Fueling the Need For Change:

Alternative Energy's Impact on Leadership in the Forest Sector

By Sean McBurney and Jay Millen

Over the past two years, high oil prices and concerns about energy security and climate change have led to a tremendous surge in global biofuels production. Around the world, recent governmental policy pronouncements and legislative enactments suggest the biofuels industry will continue to grow as evidenced by the swell in sector activity.

The emergence of biofuels is stirring activity in the forest products industry, where biofuels strategies are being developed and new business models are being formed. The human capital issues attached to these new strategies and business models are now front and center.

Biofuels present a compelling potential profit opportunity for an industry that has struggled in recent years. However, for those companies that do not own their fiber supply the rise of the biofuels sector is a threat, for the future promises increased demand for fiber, diminished supply and higher prices. Forest products and land management companies must decide whether they will enter the biofuels business, and what role they will play in this rapidly evolving industry.

Key Takeaways

- The technology to refine wood fiber-based cellulosic ethanol is rapidly advancing; the demand for this clean fuel and its commercial value are potentially immense.
- Few forest products and land management companies are currently structured or staffed to manage the risks and rewards offered by this biofuel opportunity.
- To maximize the value they gain from biofuels investments, forest products and land management companies should select an appropriate business model.
- Finally, organizations must possess the right leadership profiles and technical expertise to successfully harness the rewards biofuels promise.

The most compelling biofuels opportunity for forest products firms exists in the production of cellulose-based ethanol produced from wood fiber. Cellulosic ethanol is a rapidly emerging and attractive biofuel because it offers significant advantages over corn and sugar-based ethanol: it is less energy intensive to produce and has a greater energy yield, thus “cleaner” to produce and delivering far greater emissions-reducing capabilities than food crop-based ethanol.

The growing popularity of cellulosic ethanol and its advantages have fomented discussion and debate in the boardrooms of forest products and land management companies, as well as energy companies and biofuels enterprises — conversations that have resulted in recent joint ventures and investments in fiber supplies, refining technologies and infrastructure. We have seen a growing urgency to these boardroom discussions as businesses strive for optimum positioning with the best joint venture partners, and the most profitable investment vehicles.

Acknowledgements

Korn/Ferry International wishes to acknowledge the following executives, whose experiences and insights made this white-paper possible:

Duncan Davies
Interfor

Richard Fifer
Petaquilla Minerals Ltd.

W. Edwin Frazier, III
Rayonier

Sten Holmberg
Södra Cell

Nils Morten Huseby
SN Power

Charles Kimber
Arauco Wood Products

Tim Leitch
GreenField Ethanol

Carlos Marin
Grupo Nueva

Bob McLellan
DS Smith Packaging

Timothy S. Nicholls
International Paper

Antonio Ortuzar
Baker & McKenzie

José Luciano Duarte Penido
Votorantim Celulose e Papel

Suzanne Perry
Baker & McKenzie

David A. Rossi
Accenture

Hannu Ryopponen
Stora Enso Oyj

Leon Schlesinger
Grupo Nueva

Mark Ushpol
Mondi Business Paper

Mark Wilde
Deutsche Bank Securities

John D. Williams
SCA Packaging

To maximize the rewards and manage the risks of this alternative energy opportunity, forest products and land management enterprises must decide how they are going to evolve and how they are going to adapt their existing business models and human capital capabilities. Companies that currently own timberlands possess valuable opportunities for additional revenue streams. Companies that do not own timberlands face pressing questions about the future cost of fiber and their position in the biofuels supply chain.

The debate is ongoing. Should a company sell its fiber supply as a commodity, partner with or invest in another company to develop a biofuel refinery, or engage in biofuel production on its own? Interfor, Mead Westvaco, Weyerhaeuser and other companies already have taken important steps towards determining their strategies. European forest products companies such as Sweden-based Sodra and Stora Enso Oyj, and Latin American companies such as Arauco and Votorantim, have taken the lead from their North American rivals in the realm of biofuels; they already have plans to build cellulosic ethanol refineries and are already producing energy from wood pellets.

