Bioenergy Review (2018) - Call for evidence : Entry # 1319

National Wildlife Federation

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The National Wildlife Federation (NWF) is America's largest advocacy-based conservation organization, with nearly six million supporters and 51 48 affiliate organizations across the United States. NWF is dedicated to protecting wildlife and habitat, and to inspiring the next generation of conservationists.

As part of our work to solve the climate crisis and conserve wildlife habitat, NWF promotes using sustainable, low-carbon bioenergy as well as enhancing carbon storage and ecosystem services provided by America's working farms and forests. For many years, we have maintained a balanced approach to biomass, working with land owners and managers, bioenergy developers, and policy makers to pursue bioenergy technologies and policies that protect habitats and lower emissions in timeframes short enough to contribute to reducing the worst risks of climate change.

1. What is the latest evidence on lifecycle GHG emissions of biomass and other biofuels imported into the UK? How could this change over time as a function of scaling up supply?

Just because wood is a renewable resource does not mean it is automatically carbon neutral. Electricity generated by woody biomass from the Southeast is projected to produce higher levels of atmospheric carbon for 35 to 50 years compared to fossil fuels. To do this right, policy must require a "forest to furnace" accounting of the biomass carbon cycle to ensure it does not hasten climate change. It is critical to evaluate the carbon emissions of different feedstocks as well as the time-frame at which a feedstock is considered carbon neutral (i.e. the point in time when the total smokestack emissions are equal to new carbon sequestered from plant growth). Woody biomass should only be allowed if its use reduces carbon emissions in a short, policy-relevant timeframe.

Research from Sterman et al (2017) found that converting hardwood forests to pine plantations raises atmospheric carbon levels because plantations have less ability to sequester carbon. Given that converted land will never fully recover its carbon stocks, conversion from natural forests to plantations should not be allowed.

At the National Wildlife Federation we strongly believe that forests should not only be evaluated as a means to replace fossil energy, but as a means to increase carbon sequestration. The ability for forests to increase carbon stocks will be vital for combatting climate change.

Colnes, A., Doshi, K., Emick, H., Evans, A., Perschel, R., Robards, T., Saah, D., Sherman, A. 2012. Biomass supply and carbon accounting for southeastern forests. Biomass Energy Resource Center. https://www.nwf.org/~/media/PDFs/Global-Warming/NWF-SE-Carbon-Study.ashx

Sterman, J.D., Siegel, L., Rooney-Varga, J.N. 2017. Does replacing coal with wood lower CO2 emissions? Dynamic lifecycle analysis of wood bioenergy. Environmental Research Letters.

2. Under what circumstances can imported biomass and other biofuels deliver real GHG emissions savings (considering full life-cycle emissions and indirect/wider market effects)? Conversely, what evidence is there for ruling out certain sources on the grounds of lifecycle GHG emissions or sustainability risks?

From our studies on biomass from forests in the Southeast U.S.:

"The use of residuals versus main stems would reduce atmospheric carbon accumulation in those situations where there are adequate amounts of residuals available from current harvests."

Biomass from pulpwood is particularly damaging when "no pulp market exists and standing trees might be left to grow and sequester carbon"

"Using non-forest biomass generally has a slightly lower atmospheric carbon profile"

Colnes, A., Doshi, K., Emick, H., Evans, A., Perschel, R., Robards, T., Saah, D., Sherman, A. 2012. Biomass supply and carbon accounting for southeastern forests. Biomass Energy Resource Center. https://www.nwf.org/~/media/PDFs/Global-Warming/NWF-SE-Carbon-Study.ashx

4. Aside from GHG emissions, what evidence is there of other sustainability impacts associated with imported biomass or other biofuels? What evidence is there for how these might change as a function of scaling up supply (from the US, and internationally)?

The Southeast U.S. offers exceptional biodiversity, and yet has experienced significant habitat loss. The Critical Ecosystem Partnership Fund recognized the North American Coastal Plain, which encompasses much of the forests in the southeast, as one of the world's biodiversity hotspots. Pressure from the wood-pellet industry—which is predominantly driven by demand from the UK (making up 84% of exports in 2016 )—is adding to further habitat loss and fragmentation. This puts additional stress on threatened and endangered species that already suffer from habitat loss, such as the red-cockaded woodpecker, bog turtle, and bobwhite quail.

This issue has risen to such a degree that 27 US scientists in the fields of conservation biology and ecology wrote a letter calling attention to these impacts. World renowned scientists like E.O. Wilson, Tom Lovejoy, and Stuart Pimm addressed this letter to a European audience in order to caution of how scaled-up bioenergy demand can impact wildlife.

