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# PINCHOT INSTITUTE FOR CONSERVATION

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## **Ensuring Forest Sustainability in the Development of Wood-Based Bioenergy: A National Dialogue<sup>1</sup>**

### **Project Description**

#### **Summary**

Two major national priorities—mitigating climate change, and achieving greater energy security through increased domestic renewable energy production—have converged to create new and rapidly expanding demands on US forests for wood-based bioenergy. On one hand, these new markets for woody biomass could represent a positive new force for sustainable forest management, decreasing the forest degradation that takes place through “high grading,” and helping to counter development pressures by increasing economic returns to private forest owners. Without careful consideration and forethought, however, rapid increases in wood harvesting could lead to unintended negative consequences for biological diversity, water quality, and other important conservation values.<sup>2</sup>

Conservationists almost universally support renewable energy development. But they want to see it “done right,” especially when it comes to potentially placing new demands on forests. While there are general notions within the conservation community of what the “right” way is, this has not been well defined or translated into operational terms that can be clearly communicated, implemented and monitored. There are differing perspectives even within the conservation community itself regarding the nature of the challenges, the best means of addressing these challenges, and priorities for near-term action. The resulting mixed signals risk reducing the timeliness, cost-effectiveness, and constructive impact of conservation actions.

The Pinchot Institute, in cooperation with a number of other conservation organizations, natural resource agencies, and renewable energy companies, is convening a national dialogue to help guide the development of wood-based bioenergy by anticipating and avoiding significant impacts on important conservation values. The dialogue is designed to catalyze the development and implementation of an effective strategy for identifying and characterizing the potential risks to conservation values arising from wood-based bioenergy development, and establishing safeguards that will minimize these risks in the most

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<sup>2</sup> See: Forum on Climate Change, Forests and Bioenergy. Summary of presentations and discussion at a workshop held January 26, 2007 at the Library of Congress, sponsored by the Pinchot Institute and the Congressional Research Service. <http://pinchot.org/events/129>



constructive and effective manner. Major funding for this national dialogue is provided by the Doris Duke Charitable Foundation, the Henry P. Kendall Foundation, and the Lyndhurst Foundation, with additional support from a diversity of public and private contributors.

## **Background**

Woody biomass from US forests is increasingly being seen as a key component of a comprehensive strategy for mitigating climate change by substituting carbon-neutral fuels for carbon intensive fossil fuel, and for achieving greater energy security by substituting for imported oil in heating, electrical power generating, and transportation fuels. Spurred by government-sponsored investment incentives and tax credits, production of renewable energy from wind, solar, and corn-based ethanol have greatly increased in recent years, but their limits are within sight.

Estimates of the potential supply of woody biomass from US forests on both public and private lands are impressive. A comprehensive and authoritative study released recently by the US Department of Energy and US Department of Agriculture estimated that 30 percent of the current US consumption of petroleum could be replaced by biomass energy by 2030, in part by more than doubling the amount of woody biomass produced by US forestlands.

Biomass derived from forestlands currently contributes about 142 million dry tons to the total annual consumption in the United States of 190 million dry tons. Based on the assumptions and conditions outlined in this analysis, the amount of forestland-derived biomass that can be sustainably produced is approximately 368 million dry tons annually—more than 2.5 times the current consumption. (Perlack et al. 2005).

It is assumed that more than 80 percent of this woody biomass supply would come from private forestlands, mostly in the eastern US, and the remainder from public forest lands that have accumulated high levels of excess biomass that poses significant risk for wildfires. Separately, the report estimates that another 150-300 million tons of woody biomass could be available from perennial crops (such as short-rotation woody crops). An additional 17-28 million tons is estimated to be available from harvesting the biomass on lands currently in the Conservation Reserve Program—a program that was extended beyond its original expiration because of the valuable wildlife habitat that had been created when, through CRP, marginal crop and pasture land had been allowed to return to forest.

Clearly, there are major changes in store for America's forests.

None of this has in any way reduced the existing protection of environmental and conservation values under federal and state laws that govern the management of forests on federal, state and private lands. However, the focus of most of these laws was the regulation of timber harvesting for wood products, not the removal of woody biomass. Similarly, the existing standards for voluntary, third-party certification programs (e.g., Forest Stewardship Council, and Sustainable Forestry Initiative) were developed for the management and harvesting of “merchantable size” trees, and did not anticipate the potential effects of removing large volumes of woody biomass on a regular basis. A number of stakeholders

have proposed that standards be established to help assure the sustainability of biofuels production, to be used in the context of laws and regulations, economic incentives or in the establishment of voluntary certification systems (Bramble 2006).

## **A National Dialogue**

The Pinchot Institute, in cooperation with a number of other conservation organizations, natural resource agencies, and renewable energy companies, is convening a national dialogue to help guide the development of wood-based bioenergy by anticipating and avoiding significant impacts on important conservation values. The dialogue is bringing together multiple perspectives from within the conservation community—but also key organizations from among energy, agricultural, and sustainable forestry interests—to catalyze the development and implementation of an effective strategy for identifying and characterizing the potential risks to conservation values arising from wood-based bioenergy development, and establishing safeguards that will minimize these risks in the most constructive and effective manner.

