



Environmental and Energy Study Institute

Carol Werner, Executive Director

Sustainable Forestry and Wood-based Energy Conference Call Notes November 29, 2007 3:00 pm EST

Participants

Jesse Caputo
Agriculture and Energy Fellow, Environmental and Energy Study Institute
jcaputo@eesi.org
(202) 662-1883

Jetta Wong
Agriculture and Energy Senior Policy Associate, Environmental and Energy Study Institute
jwong@eesi.org
(202) 662-1885

Dr. Alex Finkral
Associate Professor, Northern Arizona University School of Forestry
alex.finkral@nau.edu
(928) 523-1378

Dr. William Keeton
Associate Professor of Forest Ecology and Forestry, University of Vermont
william.keeton@uvm.edu
(802) 656-2518

Dr. Wayne Clatterbuck
Professor of Forestry, Wildlife and Fisheries, University of Tennessee
wclatterbuck@utk.edu
(865) 974-7126

Notes

J. Caputo: EESI is a policy organization, we're looking to distill our conversation into policy suggestions.



Environmental and Energy Study Institute

Carol Werner, Executive Director

- J. Wong: EESI is a non-profit started by Congress in the 1980's, but then we broke off from Congress due to a change in rules. We focus on federal policy, have four major programs: Climate Change and Energy, Agriculture and Energy, Transportation, and Smart Growth, all viewed through a greenhouse gas lens. We also look at state policies to see if they can be bumped up to a federal level. We want to take into consideration sustainability and scientific backing for policy.
- W. Keeton: I'm working on carbon sequestration as a function of forest stand development, and also looking at silviculture of forest carbon management, one element of which is biomass fuel.
- W. Clatterbuck: University of Tennessee involved with biomass technology, we're a Sun Grant Center. We're seeing a lot of things that may or may not be true. We're involved in building a 5 million gallon demonstration cellulosic ethanol plant.
- J. Wong: Is that Mascoma?
- W. Clatterbuck: Yes
- J. Caputo: I'd like to talk about the implications of increased bioenergy on forest ecology. A common idea is that the bioenergy industry could open up markets for small-diameter low value material. How do you feel that silviculture could change? What opportunities are out there?
- W. Keeton: Huge interest in cogeneration plants, wood chip-fired boilers here in the Northern forest region. Key issue is potential increase of whole tree harvesting on nutrient impaired sites. We can have calcium depletion, acid deposition. There are many positive aspects of harvesting low grade wood for biomass production, economic and ecological. New market allows for more stand improvement. There is a concern that we will start cleaning out a lot of material from our forests. In New England, there is concern over procurement standards for whole tree harvests... In terms of harvesting low grade material, do we need retention standards for wildlife trees and to ensure sufficient recruitment of large downed logs?
- J. Caputo: Are you familiar with the voluntary Minnesota guidelines regarding biomass?



Environmental and Energy Study Institute

Carol Werner, Executive Director

- W. Keeton: We're looking at those. We have procurement standards that our existing biomass fueled power plants have. Middlebury College has their own procurement standards. But we still feel like there's a lot of work to be done.
- J. Caputo: The Minnesota guidelines have some pretty explicit numbers; I'm not sure where the numbers came from and what the implications would be of extending them outside the state. For example, they suggest keeping 30% of residual material... What do you think about that?
- W. Keeton: You're talking about slash – uppers and crowns?
- J. Caputo: Slash and dead standing stems and culls...
- W. Keeton: If they're referring to the uppers that you would leave as opposed to whole tree harvests, I would say that number is suspect. The number would vary a lot based on site nutrient status. We have a lot of work going on to map the region in terms of susceptibility to calcium depletion and other things. The number might be a good starting point for discussion, but I would want something more site specific.
- J. Caputo: That was my concern also. What do you think of FSC or SFI or those voluntary certification programs? The concern of doing bioenergy sustainably is huge, but how to do that through state and federal regulation is difficult to figure out because it's about land management and not the final product.
- W. Clatterbuck: We don't have that in Tennessee. I only know of 2 tracts that are FSC certified out of 11 million privately owned acres, and they're not getting any financial benefit for being certified. We have a lot of industry that is SFI, but in the last 3 years 1.5 million acres of former industry land has been sold, and we don't have any more "forest industry land" in the state anymore. Everything is going toward private ownership.
- J. Caputo: Is it going more toward TIMOs /REITs or more private non-industrial development?
- W. Clatterbuck: TIMO's and REIT's have bought a lot of that land, but they will tell you that their planning horizon is 10 years and they're going to do something else. We're 90% hardwood, so I think in much longer term than 10 years.
- W. Keeton: FSC certification is pretty big here in Vermont, also SFI. It's increasing all the time. Our landowners haven't gotten a premium on their property, but it gives them access to