The National Wildlife Federation has examined the issue and what is known of the interaction between bioenergy and wildlife in the southeast. While there are opportunities for biomass markets to improve habitat quality through practices like thinning pine stands, the main risks are 1) biomass harvests in sensitive habitats, 2) markets driving habitat degradation through conversion of natural forests to plantations, and 3) increased incentive to collect downed woody material that protects soil and water quality and provides important habitat.

A growing body of studies conducted by US government agencies and independent academics anticipate that southeastern landowners will respond to rapidly increasing pulpwood prices by converting millions of acres of pasture and natural forests to plantations. In effect, every southeastern landowner with pasture or naturally-regenerated forests will have greater financial incentive to convert them to pine plantations as a result of European renewable energy policies. In addition, landowners will be incentivized to change their management of existing forests to produce more pulpwood, which will often degrade habitat value.

Critical Ecosystem Partnership Fund. 2016. Announcing the World's 36th Biodiversity Hotspot: The North American Coastal Plain. http://sp13.cepf.net/news/top_stories/Pages/Announcing-the-Worlds-36th-Biodiversity-Hotspot.aspx#.Wne-wa6nHIU

Flach, R., Lieberz, S., Rossetti, A. 2017. EU Biofuels Annual 2017. US Department of Agriculture, Foreign Agriculture Service. https://gain.fas.usda.gov/Recent%20GAIN%20Publications/Biofuels%20Annual_The%20Hague_EU-28_6-19-2017.pdf

U.S. Scientists Call for Wildlife Protections in EU Biomass Policy. https://www.nwf.org/Home/Latest-News/Press-Releases/2018/01-05-18-Scientists-Call-for-Wildlife-Protections-in-EU-Biomass-Policy

Evans, J., Fletcher, R., Alavalapati, J., Smith, A., Geller, D., Lal, P., Vasudev, D., Acevedo, M., Calabria, J., and Upadhyay, T. 2013. Forestry Bioenergy in the Southeast United States: Implications for Wildlife Habitat and Biodiversity. National Wildlife Federation and Southern Environmental Law Center. http://www.nwf.org/~/media/PDFs/Wildlife/Conservation/NWF_Biomass_Biodiversity_Final.ashx

Wear, D. N., Greis, J. G. 2012. The Southern Forest Futures Project: summary report. USDA-Forest Service, Southern Research Station. http://www.srs.fs.usda.gov/pubs/42526

Olesen, A.S., Bager, S.L., Kittler, B., Price, W., Aguilar, F. 2016. Environmental implications of increased reliance of the EU on biomass from the South East US. European Commission.

Abt, K. L.; Abt, R. C.; Galik, C. S.; Skog, K. E. 2014.Effect of policies on pellet production and forests in the U.S. South: a technical document supporting the Forest Service update of the 2010 RPA Assessment. U.S. Department of Agriculture Forest Service, Southern Research Station.

Wang, W., Dwivedi, P., Abt, R., Khanna, M. 2015. Carbon savings with transatlantic trade in pellets: accounting for market-driven effects. Environmental Research Letters.

Costanza, J. K., Abt, R. C., McKerrow, A. J. Collazo, J. A. 2016. Bioenergy production and forest landscape change in the southeastern United States. GCB Bioenergy.

5. Are there any benefits resulting from importing biomass or other biofuels into the UK (e.g. development benefits)? How might these vary internationally? What are the conditions required for any benefits to be realised?

Many are under the impression that biomass markets help preserve forests by providing an incentive not to convert forests into development (which is an extreme detriment to habitat). The National Wildlife Federation commissioned The Irland Group to study the validity of this presumption. The research studied regions in two states, North Carolina and South Carolina. The report found that pulpwood prices, although steadily increasing, are not competitive with land prices for development. Thus, there is not evidence that rising pulpwood-prices help maintain habitat and forests.

To truly see benefits, policy must adopt a more complex approach to biomass. See the letter on conservation biomass that we wrote to the Netherlands in 2014 with the Earth Partners and Roundtable on Sustainable Biomaterials. This is to highlight biomass that can improve biodiversity, habitat, water quality, soil carbon sequestration, soil quality, and wildfire prevention. Examples include harvesting invasive species to restore native habitat or cultivating native grasses on marginal or degraded land. However, this biomass resource would need to be cultivated—its supply is far exceeded by current UK demand.

