



BIOENERGY:

CHANGING THE RELATIONSHIP BETWEEN ENERGY AND THE ENVIRONMENT

By Pete Stewart

Historically, the relationship between energy and the environment has been antagonistic. Controversies over mountain top removal mining in West Virginia, drilling for oil in the Arctic National Wildlife Refuge and offshore drilling in our most popular tourist destinations have been heated. Our dual needs for energy and a habitable environment have often been pitted against one another, to the benefit of neither.

What would it be like if this were no longer the case, if the relationship between energy and the environment were mutually beneficial? We may be on the verge of finding out.

Wood bioenergy, a growing segment of the energy sector around the world, is an almost perfect expression of this new relationship between energy and the environment.

Why wood? Clearly, sun and wind present more carbon friendly methods of producing power. While they may be preferred in the long term, solar and wind energy are opportunistic. They can only be generated when the sun shines or the wind blows. And if you live in an area in which sun and wind are intermittent at best, the huge capital investment

in the necessary technology could hardly be justified. Wood bioenergy, by contrast, can be produced continuously and on demand. It can also be produced locally, close enough to urban centers that little efficiency is lost in transmission. These reliability factors make wood a desirable renewable option, especially in areas with abundant forest resources.

Some argue that wood should not replace fossil fuels because it too is a carbon-based fuel. If you look at its environmental impact, however, wood is a strong alternative to fossil fuels. It is available domestically; it does not need to be shipped long distances with risk of disasters such as oil spills. Wood is renewable perpetually; sustainable forest management practices allow for continued production while protecting soil, water, and habitat quality.

Wood also has a significantly smaller carbon footprint than traditional alternatives. The carbon stored in wood is already considered part of the global carbon cycle. Because it will eventually be released—during a forest fire or through decomposition—the process of converting wood to energy is considered carbon neutral. On the other hand, the carbon stored in fossil fuels is in geological storage; if left alone, fossil fuels permanently sequester the carbon they contain. Combusting these fossil fuels, therefore, releases additional carbon into the global carbon cycle. Replacing fossil fuels with wood is a way of avoiding these additional emissions.

According to the Green Power Institute, combusting wood fuel to produce energy also has a better carbon footprint than the alternatives. If it were not removed from the forest for energy production, the options for biomass material would be open burning (either prescribed or by forest fire) and landfill. Both of these options produce more greenhouse gas emissions than controlled combustion of biomass to produce energy.

Because of these fundamentals, state and federal governments include wood in their definitions of renewable energy sources. To date, 28 states have adopted standards that require electric utilities to add renewable sources of energy to their portfolios. Five additional states have set renewable energy goals, and others have standards winding their way through legislative processes. These standards have prompted electric utility companies around the country to fast-track assessments of available renewable resources and methods for converting or adding this capacity. Federal action is spurring bioenergy activity as well. The Obama administration's energy policy includes two relevant provisions. One provision calls for a federal renewable portfolio standard (RPS) requiring that 10 percent of our electricity come from renewable sources by 2012 and 25 percent by 2025. The President's energy plan also calls for

the implementation of an economy-wide cap-and-trade system to reduce greenhouse gas emissions 80 percent by 2050. Because greenhouse gas offsets have value under a mandatory cap-and-trade system, the competitiveness of wood bioenergy production will only improve if a cap-and-trade system goes into effect. While these national standards may be months or perhaps years away, state and federal government policies and incentives are quickly moving to establish a renewable energy industry.

Even though we are operating in a capital-constrained economy and bioenergy is a capital-intensive endeavor, it is hard to see how it won't become a strong segment of the forest products industry. After the events of the last two years, only the hopelessly optimistic expect housing to be the sole driver of prosperity in the forestry and wood products industries in the United States in the future. Energy efficiency, biopower and export markets will be sources of future success. In these areas, opportunities exist.

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Energy companies have wasted no time capitalizing on these new opportunities. Duke Energy has been working on two fronts, for instance. In order to meet North Carolina's RPS, Duke has been planning the conversion of coal plants to co-fire facilities that will burn wood with coal. On a strategic level, they have formed a joint venture with AREVA, a European energy company. ADAGE, the resulting advanced biopower company, will build and operate small-scale dedicated biomass power plants. Their first project—five 50 MW facilities that will sell power to Energy Northwest member utilities—was announced in February.

Though neither Georgia nor South Carolina has an RPS, utilities in both states are not waiting for regulatory requirements. Georgia Power is converting a closed coal plant—Plant Mitchell—to a wood only plant. Santee Cooper has contracted with independent power producer (IPP) Rollcast Energy to purchase 50 MW of electricity from a facility Rollcast will build and operate. Dozens of IPPs like Rollcast and ADAGE are emerging onto the landscape right now, ready to take advantage of government funding and incentives to beat the competition.

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The biggest beneficiaries of new energy markets in the forest products industry will be timberland owners. When new markets for raw materials emerge, prices rise. And as is always the case with the law of supply and demand, when demand rises, additional sources of supply find their way to the market and some sources of demand are priced out of the market. Hardwood pulpwood and chip markets will undoubtedly follow this pattern as new projects materialize. In the next 10 years, timberland owners in some regions will see higher prices. To take advantage of these prices, timberland owners who haven't managed their land for timber production may want to reconsider, and those that do may want to consider revising harvest schedules to maximize production of materials in greatest demand.

Forest and wood products companies will also want to look at their own carbon profiles, especially if a cap-and-trade system is implemented. European companies that import wood pellets from the United States, for instance, have received some criticism due to the amount of fossil fuel that is needed to ship pellets across the Atlantic. In order to improve the backstory of these imports as a green energy source, these companies are requiring that the raw materials originate in certified forests and that harvesting, trucking and manufacturing operations are fueled with green sources. In the future, logging operations that use biodiesel instead of diesel may secure steady buyers at premium prices. Pellet and chipping operations that can guarantee chain of custody may find more consistent European buyers.

Some forest products companies are looking for strategic ways to diversify in light of the changes taking place in the industry. Sawmills that have historically pulled all their power from the grid are now making plans to convert to combined heat and power, selling carbon credits for their reduced greenhouse gas emissions and leftover electricity to the grid. In an economy where sawmill costs and revenues can no longer be balanced using the traditional formulas, reduced energy costs and revenues from carbon credits and electricity may outweigh the loss of revenues from mill residues.

Besides the energy industry, forests products companies have more experience operating in the nexus between the economy, the environment and energy than any other industry. To improve profitability, forest products companies turned to cogeneration to heat and power their own operations. In light of environmental concerns over deforestation, erosion and wildlife endangerment, industry organizations were formed to develop certification systems that ensure the sustainability of forest resources.

Forest industry participants will need to continue being creative in order to diversify and succeed in the new energy economy. We will need to understand as much about carbon markets and public utility commissions as we do about the wood fiber supply chain. But if energy companies can learn the wood fiber supply chain, why not? ■

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