

**Ensuring Forest Sustainability in the
Development of Wood Bioenergy**

Workshop Summary

PINCHOT INSTITUTE
FOR CONSERVATION



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Ensuring Forest Sustainability in the Development of Wood-Based Bioenergy: A National Dialogue¹

**Scoping Workshop
Pocantico Conference Center
September 17-19, 2007²**

Executive 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.³

Conservationists almost universally support renewable energy development. But they want to see it “done right,” especially when it comes to 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.

On September 17-19, 2007, the Pinchot Institute brought together leading thinkers from conservation organizations, natural resource agencies, forest industry, universities, and renewable energy companies to help catalyze the development and implementation of an effective strategy for identifying and characterizing the potential risks to conservation values

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³ 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>

Leadership in Forest Conservation Thought, Policy and Action



arising from wood bioenergy development, and establishing safeguards that will minimize these risks in the most constructive and effective manner. Following are a few of the key findings and observations based on presentations and discussions among the workshop participants, some preliminary conclusions and results, and proposed “next steps” for timely and effective achievement of the goals of this national dialogue on sustainable wood bioenergy development.

Findings and observations

- A broad diversity of interests see potential opportunities in the prudent expansion of wood bioenergy—for improved forest management, reducing the loss of forest land to development, and contributing to sustainable community development—but these opportunities will vary widely depending upon the type of wood bioenergy technology used, local forest characteristics and infrastructure, and the social, economic and cultural characteristics of local communities.
- A regional approach is needed in order to address major differences not only in forest types and other biophysical aspects, but different social, economic and cultural circumstances and preferences. The extent and effectiveness of existing safeguards to ensure that important ecological and environmental values are sustained in spite of increased removal of large volumes of woody biomass also vary widely from region to region, and state to state.
- Additional research may be needed to provide a better understanding of the potential effects of wood bioenergy facilities on the sustainable management of forests. But many important new insights can be gained through the synthesis of existing scientific information, and linking practitioner knowledge in the energy sector with that in the natural resource management sector.
- Energy companies unfamiliar with sustainable forestry issues tend to overestimate wood supply when looking only at standard forest inventory data. Feasibility studies for the siting of new wood bioenergy facilities often do not reflect the fact that other planned facilities are presuming access to the same forest resources, creating the potential for future overharvesting of local forests. Communication and coordination of this kind is sometimes limited by anti-trust concerns.
- Appropriate scale of wood bioenergy facilities is a key concern for sustainable community economic development. Communities are concerned that large-scale wood bioenergy facilities will overwhelm local capacity and infrastructure, as well as have unacceptable negative impacts on local forests. Traditionally forest-dependent communities are concerned about potential future economic dislocations associated with boom-and-bust cycles linked to world energy prices.
- Many rural, forest-dependent communities do not have access to adequate information to make reasoned choices on whether to pursue the development of a wood bioenergy facility, and if so, the type and scale that would be best suited to local circumstances.

Many communities have limited capacity for developing such information, and limited financial means for increasing this capacity.

- Even where all other ecological and economic factors seem favorable to locating a new wood bioenergy facility, active community support and leadership—not simply community acquiescence—can be the determining factor in the success or failure of the project.
- Although emerging markets for wood bioenergy would seem to be beneficial for federal land managers tasked with reducing wildfire risks in overstocked forests, the potential gains are seen as outweighed by potential consequences of government default on multi-year biomass supply contracts caused by decreasing budgets and/or court injunctions.
- The existing national-level policy framework for wood bioenergy development, consisting primarily of various subsidies, financial incentives, and protective trade tariffs, is piecemeal and lacks a coherent underlying strategy for supporting the development of sustainable wood bioenergy.
- There is broad-based support for a sustainable wood bioenergy “vision of the future” characterized by a decentralized, “distributed” energy production network, constituted by appropriately-scaled bioenergy facilities as determined by community needs and the sustainable use of local forest resources, public and/or private.
- The future of sustainable wood bioenergy is by no means guaranteed, particularly smaller-scale technologies and facilities that do not enjoy the same kinds of government support or access to private investment capital as large-scale facilities. If enough barriers are placed in the way, or there is enough complacency and unwillingness to take even manageable risks, many promising opportunities will simply be lost.