Wood pellets, which were recently endorsed by the U.S. Environmental Protection Agency as one of the cleanest burning fuels and most renewable energy sources, provide another entry point into the biofuels sector that is proven profitable. The Wood Pellet Association of Canada reported that global wood pellet production exceeded seven million tons in 2006 with anticipated consumption numbers of ten million tons by 2010 in Europe alone. The British Columbia Chamber of Commerce reported in 2006 that four wood pellet producers in northern B.C. produced over $150 million in revenues. Recently, Canfor Corporation announced plans to produce wood pellets from planer shavings and sawdust in Houston, B.C. to increase revenues.

Making these strategic decisions now will position companies to embrace the rewards while diminishing risks. Companies that have teams and resources in place can quickly capitalize upon the rapidly improving cost effectiveness of the cellulosic ethanol production technologies and the looming changes to fiber supply markets, which will be characterized by increased competition.

To provide context on the business and talent challenges accompanying the emergence of cellulosic ethanol, Korn/Ferry International conducted a series of interviews with senior industry leaders in the forest products, biofuels, biotechnology and broader energy sector, many of whom are actively pursuing biofuels opportunities. These conversations yielded three key insights important to the forest products sector that form the focus of this paper:

1. Companies are pushing the development of alternative energy/biofuels sector entry strategies. However, many companies are neither structurally configured nor equipped with the necessary talent to effectively capitalize on biofuels opportunities.

2. To effectively capitalize on biofuels opportunities, forest products and land management companies must select a business model that will define the role they play in the biofuels industry.

3. To successfully execute their chosen biofuel business model, companies must possess the talent with the required leadership competencies, technical and functional skills.

Pressures and Promise

It is clear the world must seek alternative sources of energy to fossil fuels that are more economically and politically secure, and that have a less disastrous impact on the environment. The drive for change has risen from the grassroots to the halls of government around the world.

President Bush recently announced the goal of reducing U.S. gasoline consumption by 20 percent during the next decade. The Canadian and U.S. federal governments have invested millions of dollars to produce ethanol from wood fiber (including enough for six cellulosic ethanol plants in the U.S.). In his most recent State of the Union address, Bush proposed a mandate of creating 35 billion gallons of ethanol, the majority of which would be cellulosic ethanol, by 2017.

The traditional source of ethanol to date has been food-based crops such as corn and sugar. However, the proverbial sun may be setting on these traditional feedstocks as major issues have arisen surrounding their use.

Food crop-based ethanol output is hampered by production limits and political controversy. Current estimates indicate that the U.S. can yield a maximum of roughly 15 billion gallons of sugar and corn-based ethanol annually. Using food crops for fuel reduces the amount used to produce food. That reality has sparked a charged political debate, and it has had economic impact. *The Wall Street Journal* recently reported that popcorn prices in the U.S. have increased more than 40 percent since 2006 as a result of "soaring demand for feed corn to fuel the [crop-based] ethanol boom."

Forest products companies will soon experience the "popcorn effect" — rising prices as the growing biofuels business places greater demands on the fiber supply.

Forest products and land management companies can avoid the "feed people or feed cars" dilemma, although they may not avoid the "popcorn effect." The growing biofuels sector will create greater demand for fiber supply, boosting fiber prices and greatly influencing whether fiber supply owners choose to sell their materials to producers of printing paper and two-by-fours or producers of biofuel.

For forest products companies that do not own timberlands, the questions are more daunting: how much will constraints on fiber supply affect costs, and how much of those costs will customers accept in the form of higher prices?

These questions have arisen due to cellulosic ethanol's advantages over crop-based ethanol. The production of cellulosic ethanol currently costs more than the production of food crop-based ethanol. But technological advancements are expected to close that gap within two to four years. Cellulosic ethanol reduces greenhouse gas (GHG) emissions by 85 percent or more compared to gasoline. Corn ethanol only reduces GHG emissions by roughly 20 to 30 percent compared to gasoline. Cellulosic ethanol is also far cleaner to produce than starch-based ethanol: its energy output/energy input ratio is twice as high as sugarcane ethanol and roughly eight times as high as corn ethanol.