On the topic of thinnings, research from North Carolina State University found that continued demand for forest biomass would increase total forest land and biomass from thinnings in the southeast US. However, this comes at a significant cost, with more of the forest being composed of plantations and less of the species-rich ecosystems like bottomland hardwood and longleaf pine forests.

The Earth Partners LP, Roundtable on Sustainable Biomaterials, National Wildlife Federation. 2014. Policy opportunity to support Conservation Biomass and other Low Indirect Impact Biomass. http://theearthpartners.com/wp-content/uploads/2015/10/Conservation-Biomass-SER-letter-8-28-2014-FINAL.pdf

Costanza, J. K., Abt, R. C., McKerrow, A. J. Collazo, J. A. 2016. Bioenergy production and forest landscape change in the southeastern United States. GCB Bioenergy.

6. What are the strengths, weaknesses and gaps of the current sustainability framework for bioenergy in the UK? How could the current sustainability framework for bioenergy in the UK be improved to address these issues?

Current policy still fails to address key wildlife and climate concerns of biomass. The gaps in the current framework and our proposed solutions include:

- [Biodiversity] Allowing pellet producers to harvest from sensitive habitat and critical ecosystems. Pellet producers should be required to build provisions into their supply contracts that make sure they use data and local resources to prevent harm to biodiversity.

- [Climate] Allowing feedstocks that take decades to have a better greenhouse gas performance than coal. Only feedstocks with near-term benefits should be allowed (see the fact sheet for more details on what these feedstocks look like).

- [Efficiency] Allowing biomass combustion in the least efficient power generators. There should be a minimum efficiency threshold that incentivizes thermal biomass and combined heat-and-power and eschews inefficient electricity-only generation.

- [Land Use] Current policies incentivize land owners to convert their natural forests into plantations. Instead, land that has been recently converted should not qualify for biomass harvests.

National Wildlife Federation. Biomass for Energy: Applying a Climate and Biodiversity Lens.

7. Ofgem has identified a number of certification schemes that it considers appropriate for demonstrating compliance with the 'Land Criteria' under the Renewable Obligation sustainability standards. Are these certification schemes adequate? Why/why not? How could they be improved?

The “Land Criteria” standards in the Renewable Obligation allow for biomass that has been certified by the Forest Stewardship Council (FSC) and the Programme for the Endorsement of Forest Certification (PEFC). Neither of these standards address greenhouse gas emissions or climate change. While FSC is an appropriate standard for this criteria, PEFC is not. PEFC is not a certification mechanism, but an evaluation body that endorses certification schemes. In many cases it has endorsed schemes that fall short because they do not control for conversion on native forests or size of clear cuts, they allow biomass facilities to self-assess risk rather than meet criteria that is verified by a third-party, and they don’t account for protection of sensitive ecosystems like bottomland hardwood forests.

The PEFC International Standard does not have provisions that address carbon stocks, biomass from drained wetland, and High Conservation Value areas. There are documented cases of PEFC certified biomass that came from wetlands that had been recently drained and converted to dryer ecosystems. There have also been violations of PEFC’s requirement to maintain soil quality in which no corrective action took place.17

One of the PEFC endorsed certification bodies that is most common in the southeast US is the Sustainable Forestry Initiative (SFI). This standard has many measures that support sustainable forestry, but omits key provisions to prevent natural forests from being converted to plantations and limit the size of clear cuts. For SFI to be a reliable guarantee for forest sustainability, policy would need to require additional provisions on conversion of forest type and clear cuts that brings SFI more in line with FSC standards.

Ford, J., Jenkins, A., Angerand, S., Erajaa, S., Cadman, S., AStorga, L., Greenwood, T., Goldman, P. 2011. On the Ground: The controversies of PEFC and SFI. http://www.wwf.de/fileadmin/user_upload/PDF/On_The_Ground_2011.pdf

World Wildlife Fund. 2015. WWF Certification Assessment Tool V3: Programme for the Endorsement of Forest Certification (PEFC). https://d2ouvy59p0dg6k.cloudfront.net/downloads/cat_pefc_14_5_15_final.pdf

PEFC ST 1003:2010, Sustainable Forest Management - Requirements

8. What certification schemes currently represent 'best practice'? Why?

Roundtable on Sustainable Biomaterials (FSC) and Forest Stewardship Council (FSC) are the best standards on forest sustainability. However, FSC was not designed to certify biomass. Any standard should include Best Management Practices that are designed for biomass, such as those prepared by the Forest Stewards Guild. These standards also lack provisions to address carbon accounting of woody biomass. So in addition to BMPs, carbon accounting would be needed for these certification bodies to adequately address sustainability. These are the areas in which FSC and RSB excel:

- They have robust criteria with defined performance indicators that must be verified by a certified third-party.

