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# Ensuring Forest Sustainability in the Development of Wood-based Bioenergy in the Great Lakes Region

September 9-10, 2009  
Chaska, MN

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**Meeting Summary**  
**Ensuring Forest Sustainability in the Development of**  
**Wood-based Bioenergy in the Great Lakes Region**

**September 9-10, Chaska, MN**

**Introduction**

This workshop on wood bioenergy development in the Great Lakes region was convened as part of a national dialogue on ensuring sustainability in the expanded use of forest biomass for energy. The dialogue is exploring issues related to the pace and nature of bioenergy development, availability of adequate feedstocks, appropriate measures to ensure the environmental, economic, and social sustainability of the bioenergy industry. It is clear that the expanding bioeconomy is bringing groups together that have not worked closely before--the forest and agricultural sectors and the energy industry. This dialogue, focusing on forest-related issues, is meant to find the major areas where the federal policy framework will need to maintain flexibility at the state level, while supporting and ensuring sustainable bioenergy development and support of state initiatives.

Workshop participants from across the Great Lakes region of Ontario, Michigan, Wisconsin, and Minnesota included about 45 representatives from the energy industry, forest products industry, USDA Forest Service, state forestry, economic development agencies, conservation NGOs, and academia. The workshop on September 9-10, 2009 was intended to explore common views of how bioenergy expansion might increase forestland value for landowners, safeguard conservation values, avoid unnecessary controversy over forest management and biomass procurement, and identify opportunities to maximize the net public benefit of this developing sector. More specifically, the Great Lakes workshop focused on:

- Defining data and information needs for current and future supplies of biomass.
- Enhancing regional stakeholders' ability to evaluate policy options.
- Identifying opportunities to adaptively manage biomass harvesting and supply logistics.

**Data and Information Needs for the Great Lakes Region**

A great deal of uncertainty remains about the cost and availability of forest biomass to meet state, provincial and national energy goals. The group identified a critical need for both regional- and site-level resource assessments.

Regional level assessments are needed to assist in planning and policy development, and to assist in evaluating tradeoffs. It was acknowledged that the use of roundwood for a significant portion of electricity, thermal, and biofuels feedstock was probably inevitable, and that this set the stage for possible competition for supply with existing pulpwood users. (However, attendees cautioned

against perceptions that bioenergy and existing forest products are necessarily competitive. See next section.) It was also acknowledged that in aggregate, potential demand for wood for energy production greatly outstrips likely supply,<sup>1</sup> and that allocation among these demands will produce different levels of socially valued outputs. Differing uses of biomass produce different employment outcomes, posing an important choice.<sup>2</sup> (At the same time, there are some regions in which demand is low or nonexistent, and thus such choices are less of an issue.) Different bioenergy technologies also result in different levels of efficiency and greenhouse gas (GHG) emissions, while different feedstock production strategies (e.g. energy crops, biomass/roundwood, etc.) have different GHG, soil productivity, water quality, and habitat consequences.

Participants noted that the due diligence required to obtain project financing addressed only a single dimension of sustainability – ensuring adequate supply (generally through contracts). Some participants identified a key public sector role in assuring that other dimensions of sustainability are addressed. Economic development authorities were encouraged to evaluate proposed projects based on similar criteria (i.e., jobs created or retained/energy produced/GHGs reduced per ton of biomass) to maximize the net benefit of individual projects and public monies.

Site-level feedstock supply assessments are needed and should take into account the elasticity of supply, given factors such as environmental availability, preferences of non-industrial private land owners, transportation costs,<sup>3</sup> and feedstock characteristics such as species, composition, moisture, and specifications for different end uses. There was support for a strong public sector role in making this information available and spatially explicit, to complement information gathered by energy company planners.

Participants noted that global climate policies will likely expand international demand for biomass (as with current pellet export to Europe), a factor that should be considered in regional biomass supply assessments.

### **Ensuring a Sustainable Build Out with Effective Policy**

Forest biomass is often described as a vast, largely untapped, and deployable resource. Yet, as noted, wood can only supply a small fraction of the demand to meet overall energy needs. Participants recognized the private sector's driving role in determining a final "build-out", but also emphasized the important role of the public sector in shaping this build-out. Discussion focused on maximizing the efficiency of biomass use, minimizing conflict with existing forest products users, and the nature of public incentives.

