



Recent Research on the Ecological and Economical Sustainability and Carbon Benefits of Renewable Forest Biomass

Ecological Implications of Biomass Policies for Private Forests in the United States. Dr. Alan Lucier, National Council for Air and Stream Improvement.

www.nafoalliance.org/biomass-ecological-sustainability

- Owners of working forests in the U.S. meet high standards of environmental performance through compliance with environmental laws and voluntary programs. Ecological risks associated with increased biomass utilization are mitigated by existing legal and socioeconomic frameworks that encourage sustainable forest management.
- Economic returns for wood production and forest-based manufacturing provide important means and incentives for investments in private forest stewardship and promote maintaining land in a forested condition.
- Recently adopted biomass policy discourages use of biomass from naturally-regenerated forests, the establishment of new forest plantations, and utilizing traditional uses of biomass. Such policy imposes high operating and opportunity costs on forest owners and encourages the conversion of private forests to other more economically competitive land uses.

Biomass Carbon Neutrality. Reid Miner, National Council for Air and Stream Improvement. www.nafoalliance.org/biomass-carbon-neutrality

- In the context of biomass energy, “carbon-neutrality” reflects the fact that biomass carbon was only recently removed from the atmosphere and is part of a natural cycle. When this cycle is in balance, it has a net zero impact on atmospheric carbon; i.e. it is “neutral.” This is an important distinction between biomass carbon and the carbon in fossil fuels.
- The balance of the biomass carbon cycle is most appropriately addressed at the national scale. Assessing the biomass carbon cycle at the individual plot level yields a misleading picture because it ignores trees growing on other plots that will be harvested in future years. If wood-producing land is being regrown to pre-harvest carbon stocks before it is harvested again, the atmosphere sees a net zero carbon “emission.”
- The biomass carbon cycle is never exactly in balance. Loss of forests in the tropics is a significant source of emissions, while forests in the U.S. absorb more carbon than they lose through decay, harvesting, and fires.

- By inserting energy production into the biomass carbon cycle, we can produce energy without adding combustion-related fossil fuels carbon to the atmosphere.
- The U.S. has a well-established system to account for forest carbon stock changes annually. It shows that U.S. forests supplying wood to the industry have stable or increasing stocks – meaning that the net carbon stored by these forests is accumulating over time.

***A Developing Bioenergy Market and its Implications on Forests and Forest Products Markets in the United States: Economic Considerations.* Clutter, Abt, Greene, and Siry. www.nafoalliance.org/clutter**

- Landowner response to developing markets plays an important role in meeting the future supply needs of a developing wood-to-energy sector, and understanding landowner response to market demand underscore the sustainability of the resource.
- Many U.S. forestlands are not as productive as they could be, because decreased manufacturing capacity and lower prices for pulp and paper and other forest products reduce the ability of landowners to invest in forest management.
- Given the right market incentives, forest owners can significantly increase forest productivity – particularly in plantations in the Pacific Coast and Southern regions of the United States. Intensively managed timberlands can increase productivity 150 percent, while less intensively managed timberlands could increase productivity by 75 percent.
- While emerging renewable energy markets may cause supply to be limited and prices somewhat higher in the short-run, in the medium and long-run supply catches up with demand resulting in lower supply costs.

***A Practical Guide for Tracking Wood-Using Bioenergy Markets.* Dr. Brooks Mendell and Amanda Hamsley Lang, Forisk Consulting. www.nafoalliance.org/forisk**

- It is important to accurately predict demand – not every announced biomass energy plant will come online. Use of a practical, data-driven screening methodology examining siting, financing, permitting, sourcing of raw materials, and other factors, shows that the ramp-up of renewable energy production will likely be gradual. This will help supply match demand – easing concerns over supply constraints and price spikes.
- As of April 2010, 130 announced or operating wood-consuming bioenergy projects in the U.S. South represent 46.6 million tons per year of announced capacity of which 18.9 million tons per year of capacity, or 41% of the announced capacity, is predicted to be in operation by 2020.