The dialogue will take place in several sessions over the course of 2007, and possibly into early 2008 depending on when it is launched. The first, which the Rockefeller Brothers Fund has tentatively offered to host at the Pocantico Conference Center in Tarrytown, New York, would focus intensively on the multiple perspectives within the conservation community itself, including regional, national, and international conservation NGOs and environmental grantmakers with current interests in climate change, forests and bioenergy.

Subsequent sessions will be broadened to include a diversity of organizations from the energy, agricultural, and sustainable forestry interests, both to serve as information resources for the dialogue itself, and to build the basis for future partnerships based on shared goals for ensuring forest sustainability in the development of wood-based bioenergy.

In advance of the dialogue, the Pinchot Institute is coordinating the development of a small number of brief background papers on key topics directly relevant to the dialogue. The primary purpose of these background briefs is to provide factual information essential to framing the discussion, and also provide thoughtful analysis from several different perspectives to catalyze the on-site discussions and make them as productive as possible. These background briefs will also be compiled into a single document, a kind of primer for readers interested in learning more about the relationship between wood energy development and sustainable forest management, and made widely available in print and on the Pinchot Institute website ([www.pinchot.org](http://www.pinchot.org)).

The dialogue and background briefs will be organized to address the following information needs:

- *Realistic potential for wood-based bioenergy development.* Resources within the conservation community are limited, and wood-based bioenergy development will not take place everywhere. With a relatively modest level of analysis, it is possible to focus efforts on those locations most likely to see significant expansions of current demands on forests for wood-based bioenergy, areas that are already demonstrated to have:

- Supplies of woody biomass that are accessible, and could be sustained over a long enough period to justify significant new capital investment in bioenergy facilities
- Community support and state government interest in providing investment incentives for locating or expanding wood-based bioenergy facilities
- Existing transportation and utility infrastructure, and workforce skills that would be needed by a new or significantly expanded wood-based bioenergy facility

In addition, the type of wood-based bioenergy facility that is likely to be developed will make a significant difference in the kinds of pressures that will be brought to bear on local forests. For example, a new biorefinery with an expected capacity of a billion gallons of cellulosic ethanol annually such as the one recently announced in Treutlen, Georgia (Renewable Energy Access 2007), will have a far different effect on the region's forests than a 15 MW wood-fired electric power station such as the one recently announced in Lakeview, Oregon (Barnard 2007), or a community-based combined heat and power (CHP) facility such as the one recently opened in Gardner, Massachusetts (Rizzo 2006).

- *Potential environmental and conservation implications.* Substantial progress has been made during the past several decades of controversy over forest management. While government land management agencies and the forest products industry has been integrally involved in the development of today's generally accepted principles of sustainable forest management, the energy industry has not. Conservationists have expressed concern over potential negative impacts on important environmental and conservation values, particularly:
  - Biological diversity, both terrestrial and aquatic
  - Wildlife habitat and influences on abundance and distribution
  - Nutrient cycling, soil structure and fertility as it relates to maintaining biological productivity
  - Water quality and quantity, timing of peak flows, and soil erosion in headwaters of streams and tributaries of high conservation value
  - Air pollution from combustion processes, but also from raw materials transportation and handling
- *Adequacy of the existing governmental and non-governmental policy framework.* All of the laws, regulations and "best management practices" developed to guide forest management and timber harvesting for conventional wood products will continue to apply. Yet the sheer magnitude of the potential increase in wood harvesting—more than doubling by 2030 according to the USDA and DOE (Perlack et al. 2005)—and the shift in emphasis to woody biomass that typically remains in the forest after timber harvesting, suggests that there is a need to review, evaluate, and possibly augment the existing public policy framework in support of sustainable forest management. Similarly, the framework underpinning voluntary non-governmental sustainable forestry programs shares the same weaknesses. The principles and standards for the leading third-party forest management certification programs may likewise need to be reviewed, evaluated, and possibly augmented to support sustainable woody biomass removal from public and private forestlands.

- *Needed actions, both near-term and longer-term.* Addressing all of the various challenges simultaneously probably is not feasible—nor may it even be necessary, or an optimal use of limited human and financial resources. Clearly, some actions are needed in the near term, while others can be developed over the longer term as part of a comprehensive strategy for sustainable forest bioenergy development. Identifying the key actions needed, where they fall in this continuum, and what combination of public, private, and nonprofit public interest organizations is best suited to carry them out is central to the purposes and value of this dialogue.

Expanding renewable energy production, especially in a country with close to the highest per capita energy consumption in the world, is a common goal that is almost universally supported in American society, and within the conservation community. Wood-based bioenergy is virtually certain to be a major component, and may even present important new market opportunities that can result in significant improvements in sustainable forest management in the US. So the question before us is not *whether* there will be a major expansion in wood-based bioenergy, but *how* this expansion can be guided so as to maximize its value for progress toward an ecologically, economically and socially sustainable energy future.

This national dialogue is aimed at catalyzing the discussion that is needed, first within the conservation community itself, and then folding the resulting information and recommendations into the larger debate within civil society and among policymakers, so that future actions to promote wood-based bioenergy development will be as informed and intelligent as possible.

## References

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