as organisations outside the forest products industry: energy companies, policymakers and financiers – to develop a **strategic response** to the many opportunities and challenges that they face.

Background to the study

Fundamental shifts in government energy policies have major implications for companies in forest-based industries. Increasingly, government policies in Europe, North America and elsewhere are encouraging the development of renewable sources of energy, many of them setting ambitious targets for the use of renewable heat, electricity and/or transport fuels. Although wood is obviously just one source of renewable energy it is apparent that **the only way that governments can hope to meet their targets is by realising the untapped energy potential of forests**.

Some forest product companies may be inclined to view bioenergy as a **threat**; it does, after all, introduce a completely new set of end-uses which will in the future compete for more-or-less the same forest resource. On the other hand, it is also a tremendous **opportunity** for forest-based companies which are, in most cases, several steps ahead in terms of their access to biomass resources, whether these be in the forest, in pulp mills or in sawmills.

A choice of bioenergy pathways

The challenge for forest-based companies will be to choose the most appropriate bioenergy strategy. There are a great many bioenergy pathways to choose from; some which may be integrated with a company's existing operations and others which will necessarily involve a joint venture with a specialist energy company or distributor.

Some pathways are relatively low-tech, such as the production and marketing of wood pellets and chips. For forest companies with access to appropriate fibre they offer exciting possibilities in a rapidly growing market. The European market for wood pellets, for example, is predicted to grow by between five and tenfold by 2020, depending on regulatory developments in the EU and the feedstock choices of electricity generating companies. The North American market for wood pellets is currently much smaller, but this could also take off if the next US Administration introduces federal targets for renewable electricity and heat.

Other bioenergy pathways involve higher-tech processes, many not yet commercially proven. These carry a higher risk but, by promising to add much more value to the wood resource, potentially offer commensurately higher rewards. The so-called **thermochemical pathways** are the most advanced. These include advanced gasification technologies to produce heat and power, pyrolysis oil and liquid biofuels produced by variations on the Fischer-Tropsch process or mixed alcohol synthesis.

The **biochemical pathways** – including cellulosic or second-generation bioethanol or biobutanol – offer perhaps the greatest potential rewards in the long term, but the technology is still in its infancy, although larger-scale demonstration plants are due to start up by 2009-2010.

Possibly the most interesting opportunities for pulp producers involve developing **the energy potential of black liquor**. Kraft pulp mills are already major producers of bioenergy, but new black liquor gasification technologies promise to capture the energy values of black liquor far more efficiently, turning a pulp mill into a true biorefinery that produces transport fuels and biochemicals alongside electricity, heat and woodpulp.

Feedstock availability

European and North American targets to supply bioenergy in the form of heat, power and second generation biofuels imply **a threefold growth in woody biomass feedstock demand** by 2020. Consequently there are questions about the availability of wood to meet the growing demand for bioenergy as well as the existing demand from the pulp, paper, lumber and wood panel industries.

Our research demonstrates that a surplus of woody biomass in North America contrasts with a potential shortfall in Europe, a fact that will increasingly drive the development of the trans-Atlantic seaborne trade of wood chips and densified biomass; e.g., wood pellets (including torrefied pellets) and bio-oil.

Biomass sourced directly from forests comprises by far the largest share of potential woody biomass supply in both Europe and North America. (Other sources include different forms of processing residues and recovered wood.) However, this is also the source whose availability is most sensitive to the costs of supply. As it becomes necessary to extract energy wood directly from the forest in dedicated harvesting operations – rather than using industrial processing residues – so the marginal costs of supply will rise.

The conclusion is that if forest biomass supplies are to be mobilised to meet governments' ambitious bioenergy targets, the price of energy wood will necessarily increase. One of the results will be that **pulpwood and energy wood buyers must expect to compete more fiercely for favourably located wood.**

Some of the questions addressed in the study...

Amongst the questions addressed in this **215 page** multi-client study are:

- What are the factors driving bioenergy developments? What are the implications of **government targets** for renewable energy supply in the EU and North America? How likely are they to be achieved? What do these targets mean for the **future supply** of wood-based bioenergy?
- What are the advantages and disadvantages of the various bio-energy **technologies** involving wood? The study reports on the progress of the thermochemical and biochemical conversion technologies under development. The study includes **profiles of key bioenergy projects** and technology developers.
- What are the **economics of biorefineries** and black liquor gasification? Does the technology offer a future for uncompetitive pulp mills in North America and Europe?
- Residual wood fibre – including harvest residues and processing residues – will be an increasingly important source of fuel. What are the **supply and demand balances** of woody biomass in North America and Europe?
- How much woody biomass is available? The study presents a detailed analysis of future regional **biomass availability by source**: forest and harvest residues; processing residues (including sawmill residues and black liquor); and recovered wood.
- Can the existing **wood supply chain** meet the needs of the energy industry as well as those of traditional end-users? What changes may be required?
- By how much will the cost of energy wood increase when it depends on **dedicated harvesting and extraction** of biomass directly from forests? How will this influence the marginal costs and prices of pulpwood supply in Europe and North America? (The study presents indicative supply costs for energy wood by region/country.)
- A likely deficit in woody biomass availability in Europe and a potential surplus in North America will drive **an increase in trans-Atlantic seabourne trade** in biomass. In this context, what is the outlook for the supply and demand of **wood pellets** and other forms of *densified* biomass?
- What are the **strategic implications** for companies in forest-based industries? What factors will influence a company's choice of bioenergy diversification strategy? How can a company **manage the risks** associated with diversification?

The study's comprehensive **Table of Contents** is shown overleaf together with a list of its 136 tables and charts.

Table of Contents

Tables

Figures

Our experience

The study has been a collaborative project of **Hawkins Wright** and **Ceres Ventures.**

Hawkins Wright Ltd is a business consultancy based in London, UK, specialising in the provision of consultancy and business information services to the international forest products industry. The company was formed in 1982 and over the past twenty-five years has developed an unequalled bank of data, qualitative information and senior contacts throughout the industry. Visit *www.hawkinswright.com* for more information.

Ceres Ventures' founding partner, Niel Barnard, has over 20 years of experience in the global forest and related products industry and has held a number of managing, executive and non-executive directorships in international businesses located in UK, South Africa, Denmark and Belgium, initially in plantation development in South Africa and subsequently as a vice president of Jaakko Pöyry. More recently Niel Barnard has been involved in forestry and bioenergy investment, strategic consultancy and fund management. Visit *www.ceresventures.co.uk* for more information.

Availability and cost

The study was completed in September 2008 and is **available immediately**. The price of the study is **£4,800** (or the equivalent in US dollars or euro)**.**

The price includes a PDF copy and two printed copies of the study as well as a presentation meeting with the authors in London. Additional copies of the report will be available for a nominal fee.

Contact

To order the study, please complete and return the order for overleaf. Alternatively, to discuss the study or to request more information please contact **John Bingham** or **Roger Wright** at:

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Energy from Forests

Bio-energy and the global forest products industries

Order form

I should like to order the multi-client study **"Energy from Forests - Bioenergy and the global forest products industries"** at a price of £4,800 (or the equivalent in euro or US dollars).

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