April 2011

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Wood as a Source for Biofuel

Verso Paper Corp.'s Position

The use of biofuels is an important element in Verso Paper Corp's strategy to improve energy efficiency and reduce greenhouse gas emissions. In addition to its own endeavors, the company encourages marketplace efforts to learn more about the environmental and economic benefits of burning non-fossil fuels. However, as industry, government and other stakeholders look to alternative fuel sources, we must be certain that we do not sacrifice one vital resource at the expense of another. While wood has been successfully used as a valued energy source since time immemorial, increasing tree harvests for the sole purpose of replacing fossil fuels raises serious environmental and economic concerns that must be addressed. As we evaluate new energy strategies that propose greater use of wood for fuel, we must assure that these strategies guarantee long-term forest sustainability; that they do not sacrifice one valuable consumer product for another; that they do not drive inflation, eliminate jobs or otherwise have an adverse effect on the U.S. economy; and that all potential consequences have been thoroughly evaluated.

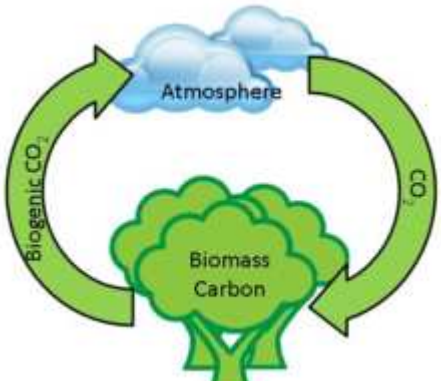
The use of biofuels is an important element in Verso's strategy to improve energy efficiency and reduce greenhouse gas emissions.

Background

Increasing the use of biofuels is becoming a hot topic as people around the globe explore options for mitigating global climate change through greenhouse gas reductions and otherwise reducing dependence on oil. Unlike fossil fuels such as oil and coal, biofuels can burn cleaner, emitting less sulfur dioxide and heavy metals into the atmosphere. And while biofuels and some fossil fuels release about the same amount of carbon dioxide (CO_2) when burned, CO_2 from the burning of biofuels does not contribute to climate change the way fossil fuel CO_2 emissions do.

Burning fossil fuel releases carbon that was captured by photosynthesis and stored for millions of years, essentially adding "new" carbon to the atmosphere. As the name suggests, biofuel is derived from biomass -- recently living organisms or their metabolic byproducts -- and many types of biomass, from corn to switchgrass to wood fiber from trees, are being studied as fossil-fuel alternatives. Because they are made from renewable biomass, biofuels are carbon neutral, meaning that burning them results in a net zero carbon exchange in the atmosphere. In a continuous cycle, carbon that was originally absorbed by living matter is simply returned to the atmosphere when burned.

Biomass, such as wood fiber from trees, is renewable, meaning it can be perpetually grown, harvested and re-grown.



Neutral Biomass Carbon Cycle

Because biomass is renewable, meaning it can be perpetually grown, harvested and regenerated as it is in forests that are responsibly managed by the paper industry and its suppliers, this carbon cycle remains balanced. Those who contend that this balance is disrupted when trees are harvested for papermaking focus narrowly on the harvest of one individual plot of land, rather than

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on real-world evaluations of the carbon cycle across the entire forest landscape over time. In responsibly managed forests, carbon losses due to harvest on one plot of land are offset by the carbon uptake of trees growing across the entire forest landscape.

According to the U.S. Forest Service and the Society of American Foresters, the amount of forestland in the United States has remained essentially the same over the last 100 years at about 750 million acres. However, this forestland is more productive than ever with an increase of nearly 50 percent in the volume of standing trees over the last half century. This is due in great part to responsible forestry practices implemented by the paper and forest products industry. As these practices help increase forest volume, they also help increase carbon stocks and help mitigate rather than contribute to global climate change.

The U.S. Environmental Protection Agency reports that carbon stocks in U.S. forests continue to grow at a rate of 800 million metric tons of carbon dioxide equivalents per year.

The U.S Environmental Protection Agency's (EPA) comprehensive accounting of total U.S. carbon emissions includes carbon exchanges related to land use, including forests that supply U.S. papermakers. According to its most recent report to the U.N. Framework Convention on Climate Change, the EPA reported that carbon stocks in U.S. forests continue to increase at a rate of 800 million metric tons of carbon dioxide equivalents annually.