Environmental and Energy Study Institute

Carol Werner, Executive Director

buyers that will only buy certified wood. So that is an economic incentive for certification. Rainforest Alliance and Smartwood have started a forest-carbon program, to look at ways to allow FSC certified landowners to participate in carbon markets. I haven't heard of anything coming out of FSC to address biofuels, has anybody else?

J. Caputo: My understanding is that FSC standards as written with land management in mind, as opposed to the end product, so they would catch what needs to be caught, if I were using my wood for bioenergy.

W. Keeton: I disagree. FSC standards are very vague when it comes to actual silviculture. Objectives are very broad: conserve biodiversity, maintain site quality, etc. When it comes to specifics like whole tree harvesting, etc., it leaves too much to the discretion of the individual auditing teams.

A. Finkral: I agree. My experience with certification was in Southern New England a few years ago and it's more focused on process than on specific types of things... Sometimes that latitude that's given to the auditors is a good thing, but the FSC principles really aren't as specific as I'd thought they would be.

J. Caputo: Do you think Forest Service standards need to be made more specific?

A. Finkral: For the Western United States, fire rules everything. The issue here is to get rid of as many small trees as possible to make things more sustainable. We have two problems: there's no ability to cut trees over 16" in diameter on federal lands because of environmental pressure. But there's nothing to do with the smaller diameter trees so they are used for firewood or piled and burned.

J. Caputo: Are you familiar with the White Mountain stewardship contract on Apache-Sitgreaves Forest?

A. Finkral: They are doing something more creative than the National Forests near Flagstaff.

J. Caputo: I know they have good communication going with local environmental groups and are able to remove a number of those more merchantable trees.

A. Finkral: That's a neat example that we hope will spread throughout the region. There's a sawmill on Apache land that deals with the larger trees, but otherwise sawmill capacity has dried up in this region.



Environmental and Energy Study Institute

Carol Werner, Executive Director

- J. Caputo: I would think that the density of over 16" trees is still higher than the historical norm.
- A. Finkral: Yes, way higher, and there's no good scientific or ecological reason not to cut them. But there is a well-organized environmental communities that effectively hold up activities on public lands.
- J. Caputo: Is it more through appeal and litigation, or does the Forest Service know its boundaries with these groups and agrees to stay on the safe side?
- A. Finkral: There's an unwritten understanding that any prescription that involves cutting larger trees will be challenged in court. Greater Flagstaff Forest Partnership designed a thinning project on one side of town, and Center for Biological Diversity is challenging it.
- J. Caputo: How big of an effect do appeals and litigation really have? One of the purposes of Healthy Forests was to get past these hurdles, but it hasn't done such a good job. But there are a lot of statistics that show that a lot less treatments actually get to litigation than you'd think... something like 24%.
- A. Finkral: What happens is that the guts are torn out of the prescriptions and then they happen. It's the threat of litigation that sends this back to the drawing board and it's completely compromised in terms of fire risk reduction.
- J. Wong: What was the specific reason for Center for Biological Diversity's litigation?
- A. Finkral: It was about what scale you use the data that was collected. It was about trees per area, is that at the acre/ hectare level, at the patch and gap level? Some wildlife species are sensitive to structural changes. If you collect data on a 100 hectare area and average that, that may or may not reflect what particular species need. In my opinion, this has been considered over and over again. It might be a small way to just stall the process. There's a great group of environmental organizations in this region that participate in these planning processes in a more collaborative way.
- J. Caputo: Let's move away from impacts and talk about the potential for bioenergy to influence new silvicultural systems or old, traditional ones and make them players. Do you think it will move us toward greater use of even-age silviculture? Potential to shorten rotation lengths?