Model Organizations for Biofuels

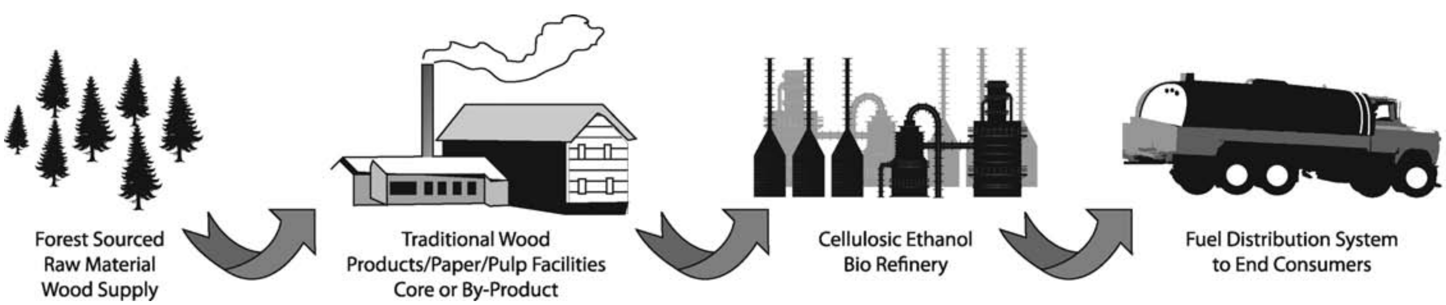
The advantages of cellulosic ethanol have motivated certain companies to action and led a larger group to start asking important structural questions. Canada-based Iogen, for example, annually produces more than one million gallons of cellulosic ethanol. The company's ultimate commercialization strategy involves licensing its refining technology to partners that will construct biofuel refineries throughout the world.

Iogen earned its status as a global leader in the development of cellulosic ethanol production technologies as a result of more than 30 years of producing enzyme products for the forest products sector. In recent years, Iogen has successfully partnered with major energy companies such as Petro-Canada and The Royal Dutch Shell Group. Last year, Goldman Sachs became one of the first Wall Street firms to invest in cellulosic ethanol when it took a minority stake in the company.

U.S.-based Verenium Corporation, a leading biofuels developer for the past 15 years (under the name Celunol), merged with Diversa, a specialty enzyme producer, earlier this year. The new company now boasts an integrated presence in the cellulosic ethanol production sector. Verenium operates the first cellulosic ethanol pilot facility in the U.S., and licenses its technology to companies, such as Marubeni Corp., who used it to build and operate BioEthanol Japan's cellulosic ethanol plant in Osaka.

These biofuels pioneers demonstrate the crucial role that joint ventures, partnerships and corporate mergers are playing in the development of the biofuels industry and its value chain. Those and related developments reveal that biofuels, biotechnology and energy companies are actively searching for partners to successfully leverage biofuels opportunities. Developments such as the Weyerhaeuser-Chevron joint venture demonstrate that more forest products and land management companies need to take action as well. The search for partners will increasingly concentrate on timberland owners who own biofuel feedstocks. But who owns the fiber? The recent numerous for-sale signs cropping up in the forests (see "Fuel for Thought: Who Owns the Supply?" sidebar on page 7) have

Figure 1 — Wood-Based Biofuels Value Chain



brought this question to the fore.

In the 1990s, the advent of timber investment management organizations (TIMOs) and significant timberland purchases by real estate investment trusts (REITs) created a new category of forest owners. These owners typically have more options for using their raw materials than do integrated pulp and paper companies, which have to weigh the impact on utilization of existing paper and pulp manufacturing assets when considering investing in biofuels production.

Furthermore, the ability of traditional forest products companies to enter the cellulosic ethanol business may be limited by existing commitments to commercial land development and/or long-term fiber supply agreements. Although the same constraints represent a concern for some TIMOs and REITs, these organizations can more easily optimize the value of their fiber assets because few "forward assets" typically exist in their own value chains.

That said, integrated forest products companies as well as TIMOs and REITs (with timberland assets) face a similar set of business model and human capital issues. These organizations must determine whether it is in their best interests to operate purely as raw material suppliers or as energy producers. If they choose to be energy producers, these organizations need to decide if they do so on their own or with partners.

The decision-making process surrounding biofuels investments begins with the question of ownership and progresses through the question of talent ownership:

- Do we own the fiber? If so, will we be constrained by existing fiber markets?
- How will a "popcorn effect" change the fiber markets? If we own our fiber, which customers will deliver the greatest profit? If we do not own fiber, to what extent will the cost of our raw materials increase? What impact will that have on our prices and our business as a whole and how can we extract value by participating in the biofuels value chain — as a supplier, a manufacturer, a refiner and/or a distributor?
- Finally, given the answers to those questions, which leadership competencies and technical and functional skills does our organization need to make the business model work?