> "In the long term, a sustainable forest management strategy aimed at maintaining or increasing forest carbon stocks, while producing an annual sustained yield of timber, fiber or energy from the forest, will generate the largest sustained [climate change] mitigation benefit."
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> **-- International Panel on Climate Change 4th Assessment Report (2007)**

More than half the energy Verso uses to manufacture its products – some 54 percent – comes from greenhouse gas-neutral biofuels.

At first glance, plentiful biomass resources seem like an easy answer to the greenhouse gas dilemma. However, growing and harvesting living matter specifically for conversion to energy presents a complex host of potential environmental and economic consequences that must be carefully evaluated. That's not to imply that using biomass for energy is inherently a bad idea. In fact, the paper industry has been successfully using it for decades. At Verso, more than half the energy used to manufacture our products – some 54 percent – comes from greenhouse gas-neutral biofuels that are derived from wood residuals, primarily tree tops, small tree limbs and wood leftovers recovered from the pulp and papermaking process.

Unintended Consequences

Recently, we have seen great emphasis in the United States – from environmental activism to government subsidies -- on producing biofuels, particularly ethanol. This accelerated activity to find an immediate solution to U.S. energy needs and its ripple effects should serve as a lesson as we consider wood for fuel.

Most current U.S. ethanol production comes from corn. The dramatic rise in demand for corn to produce ethanol has triggered a variety of undesirable consequences. This includes a drop in production and price increases of other important food crops as well as rising prices for U.S. corn and a host of corn-derived products – everything from livestock feed to a multitude of food products sweetened with corn syrup. According to the United Nations World Food Program, the U.S. price of corn rose 73% in the second half of 2010, with much of this increase attributed to greater use of American corn for biofuel. The long-term environmental effects of converting vast amounts of agricultural land to energy-producing corn are yet unknown. This conversion activity continues, even though the ultimate energy efficiency and environmental benefits of corn-based ethanol remain the subject of hot debate.

Over the last several years, the federal government has awarded hundreds of millions of dollars in grants to companies to develop cellulosic ethanol plants. These plants will produce ethanol from non-food cellulose sources such as corn stalks, switchgrass and wood chips. While these types of research and funding efforts are important steps in advancing both environmental improvement and energy independence, careful evaluation of the long-term consequences of using each biomass source as an alternative to fossil fuels is of paramount importance.

The Value Chain of Wood

As the government creates incentives that promote the use of wood for biofuel, it is important to maintain the traditional value chain of wood, that is, to make sure that every part of every tree provides the most value possible to society. Value is measured not only in terms of the wood-based end products, but also by a cascade of economic contributions from equipment, other materials and jobs required to produce the products, tax revenues generated by those jobs and so on. Establishing wood-to-energy incentives that fail to make appropriate value distinctions would have significant unintended consequences and inflict long-term damage to traditional wood-to-products industries.

Wood-to-energy incentives that fail to recognize the traditional value chain of wood will have significant unintended consequences and inflict long-term damage to the paper industry.

The traditional value chain of wood is broadly divided into three parts. Tree trunks are typically used to produce building products (lumber and veneer) and furniture. Lesser quality trunk wood, often referred to a pulpwood, is used to produce pulp and paper products. Residual wood – tree tops, limbs and bark – is an excellent resource to produce renewable energy. Residual wood cannot be used to manufacture high-value products like lumber or paper, and in most cases, it simply does not make economic sense to use trunk wood or pulpwood as a source of energy. Consider the following example.

As $100 worth of pulpwood logs are transformed into pulp, from pulp to paper, and from paper to end-use products like magazines or corrugated boxes, value is added at each step in the process. When you add in the capital needed for papermaking equipment and payroll for jobs to run the paper manufacturing operations, the value increases even more. If the same pulpwood logs move from the forest to a chip mill and directly to a boiler where they're burned for energy, the dollar value of the end product (electricity measured in kilowatt-hours) is significantly less, and the production of energy requires less capital investment and supports far fewer jobs.