Environmental and Energy Study Institute

Carol Werner, Executive Director

W. Keeton: I think short-rotation element will only come into play in rare situation, like if biomass is being produced intensively on industrial lands or agricultural lands planted with high-yield crop species grown specifically for pulp/fiber/biomass fuel. I think the biggest change will be a significant increase in stand improvement style thinning which could be great if done carefully or deleterious if we clean out forests. Also potential for increase in whole tree harvesting.

W. Clatterbuck: We don't have any small diameter markets... Hardwood pulp goes for \$25 per ton. We do get bombarded by some interest groups about short rotation hardwoods and I don't see that happen with the inputs you need compared to the returns. Not going to happen over short term. We're sort of at a stand still in that we don't really practice silviculture because we don't have markets. We don't even have co-firing here, we're in the middle of coal country and coal is cheap. We have had chemical wood plants in Tennessee in the past. They clear cut low quality land every 30 years. I can see some of that happening on poorer lands that can't grow saw timber anyway if the market is strong enough.

J. Wong: When was that?

W. Clatterbuck: 1950's... That would be a productive use of that land to some degree.

J. Wong: What's that land in now?

W. Clatterbuck: It's in trees, all privately owned.

J. Wong: Those wood chemical plants don't exist anymore?

W. Clatterbuck: No.

J. Wong: Because petroleum chemicals were cheaper?

W. Clatterbuck: Yes.

W. Keeton: One positive on the biomass fuel issue is the potential to do rehabilitation silviculture in those areas. If the price of chips and biofuel comes up a bit, it can provide at least some reimbursement for rehabilitation treatment.



Environmental and Energy Study Institute

Carol Werner, Executive Director

- J. Caputo: Wildlife habitat silviculture is getting more popular. I've seen a lot of chipping in place or stump-grinding type silviculture to open up some early successional habitat. I would think those kinds of treatments could receive a real advantage from these kinds of markets.
- J. Wong: In the Northwest, you would need a stewardship contract to do something like that on public land.
- J. Caputo: Yes.
- J. Wong: Wayne, do you have any contacts with any of those chemical wood plants?
- W. Clatterbuck: Old foresters.
- J. Wong: The whole concept of energy is very important when looking at our forests, energy prices, and climate change. Besides chemicals, biobased products have often been overlooked. My understanding is that the chemical products that you will get from the biorefineries will be high value. Chemical wood plants in Tennessee might come back. Right now, chemicals are coming mostly from corn and soy, but there is potential from wood also. We'll follow up on that.
- W. Clatterbuck: Our wood chemists are looking at that. They doubt that unless things change in the short-term, the profit to make ethanol from wood will be very slim. It's really going to be on the wood chemical side. There are three ways to produce ethanol: thermal, chemical enzyme process, pyrolysis. They're building an enzyme process here but the wood tech people are really looking at pyrolysis.
- J. Caputo: The Range Fuels facility in Georgia is going to be a combination of thermochemical and biological, but I think they are also going to produce ammonia which will be a value-added product for them.
- W. Clatterbuck: If we get into a large small-diameter market, what impact will that have on the environment and nutrient flow and carbon sequestration? There's not a lot of data out there. We get that question a lot. If you're looking at limbs, tops of hardwood, except for the calcium element which is different depending on the landscape, there's not going to be a whole lot of loss in nutrient cycling in my view. Cellulose and lignin doesn't have a lot of chemical recycling. Wildlife habitat would be a different aspect. Unless you go to really short woody rotations, I don't foresee a lot of nutrient problems.