Leadership and Human Capital Implications

The short answer to the final question above, for the majority of forest product and land management companies, is "leadership qualities and skills that we do not currently possess."

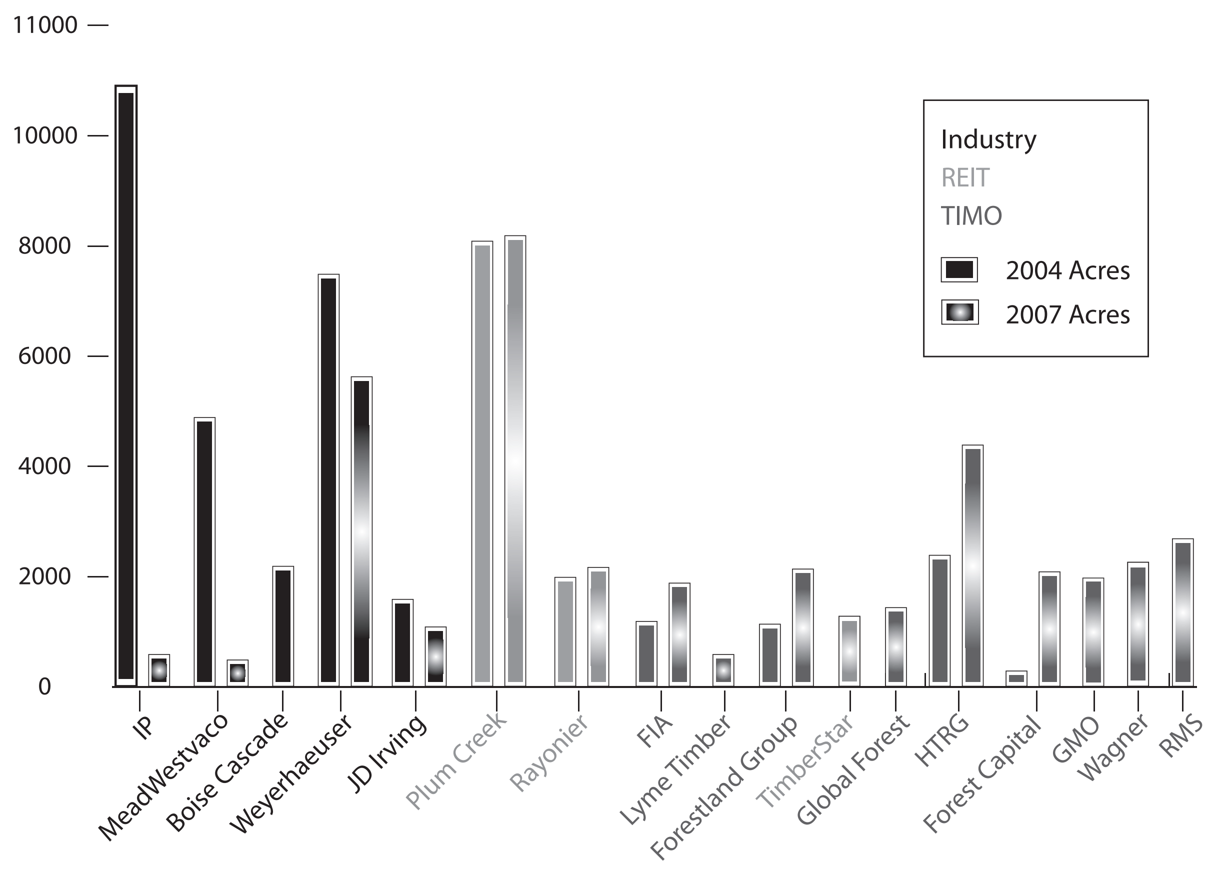
> To successfully manage the risks and maximize the rewards of this alternative energy opportunity, leading forest products and land management enterprises must identify how to adapt their current business models and leadership competencies.