Taking this example a step further, it's easy to see how government wood-to-energy incentives without clear value-chain distinctions would damage the U.S. economy. A general incentive to burn any grade of wood for fuel would create a damaging ripple effect. If, for example, pulpwood otherwise well-suited to make paper is shifted to electricity production, the cost of manufacturing all types of paper products would increase dramatically. Higher prices for paper products would reduce demand. A reduction in demand would mean reduced production and lost jobs. Lost jobs would result in lower tax revenues, which would lead to increased debt. For the paper industry, which directly supports some 900,000 U.S. jobs, and for our country as a whole, the economic aftermath of such a shift would be devastating.

Responsibly managed forests are essential for the balance and protection of critical ecosystems and are the earth's best defense against global climate change.

There are clearly scenarios that both preserve the value chain and allow for the sustainable use of some wood as fuel. For example, even without government incentives, paper mills for years have used high-efficiency combined heat and power (CHP) facilities to produce more wood-based biofuel energy than any other industry. Typically, traditional fossil fuel power plants in the U.S. have an average efficiency of around 33%, while CHP facilities achieve total system efficiencies of up to 80% for producing electricity and thermal energy. Rather than excluding such facilities from future incentive programs, the government should use incentives to encourage expansion of already highly efficient CHP capacity and to build additional capability to support next generation biofuel production. This would not only increase capacity for renewable energy production, but could potentially support jobs as the paper industry develops new energy revenue streams to mitigate permanent losses in paper demand that have resulted from changes in the marketplace.

Sustaining the World's Forests

At the heart of the wood for biofuel discussion is the question of forest sustainability. Sustainable forests are not only essential for the balance and protection of critical ecosystems, but also are the earth's best defense against global climate change. Trees act as a carbon sink, removing vast amounts carbon dioxide from the atmosphere through photosynthesis and storing it in tree trunks, soil and wood debris on the forest floor. CO_2 is released only when wood fiber burns or decays.

When trees harvested for papermaking are replaced by natural regeneration or planting, the net result is a carbon neutral exchange.

The paper industry's sustainable forest management practices help assure that the world's forests will remain healthy, productive and biologically diverse for generations to come. Today, Verso and other forest products companies and their supply chain partners adhere to sustainable forest management principles that assure the perpetual growing, harvesting and regeneration of trees is successfully integrated with the protection of wildlife and wildlife habitat, plants, soil, air and water quality. Third-party certification to credible forest management standards such as the Forest Stewardship Council™ (FSC)®, Sustainable Forestry Initiative® (SFI)®, Canadian Standards Association (CSA), Programme for the Endorsement of Forest Certification (PEFC), American Tree Farm System (ATFS) and most Master Logger (ML) standards verify that responsible forest management principles are being upheld and specific land management criteria are being met.

These criteria include protections against over-harvesting as well as requirements for re-establishing trees by natural regeneration or planting on all harvested lands within a specified period of time, typically two to five years. The standards also prohibit harvesting on adjacent lands until the regenerated forests reach a certain age or height. In sustainably managed forests, when trees harvested for papermaking are replaced by natural regeneration or planting, the net result is a carbon neutral exchange.

Conclusion

Just because wood fiber from trees is a renewable resource doesn't mean that harvested forests are always managed responsibly and renewed. As the demand for wood-based biofuel grows, Verso believes that the only way to assure productive, healthy forests for future generations is to require that all wood-based biomass used for fuel comes from responsibly managed forests. In addition, the potential economic and societal impacts of substituting wood for fossil fuel must be carefully evaluated to assure there are no unintended consequences, such as those the United States has experienced with corn-based ethanol. Maintaining the traditional value chain of wood is critical to assuring that every part of every tree provides the most value to society.

Good public policy related to the production and use of biofuels demands an unbiased approach that assures both environmental sustainability and economic balance. Sound science and real-world experience must be the foundation for decision-making related to issues like the carbon neutrality of wood-based biofuel. With all stakeholders working together to achieve these goals, Verso believes we can develop practical, sustainable solutions for adding wood biomass to a diverse mix of biofuels that will help reduce greenhouse gas emissions and oil dependence.

For more information on biofuels or other sustainability issues, please call Verso's Office of Sustainability at 901-369-4154 or visit our website at www.versopaper.com/sustainability.