Environmental and Energy Study Institute

Carol Werner, Executive Director

- J. Caputo: That seems to be the consensus, but there are a few who think there would be a higher loss than is currently calculated.
- W. Clatterbuck: If it's conducted in conjunction with a harvesting network, you're probably only on the site every 25-30 years.
- A. Finkral: In the Southwest, we're in a different situation. Regarding the silviculture question, the same types of treatments would continue to be done, but there would finally be a bioenergy market. Currently it costs \$100-\$700 per acre to thin public land.
- J. Caputo: Do you think the extent of the treatment would go up? Only a small percentage of land in the West that needs to be thinned is actually being thinned...
- A. Finkral: Absolutely. A bioenergy market would accelerate the amount of treatment.
- W. Keeton: I think biomass harvesting will increase significantly in New England, given the number of small boilers being built to power schools and public buildings, new co-generation plants, plus an existing plant that is expanding. Impacts on habitat, nutrients, carbon sequestration are real issues but very complex. Depends on harvesting intensity, nutrient status of the site, etc. Taking out a lot of wood could remove carbon that would be stored, but on the other hand, a thinning treatment that means you can increase growth rates and potentially increase the amount of carbon sequestration.
- J. Caputo: How do you think you could go about crafting national guidelines that are flexible enough to take into account local site characteristics?
- J. Wong: Would some type of block funding for each state, where they could decide priorities and how to use the money, facilitate what needs to be done?
- W. Keeton: That could be effective...
- A. Finkral: If more state funding were available for Arizona, it could go a long way, especially in the development of markets.
- J. Wong: Do any of you have a favorite federal forestry program that could really facilitate some of these things, but just needs funding?



Environmental and Energy Study Institute

Carol Werner, Executive Director

W. Keeton: Federal forest legacy program.

W. Clatterbuck: I have a little cynicism about cost-share programs, because people who get the cost-share know how to work the system... These programs need to be simple and right now they're not. If there were a lot of money available, it would be different.

J. Caputo: Do you have any policy suggestions or key research needs?

A. Finkral: It seems that lately you have a greater chance of getting research funding if you mention climate change or carbon dynamics. That's a very relevant issue, if we can link some of the forest management deeds with energy deeds, then everyone might win. I'm looking at how carbon budgets of harvesting operations and end products for the timber that is harvested, how that relates to carbon and climate change. Seeing vast amounts of slash piles being burned and knowing that they could be burned to produce power is profoundly eye-opening.

J. Wong: One of the things that EESI is involved in and known for are Congressional briefings. We hold 20-30 every year, and we're going to hold a series of briefings on forests, climate change, bioenergy, fires, and how they're all connected and where these technologies might fit in. Tomorrow Jesse and I are meeting with environmental groups about forests and climate change.

A. Finkral: From a Western fire perspective, thinning projects can be considered as avoided deforestation. We're safeguarding carbon in the residual stand. We're exploring how carbon credit markets might be able to value that.

J. Caputo: You're not only avoiding the stand replacing catastrophic fires, but if the thinning are used for energy, you avoid burning coal down the road.

A. Finkral: Absolutely.

The Environmental and Energy Study Institute (EESI) is a non-profit organization that works at the nexus of policy and innovation to promote environmentally sustainable societies. EESI was founded in 1984 by a bipartisan group of Congressional Members dedicated to finding environmental and energy solutions. EESI provides credible, timely information and innovative policy ideas through coalition building, media outreach, publications, briefings, workshops and task forces on the issues of energy efficiency and renewable energy, transportation, smart growth, agriculture and global climate change. Carol Werner leads the EESI team as executive director.