The competencies and skills required to plan, execute and manage operations in the biofuels supply chain differ markedly from the leadership and technical talent characteristics required to manage lumber yards, acquire and manage timberlands and sell two-by-fours. However, there are inherent skills and strengths those forest products companies have that can be leveraged in the biofuels business: they know how to harvest the timber, store and transport it, and process it. Thus, they are the perfect partner for others with more biofuels-centric skills. If they choose to go it alone and create integrated biofuels businesses, they may need to seek talent externally.

Korn/Ferry's discussions with senior executives active in biofuels identified numerous leadership qualities and technical skills that qualify as "must-haves" from a talent management perspective:

- **Strategic vision and business development:** Can the executive team develop and deliver the vision? Once that

Figure 2 — Major Land Ownership Changes (2004-2007)



Source: *RISI's Timberland Markets Report, 2007*

Fuel for Thought: Who Owns the Supply?

More than 30 million acres of North American forest lands were sold in the past decade and another 12 to 15 percent of North American timberlands are expected to change hands within the next three years, according to RISI's Timberland Markets Report. As a result, more than half of 80 million acres of privately owned timberland will belong to land management organizations. Owners of the fiber supply will determine whether fiber is sold to paper and wood producers or alternative fuel producers. Fiber buyers will have to adjust to rising fiber prices due to a more constrained supply.

vision is established, how will the organization execute it — will it "build or buy" the fiber and production assets or access those assets through joint ventures, mergers and acquisitions, or other business partnerships? Does the organization possess skills to ensure that those arrangements are managed effectively moving forward?

■ **Financial and risk management acumen:** Financial acumen is necessary to accurately assess investments and their potential risks and rewards. Financial and risk management capabilities are also required to structure effective and innovative business partnerships and joint ventures, and finance facility or infrastructure developments.

■ **Communications and entrepreneurial aptitude:** Executives must be able to engage an audience, articulate the vision and business plan, and create enthusiasm for the venture whether they are addressing investors, shareholders, regulators, non-governmental organizations, potential partners or employees. These executives will also participate in increasingly complicated and contentious discussions about national and global forest management and economic issues. The independent power producer industry of the 1990s demanded a similar entrepreneurial savvy, where an ability to raise money and creatively finance major projects was required. This is why we see many executives in the biofuels sector with the IPP industry backgrounds, along with many former biotech and dot-com executives.

■ **Supply chain vision:** Biofuels decisions within integrated forest products producers affect both sides of the supply chain. Raw fiber may be consumed either as fuel or as a traditional wood/pulp/paper product. As a result, procurement and energy management operations for these businesses will require new levels of insight into the entire business environment and into use decisions. Senior executives and business managers should understand how to deal with utilities and cellulosic ethanol retail consumer outlets, for example. Sophisticated procurement skills also are important. In a similar vein, executives should be able to design and manage branding and marketing not only as a business-to-business process, but also as a sell-through consumer activity.

■ **Sustainability savvy:** To what degree can the senior team express the company's "Triple Bottom Line" to stakeholders? This increasingly important accounting term refers to corporate reporting on environmental and social performance in concert with financial performance. Each one of these reporting elements is affected by biofuels investments.

■ **Technical skills:** Finally, does the organization possess the technical capabilities — the scientific, research and development, project development, and production operations skills — required to develop and manage a biofuels business?

While these leadership capabilities and skills exist in the broader talent marketplace, that supply will quickly dwindle as the nascent biofuels industry matures. Companies that address important business model and human capital questions surrounding biofuels opportunities now will be less likely to leave their boards, shareholders and employees scratching their heads and wondering about missed opportunities later.

Sean McBurney is a Client Partner in the Calgary office of Korn/Ferry International. He has extensive experience in a variety of industry sectors with special emphasis in energy and natural resources.

Jay Millen is a Senior Client Partner in the Miami office of Korn/Ferry International. He specializes in assignments within the paper, packaging and forest products sectors. He also works extensively in the land management and cross-industry natural resources sectors.

Additional research was completed by Jennifer Winter, knowledge manager for Korn/Ferry's International's Global Industrial Market.

About Korn/Ferry International

Korn/Ferry International, with more than 70 offices in 40 countries, is a premier global provider of talent management solutions. Based in Los Angeles, the firm delivers an array of solutions that help clients to identify, deploy, develop, retain and reward their talent.

For more information on the Korn/Ferry International family of companies, visit www.kornferry.com.

© Copyright 2007 Korn/Ferry International