Several participants described the relative efficiency of thermal and combined heat/power (CHP) applications. Some participants recommended policies that favor or at least treat this application

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<sup>1</sup> One estimate is that Wisconsin's energy needs would require about 120 million oven dried tons (ODT) of biomass, but only 2 - 3 million ODTs of actual woody biomass are available in the state annually.

<sup>2</sup> One participant asserted that a given wood supply could support 1,000 jobs at a paper plant, 400 jobs at a pellet plant, or 200 jobs at a bio-power plant. While these numbers should only be viewed as an approximation, they illustrate well the potential tradeoffs.

<sup>3</sup> According to participants, transportation costs can range from around 20% to over 60% of the cost of biomass supply.

equally with others (i.e. fuels, electricity). See next section.

Increased demand for biomass for energy has often been viewed as directly competitive with existing forest products users. Both energy and forest products sector participants noted strong potential synergies, stating that existing forest products facilities are a valuable part of a healthy supply chain for both industries. Because there is great uncertainty regarding emerging technologies and an uncertain future for the forest products industry, identifying, taking advantage of, and supporting these potential synergies through policy remains a challenge.

Current and impending energy and climate policy is driving the energy sector to make decisions now that will lock in a development path for the next few decades. There was concern that key decisions are being made while supply logistics and promising technologies such as torrefaction remain uncertain. In addition, while existing fossil fueled generating facilities are relatively larger, it is likely that more numerous, smaller facilities will be developed in the future. Smaller scale options are often easier to reconcile with local/regional sustainability, supply, and competition for feedstocks. Meeting expected energy demands – such as those resulting from Ontario’s policy to replace coal-generated electricity by the year 2014 – will require careful attention to sustainability and supply as up to 1,600MW of biomass fired capacity is considered.

Participants made the following observations about public policies needed to shape a positive biomass energy future:

- Additional research and demonstration is clearly needed to improve the economics of sustainably harvesting, handling and transporting biomass, and to identify how policy can best facilitate competing interests.
- Direct incentives, subsidies, and mandates may not be the most effective approach to meeting climate change and energy security challenges. Valuing carbon emissions will provide a more comprehensive and flexible incentive structure.
- Supply chain incentives such as the USDA Biomass Crop Assistance Program (BCAP) may not be doing what was intended. Some participants asserted that the way the program was begun, with a focus on transportation costs, may actually subsidize existing wood and residue markets rather than creating incentives for energy crop production.
- Property tax incentives could help landowners grow energy crops or supply biomass through activities such as pre-commercial thinning and wildlife habitat improvements.
- The significant acreage of public (county, state, and federal) forests, much of it certified under FSC or SFI, might be an incentive for developers to require or transition to certified supplies, encouraging the further participation of private landowners in these programs.

### **Efficient use of a Limited Resource**

It was widely noted that, despite perceptions, biomass is a scarce resource and that its efficient use is an important aspect of sustainability. As noted, some participants emphasized the relative efficiency of some technologies (thermal and CHP), and noted the potential for public policy to promote efficient use of biomass resources. At the same time, CHP and district energy will be limited by the availability of appropriate infrastructure to serve as a heat sink, community willingness or ability to invest, the status of existing wood markets and infrastructure, and interconnection policy. Also the choice of energy technology will be influenced by a range of

factors other than policy, including the nature and amount of feedstock available and economic development considerations.

Policy options discussed to address perceived lack of incentives for thermal and CHP applications include:

- State and federal policies might focus incentives on expanding highly-efficient uses of fossil fuels and the reduction of GHGs, which would likely favor thermal options. Some noted that Europe had proceeded along a similar path with policies that promoted wide use of CHP and district energy systems. Others noted that the electricity sector is already heavily regulated, making it an easy target for structured incentives.
- As noted, some participants favor a technology neutral strategy based on carbon pricing as a means to promote renewable thermal and energy efficiency.
- A leveling of the playing field to include thermal energy in national climate and energy legislation. Options include a Renewable Thermal Standard, crediting renewable thermal projects through a conversion factor for sale in the REC market (eleven states currently have some permutation of a renewable thermal energy standard), and ensuring parity in tax and other financial incentives to encourage thermal applications.
- State and federal programs to encourage efficient biomass options for residential, commercial, and industrial uses. Seven states have Fuels for Schools programs in place and Wisconsin and Michigan have pilot programs in place that could be emulated.
- A federal revolving loan fund to invest in district thermal grid infrastructure necessary to take advantage of CHP, geothermal, and solar thermal options.