Preliminary conclusions and results

The key objective for the Pocantico workshop was to outline recent trends in the development of wood bioenergy, and opportunities to guide further development in order to achieve desired social goals for renewable energy production without engendering unintended negative consequences for environmental values and sustainable community development. The Pocantico workshop served as a *de facto* scoping session for a broader national dialogue, the overarching goal of which is to facilitate well-informed decision making regarding the choice of renewable energy facilities of the appropriate type and scale for local circumstances.

For its relatively small size, the Pocantico group represented an exceptional degree of diversity in perspectives, experience, and expertise—horizontally across a spectrum of interests that included energy producers as well as natural resource management specialists, and vertically from national-level policy experts to front-line field personnel who deal each day with the practical realities of energy production, sustainable forest management, or community economic development. Through a series of concise expert presentations and vigorous interactive discussions by the group as a whole, participants:

- Described and characterized the range of wood bioenergy technologies that exist today or are expected to be operational in the near future, including thermal, combined heat and power, wood pelletizing, industrial co-generation, wood-fired powerplants, biorefineries. Participants further described factors that influence the location and scale of such facilities, typical patterns of wood consumption and how these vary among different types of wood bioenergy facilities, and implications for local economic development.
- Examined the potential effects of accelerated, often uncoordinated wood bioenergy development on regional wood demand and harvest levels, and the implications of this for environmental quality and important ecological values in forests.
- Explored current initiatives aimed at reviewing, evaluating, and augmenting existing sustainable forestry standards regarding woody biomass removal. This included revisions in governmental standards such as federal environmental laws, state forest practices laws and voluntary “best management practices.” It also included nongovernmental standards such as those for independent third-party certification.
- Considered the spectrum of existing and emerging wood bioenergy technologies in terms of broader community and regional goals for economic stability and affordable energy. This included a brief examination of the factors that communities, governments, and industry consider in determining what types of wood bioenergy may be best suited to the local circumstances and goals.
- Incorporated this information, and the multiple perspectives represented among the participants, to summarize the key questions and information needs to be addressed in follow-up sessions, with the goal of fleshing out a comprehensive long-term vision for sustainable development that integrates natural resource conservation, appropriately-scaled renewable energy production, and sustainable community development.
- Agreed that a key objective of this dialogue, whatever form it should take, must be to “think two steps ahead instead of one,” that is, to anticipate and surface potential issues to address them proactively and, to the extent possible, guide the future course of wood bioenergy development in the US so that these issues never need arise. Timely and decisive action is needed before political battle lines get drawn and positions become entrenched, so that we can fully capitalize upon the opportunities in wood bioenergy to advance, not impede, further progress in conservation and sustainable forest management.

There was broad agreement that better information is needed as a basis for more effective dialogue at all levels, national to local. Specifically, accurate up-to-date information on available and emerging wood bioenergy technologies is needed to provide the basis for a better informed dialogue on how best to take advantage of wood bioenergy opportunities without engendering unacceptable—and almost certainly unintended—negative consequences for environmental quality or sustainable community development. Local community leaders have a pressing need for this information as well, not just federal and state policymakers. Information is needed in a form that will help guide communities—

especially rural, forest-dependent communities—in making intelligent choices on (1) whether to attempt to attract new local investment in a wood bioenergy facility, and (2) if so, which type of facility or facilities might be best suited to local circumstances. Local circumstances to be considered include not just the area's forests and other biophysical resources, but the economic, social and cultural values and goals of individual communities.

Three distinct categories of needs were identified: research, synthesis, and policy development.

