

US forest management policy must evolve to meet bioenergy targets

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To keep pace with the ever-increasing demand for renewable energy, forest management policy in the U.S. must evolve to address environmental sustainability issues, says Jody Endres, a professor of bioenergy, environmental and natural resources law at Illinois. Credit: L. Brian Stauffer

(Phys.org) —In order to keep pace with the burgeoning demand for renewable energy, forest management policy in the U.S. must change to address environmental sustainability issues, according to an article by a University of Illinois expert in bioenergy law.

Unless the forestry sector can tailor [sustainable forest management](#) policies specifically to forest-to-energy feedstocks, its role in helping the country broaden its energy portfolio – and by extension, meeting ambitious bioenergy targets – may be limited in large part because of uncertainty about whether existing policies can effectively constrain overharvesting, said Jody Endres, a professor of bioenergy, environmental and natural resources law at Illinois.

"Because we have a federal system of government, we don't have a one-size-fits-all [policy](#) on land use and biofuels," said Endres, who also is an affiliate of the Energy Biosciences Institute, a collaboration between the U. of I., the University of California at Berkeley, the Lawrence Berkeley National Laboratory and the energy company BP.

"In a lot of environmental and natural resources law in the U.S., the primary role lies with the states to manage private land. But we also have national-level problems, like [climate change](#), biodiversity and water-quality issues, which span jurisdictions. In other words, [ecosystem services](#) are not confined to a single state's jurisdiction. So we have this crazy-quilt system in the U.S. that needs to be untangled."

The paper, which was published in the *Vermont Law Review*, was written to pinpoint what U.S. policy looks like, "which is very complicated because of the intermingling of state and federal policy," Endres said.

"We don't have a coordinated public, state or federal policy in the U.S. about what sustainability means in the bioenergy context," she said. "We don't have one overarching policy that says, 'This is how you assess land

for biodiversity, or for water quality.' So this patchwork of policies really makes it difficult for outsiders like European regulators looking in. A lot of misperceptions grow out of that."

According to Endres, the U.S. needs to craft some sort of integrated standard that covers not only the purpose-grown, short-rotation biomass crops such as the perennial grass miscanthus, but also forested plantations and seminatural environments, and be able to assess whether there are actually some ecological and climate benefits for getting those lands into the bioenergy system.

"Those are the problems that bioenergy in the U.S. is facing, and it's all really very nascent, but we know it's problematic," she said. "How do we translate that into a policy and into a sustainability certification? How do we make it economic while also providing an on-ramp for consideration of the ecological properties of forests in terms of larger scale landscapes and connectivity? That's yet to be decided, but the paper lays it out what the points of contention look like."

It's an interesting conversation to have in the U.S., because unlike Europe, "we still have some natural or seminatural forest left," Endres said.

"Ultimately, the goal is for U.S. forestry interests to access the European bioenergy, which may involve an additional level of certification or verification. We certainly have mandates here in the U.S., but they're becoming much more stringent about certification in Europe."

According to Endres, there are two main certification programs in the U.S. – the Forest Stewardship Council and the Sustainable Forestry Initiative.

"Those are the two dueling standards in the U.S., but what they don't do

is address bioenergy applications specifically, and that's mainly the carbon foot-printing of managing forests for bioenergy," she said. "Through all of these bioenergy policies, one of the main goals is to reduce greenhouse gas emissions. But we're not there yet in terms of how to design a policy that chooses the appropriate measurement methodology for carbon fluxes within forests, because what you really want is a net greenhouse gas reduction. Private standards have not determined yet how to account for that – the science is still nascent on the effects of sustainability standards, as well as the time horizons for accounting in comparison to business as usual."

Assessing whether a land is natural, seminatural or a plantation is also something that the U.S. doesn't do neatly in one overarching bioenergy policy.

"We need to be able to classify land so we know whether or not we can access it for bioenergy applications that would be additional to, for example, lumber or paper, although those markets have been in general decline over the past decade," Endres said. "The renewable energy directive in Europe is not going away. Forest product industries are actually gearing up to access those markets, and ultimately consumers, especially the type who go to big-box stores and look for sustainability certification on two-by-fours and other products, will likely want to see that forests aren't overharvested. The European Union also may want to see that in some type of formal certification."

Thus, bioenergy now carries the burden, whether justified or not, to address perceived shortfalls in sustainable forest management, Endres said.

"It is simply not enough in policy design, given the historically highly charged debate about forest sustainability, to make assumptions that existing sustainable [forest management](#) policies provide the assurances

necessary for stakeholders, particularly environmental and wildlife organizations, to support forest-based bioenergy initiatives," she said. "The main environmental groups are very concerned with over-sourcing from natural and seminatural private forest lands and federal lands. And they were actually successful at the federal level at keeping federal forests off-limits from the Renewable Fuel Standard."

According to Endres, forest policy since the early 1970s has grappled with how to manage forests holistically, "so I applaud bioenergy for bringing that conversation to the forefront on how we can really manage forests in a more informed, connected way at the ecosystem level," she said.

"We could really learn a lot from Brazil's Forest Code protections for water quality and habitat connectivity derived from forests simply because they've been under the microscope since the 1990s for how they've managed their forests, including the Amazon rainforest," she said. "But with the emergence of bioenergy, the whole world is going to participate in that conversation, and I see that dialogue as paradigm changing, as something that will ultimately benefit both the environment and humanity."

More information: The article, "Barking Up the Wrong Tree? Forest Sustainability in the Wake of Emerging Bioenergy Policies," is available [online](#).

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