### **Sustainability Standards**

It was suggested that a portfolio of options may be the most efficient, effective and flexible way to ensure a robust and sustainable biomass supply in the region. Policy could require facilities to source biomass from lands covered by a forest management plan, a robust practice plan similar to a harvesting plan, a third party certification system, or biomass harvesting guidelines. The details of what specific provisions need to be included in these plans were not addressed. To some extent, the Great Lakes region's early leadership on forest certification and biomass harvesting guidelines limit the risk of future supply disruptions and potential for controversy over sustainability, thus making the region an attractive location for the energy industry. Many energy companies perceive the benefits of 3<sup>rd</sup> party validation and some have begun to write such requirements into supply agreements.

There was discussion about what level of (e.g. local, state, regional, federal, international, market) should implement sustainability standards:

- In general, most participants favored a state-oriented approach, with regional coordination to avoid fragmenting markets.
- If federal law requires a "look back" after initial implementation, participants believed this should be accompanied by federal funds for monitoring and evaluation.
- State and regional efforts could be augmented by federal and international standards focused on broad principles for international cooperation on sustainable sourcing.
- Regional coordination on monitoring of guideline implementation and coordination of supply were viewed as being critical.

Participants suggested that sustainability guidelines should apply to energy crops, including agricultural feedstocks to create a level playing field and encourage sustainable agricultural practices. At the state, regional and federal policy levels, there needs to be a process to identify:

- Marginal lands that may be appropriate to bring back into production for energy plantations. Minnesota is working to identify one million acres to be reforested, and there was support for a similar regional landscape analysis to assess the region's potential to produce biomass and other ecosystem services.
- Management actions needed to ensure that soil and water quality, biodiversity, carbon sequestration potential and other values can be maintained or enhanced.
- What entities (e.g., facilities, natural resource agencies, or agriculture agencies) should be responsible for developing and implementing guidelines for energy crops.

Participants noted that successful sustainability guidelines are characterized by broad buy in, funds for education, monitoring and evaluation, forest and energy industry engagement, and coordination between state governments. One suggestion was to develop a regional framework to evaluate the effectiveness of harvesting guidelines. Logger awareness and training to meet state guidelines and certification is important as well.

The large amount of county, state and private land that is certified is viewed as a regional asset, but certification is largely not addressed by state energy policy. Market pull – encouraged by state policy could recruit more landowners to certification programs and sustainable management more generally. Ensuring that small landowners can take advantage of the market access provided by certification remains a challenge, but at least one of the major certification systems is revising their standards to provide flexibility for small landowners.

Lastly, the region has a strong culture of assessing environmental impacts and has stringent state environmental permitting processes. The flip side is that many states in the U.S. currently lack such robust environmental review processes and may be more successful in attracting industry.

### **Opportunities to Enhance Regional Coordination**

There was significant interest in regional coordination to advance sustainable biomass production. Several potential areas were identified, and there was a strong sense that regional discussions to refine these and possibly identify other action items should be pursued. In this regard, the Great Lakes Forestry Alliance was identified as uniquely positioned to coordinate regional efforts. Possible areas of collaboration included:

- Region-wide assessments of available and sustainable biomass supply, marginal land appropriate for energy crop production, lands not appropriate for biomass harvesting, and identification of methods for determining and marketing ecosystem service values.
- Identification of a common research agenda to leverage resources and avoid duplication. This may include regional coordination on how best to address the topic of environmental review and life cycle assessments, and identification of indicators of sustainability.
- Evaluating the implementation and effectiveness of biomass harvesting guidelines.
- Formation of recommendations to federal policy makers on what specific resources are needed to support research on sustainability.

## Attendees

Art Abramson  
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Frontier Renewable Resources

Don Arnosti  
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Institute for Agricultural and Trade Policy

Dennis Becker  
Assistant Professor  
Department of Forest Resources  
University of Minnesota

Steve Betzler  
Account Manager  
Minnesota Power

Cara Boucher  
State Forester  
Dept of Natural Resources

Jim Bowyer  
Director of Responsible Materials Program  
Dovetail Partners

Wayne Brandt  
Executive Vice President  
Minnesota Forest Industries

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Office of Energy Security  
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The Nature Conservancy

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Fred Souba  
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Keith Stewart  
Climate Change Director  
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Brian Warner  
Director of Environmental Services  
Wolverine Power Cooperation

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