Research. Most of the research and new science around wood bioenergy today is devoted to developing new chemical and physical processes for efficiently turning wood into electricity or liquid biofuels—once it arrives on site. Much less attention has been devoted to questions of how the woody biomass will get there, e.g., how and where it will be grown, harvested, transported, and processed into the form in which energy users need it, and how all of this fits into our existing vision and goals for conserving and sustainably managing the nation's forests. Socioeconomic research is needed as well, to address questions such as:

- What are the key variables, other than simply the price of oil on world markets, that will determine the extent, types, and locations of wood bioenergy facilities in the foreseeable future?
- Is there more than one plausible scenario that justifies in-depth exploration?
- How sensitive are various types of bioenergy facilities to unexpected shifts in these key variables, and what are the potential risks of downturns for reinvestment in sustainable forestry, and economic stability in forest-dependent communities?

Synthesis. Addressing at least some of the key questions may not actually require new research, but a synthesis of existing information targeted to a specific need. Such a synthesis would bring together best available information from a variety of different sources, and perhaps originally developed for different purposes. It would connect what we already know about what is needed to sustain the ecological, economic and social values of forests to address the additional demands that extensive energy uses are likely to place on these natural resources.

Policy. The policy environment in which decisions are made can have an indirect but potentially major effect—positive or negative—on the future course of wood bioenergy development. Getting the policy signals right will be essential to ensuring federal land management decisions, corporate capital investment decisions, and decisions by individual woodland owners that take wood bioenergy development in a constructive direction.

- How are the implications of wood bioenergy development for forests and communities likely to be influenced by governmental and corporate policies?
- What is the likely effect of national policy and priorities for renewable energy development and energy security (e.g., incentives, subsidies, trade tariffs) with regards to other forms of renewable energy (wind, solar, etc.), and existing value-added wood products manufacturing?

- How are state-level Renewable Portfolio Standards expected to drive investment in new wood bioenergy facilities? How can this be expected to vary across states with different standards? What would be the effect of a national Renewable Portfolio Standard, or national targets for wood bioenergy development?
- Is there a need for some type of national-level leadership on an enabling policy framework (e.g., overarching goals, research support, statistical reporting) within which states have flexibility to develop policies and implementation plans suited to their individual circumstances?
- The future of forests and forestry in the US is likely to be influenced far more by energy policy than by traditional forest policy; how might this be factored into ongoing sustainable forest management policy efforts (National Report on Sustainable Forests [C&I]; National policy on forests [NASF initiative]; Forest Service “Redesign”)
- What are the policy barriers to taking advantage of expanding markets for wood bioenergy, and what is the role of Federal natural resource agencies in addressing them?
 - Private forests
 - Timely market information
 - Enhancement and “packaging” of forest inventory and analysis (FIA) data for use by private forest owners/managers, and by energy producers in analyzing local potential for sustainable woody biomass supply
 - Guidance on forest practices oriented to maintaining resource productivity and countering the effects of past “high grading”
 - Public forests
 - Uncertainty over long-term sustainable level of woody biomass (as opposed to short-term supply from treatments to reduce wildfire risks, or from insect/disease mortality)
 - Potential for additional pilot projects to test concept of publicly-developed multi-year agreements to facilitate private capital investment in appropriately-scaled wood bioenergy facilities
 - Opportunities for broader Federal interagency cooperation toward the development of a more decentralized energy network that stabilizes energy costs to rural communities, and provides greater energy security locally, regionally and nationally

Next steps

Several participants asserted early in the discussions that achieving the stated goals of this dialogue will require follow-up sessions that are regionally specific. This assertion was reinforced several times over the course of the workshop, and was consistently supported across the spectrum of interests represented by the workshop participants. The forest characteristics, land ownership patterns, existing energy infrastructure, economic trends, cultural values and other important attributes differ significantly among major regions of the United States, and this will profoundly affect the needs and opportunities associated with wood bioenergy development. Development of a national-level policy framework that allows flexibility for different state-level approaches is a worthy goal, but it is difficult to

achieve this goal without knowing what kind of regional differences need to be accommodated.

State government interests will be an essential component to include in any follow-up sessions, both to ensure that their perspective is considered, and to coordinate more closely with efforts already under way in many states. Several regional governors' associations have task forces on renewable energy development, climate change mitigation, wildfire protection, and other topics related to wood bioenergy development, and these should be incorporated into the network that this national dialogue is building.