- They facilitate opportunities for small landowners to participate through group certificates.

- They preclude biomass from recently converted plantations and from clear cuts that are excessively damaging to wildlife.

- They require identification and protection of key species and ecosystems.

- They were developed and are governed by multi-stakeholder bodies.

Forest Stewards Guild. https://www.forestguild.org/biomass

9. Ofgem has set out approaches to calculating bioenergy GHG emissions for demonstrating compliance with the 'GHG Criteria' under the Renewable Obligation sustainability standards. Are these approaches adequate? Why/why not? How could they be improved?

Ofgem's standards fail to include emissions at the stack and carbon stock changes in sourcing area. GHG criteria that contribute to climate solutions should either a) have a lifecycle analysis framework that can differentiate the timeframe of emissions benefits, or b) provide a list of allowable climate-friendly feedstocks that can be verified.

10. Please highlight any further measures you feel are required to ensure bioenergy feedstocks used in the UK are sustainable and deliver significant life-cycle GHG emissions savings. Why are these measures needed?

Policy needs to include emissions at the stack and carbon changes in the sourcing area. By not considering these variables, feedstocks that have a long-term carbon debt are often preferred, causing a negative effect of the policy. This is the case for much of the biomass sourced from the southeast US. Instead, feedstocks should be chosen that have near-term climate benefits. The timeframe of benefits often relates to policy goals (i.e. reducing emissions by 2030), but all benefits should at the longest be realized within 20 years.

Colnes, A., Doshi, K., Emick, H., Evans, A., Perschel, R., Robards, T., Saah, D., Sherman, A. 2012. Biomass supply and carbon accounting for southeastern forests. Biomass Energy Resource Center. https://www.nwf.org/~/media/PDFs/Global-Warming/NWF-SE-Carbon-Study.ashx

11. Some large UK users of imported biomass use a risk-based approach to assess the sustainability risks associated with importing biomass from specific jurisdictions. What is the role for these approaches?

Risk assessment criteria and standards must be firmly established at the local level and strictly applied by the certification body or independent verifying body, not the landowner themselves.

In many cases, we see biomass producers self-evaluating their risk, which undermines the reliability of the sustainability scheme. Schemes like Sustainable Biomass Partnership employ this honor-system approach that is entirely inadequate to measuring sustainability.

12. What are the most credible and up-to-date estimates for global bioenergy resource potential through to 2050, broken down by feedstock type? What key assumptions underpin these estimates?

While many expected biomass supply from the US to come mostly from wastes and residues, it has instead largely come from pulpwood in the southeast US. The U.S. Forest Service modeled wood-product markets and found that between 2010 and 2025 the price of non-sawtimber over the Coastal South will more than double. This is largely due to supply constraints in pulpwood and high prolonged demand by pellet export mills. The implication? The decade-plus doubling in the price of pine non-sawtimber (mostly pulpwood) will have far-reaching impacts on forest practices and land use decisions. This is expected to drive land owners to harvest their stands and convert to plantations.

Abt, K. L.; Abt, R. C.; Galik, C. S.; Skog, K. E. 2014.Effect of policies on pellet production and forests in the U.S. South: a technical document supporting the Forest Service update of the 2010 RPA Assessment. U.S. Department of Agriculture Forest Service, Southern Research Station.

18. What are the main opportunities to scale-up the supply of sustainably-produced domestic bioenergy supply in the UK?

In the US we are seeing dramatic under-supply of sustainable feedstocks, and instead demand for biomass that is neither good for climate nor wildlife. This is largely due to a lack of sustainability safeguards that would direct the market toward more appropriate feedstocks.

Better feedstocks would include low impact biomass like authentic wastes and residues that would not be directed to another market. However, what would be preferable is conservation biomass that offers ecosystem service benefits such as improved biodiversity, water quality, or soil quality. Yet, this type of biomass does not have the same infrastructure available that traditional forest-based biomass does, so it would need to be scaled up incrementally.

The Earth Partners LP, Roundtable on Sustainable Biomaterials, National Wildlife Federation. 2014. Policy opportunity to support Conservation Biomass and other Low Indirect Impact Biomass. http://theearthpartners.com/wp-content/uploads/2015/10/Conservation-Biomass-SER-letter-8-28-2014-FINAL.pdf