Near the close of the workshop, the participants made clear that they did not want this to be "a one-shot deal," i.e., that in order for this effort to be effective there would need to be continued commitment by the diversity of interests represented in the group. It was suggested that, if the Pinchot Institute is able to move forward with organizing and facilitating a follow-up series of regionally-specific workshops, that at least a few members of the Pocantico group should participate—to help identify potential participants, to contribute to the regional workshop discussions themselves, and to assist in interpreting and articulating the results of the regional workshops in the development of any national-level direction.

It was also suggested that the Pocantico group itself may want to come back together as a group to help synthesize this information and formulate a set of findings and recommendations for the development of national direction. It was understood that this would require a continuing commitment of time and resources from these individuals and their organizations. The fact that these individuals were willing to offer such a commitment, given how thin many of them are already stretched, is a very positive indication. Clearly there are shared concerns that the development of wood bioenergy be "done right" so that it does not have unintended negative consequences for forests or communities. But there is also an express willingness to work constructively across interest group lines and across geographic areas of interest to develop guidelines that have the power of the broad consensus that underlies them.

With this in mind, it is the intention of the Pinchot Institute to move forward with planning three possible region-specific workshops:

- *North.* This region would include the Lake States as well as the Northeastern States. The workshop would take advantage of the long experience this region has in developing a wide range of wood bioenergy facilities, from the wood-fired powerplants developed in response to the energy crisis of the 1970s to cutting-edge research and development on the adaptation of pulp and paper manufacturing technology to the production of liquid biofuels.
- *South.* This region would include the southern Appalachian and Gulf Coast states from Virginia to Texas. It is expected that this workshop will have a particular focus on the development of liquid biofuels from wood, and implications for feedstocks that include existing forests but also proposed short-rotation woody crops and other quasi-agricultural sources.

- *West.* This region would include most of the area west of the Mississippi. A particular focus of this workshop would be the preponderance of public forest ownership, and how wood bioenergy is expected to develop in an area characterized by dispersed populations, with many forest-dependent communities, and priority goals for reducing wildfire hazards and insect mortality in overstocked forests.

It is expected that these regional workshops could be completed in 6-8 months from initiation. The timing is dependent upon securing adequate financial support to carry out these activities, keeping in mind that the opportunity to “get out in front of the curve” and proactively address these challenges will pass quickly.

If it is possible to bring the Pocantico group together again to review the results of the regional workshops and formulate their own comprehensive set of findings, conclusions, and recommendations, it is expected that this would take place within two months of the last regional workshop. The objective would be for the entire set of follow-up activities to be completed within one year. Various briefings, presentations, and other communications activities would continue over a period of months following the completion of a final report containing the findings, conclusions and recommendations.

Conclusion

Like many in the conservation community, the Pinchot Institute is intrigued and encouraged by the possibility that emerging markets for wood bioenergy may help slow the tide of forest losses to development in the US, and contribute to improvements in forest management that will enhance wildlife habitat, water quality, biodiversity and other important conservation values. Experience shows, however, that good things like this do not often happen if left purely to chance, and that unwanted negative consequences can arise from the very best of intentions if they are not well thought through beforehand.

Experience has also taught us that the earlier one can start thinking through the possibilities, and the greater the diversity of expertise and perspectives that can be brought to bear on the process, the greater the likelihood of success in capturing the opportunities and avoiding the pitfalls. Mitigating climate change and enhancing energy security are certain to be major national priorities in the US for the foreseeable future, and wood bioenergy is certain to be one of the means by which we attempt to address these challenges. Understanding all its possibilities, and making informed choices about the type and scale of wood bioenergy that is developed in different regions of the country, will be the key to ensuring that this is a positive development for forest conservation and sustainable community development.

Additional information about the Pocantico workshop, including speaker presentations and list of participants can be found at www.pinchot.org. The Pinchot Institute wishes to thank the following organizations for making this effort possible:

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