

NRDC BRIEFING NOTE: An analysis of the Ricardo report “Use of high carbon North American woody biomass in UK electricity generation: Assessment of high carbon biomass fuel sourcing scenarios”

Background:

The [Ricardo report](#)¹ was commissioned in early 2015 by the Department of Energy and Climate Change (DECC), —now part of the Department for Business, Energy and Industrial Strategy (BEIS), as a follow up to the Biomass Emissions and Counterfactual (BEAC)² model, which examined the carbon emissions impacts of using different biomass feedstocks in electricity generation and reported several high-carbon feedstock scenarios. The stated purpose of this work was to assess the likelihood that specific BEAC scenarios were occurring within the context of UK pellet imports and, if so, evaluate whether there was a need for additional policies in the UK to ensure real carbon emissions reductions from bioenergy.

The report is made up of three parts: 1) a questionnaire; 2) a literature review; and 3) economic modelling.

Due to a lack of budget, DECC/BEIS decided against commissioning vitally important field work as part of this follow-on project. Such on-the-ground research could have verified that high-carbon pellet sourcing is occurring in the forests of the Southeastern United States, as—documented by U.S. NGOs and investigative journalists since 2013³.

Central weaknesses of the report

Conflicts of interest

- Jennifer Jenkins, one of the lead authors of the study, became the Chief Sustainability Officer at Enviva, the largest wood pellet manufacturer in the United States and Drax's main U.S. pellet supplier, before the study was concluded, raising questions about her objectivity during the writing of the report.
- The majority of respondents to the questionnaire (33 out of 56 or 60%) are directly connected to the pellet trade and know that the outcome of the study could have a direct impact on their export market. NGOs and competing wood-using industries (e.g., pulp and paper) combined only represent 13% of questionnaire respondents.

¹ <https://www.gov.uk/government/publications/use-of-high-carbon-north-american-woody-biomass-in-uk-electricity-generation>

² <https://www.gov.uk/government/publications/life-cycle-impacts-of-biomass-electricity-in-2020>

³ <https://www.nrdc.org/resources/european-imports-wood-pellets-green-energy-devastating-us-forests>

No consensus in questionnaire

- The authors of the report themselves acknowledge that "the number of respondents was not suitable for extensive statistical analysis."
- The results of the questionnaire suggest no consensus between stakeholders on the likelihood of 20 out of the 40 scenarios examined occurring. NRDC is concerned—based on recent meetings with UK civil servants—that some in Government seem to be interpreting 'no consensus' as meaning the scenarios are 'unlikely' to occur. This is a serious misunderstanding of the results.
- While some respondents rejected the high-carbon hardwood sourcing scenario (Scenario 13a in the BEAC model), this was because they thought the rotation change proposed in the BEAC study (shortening rotations from 70 to 60 years) would not necessarily occur precisely in this timeframe (i.e., shortened rotation would occur, but not necessarily from 70 to 60 years). Notably, they did not reject that the harvesting of hardwood forests for pellets is taking place. Such harvesting (particularly via clear-cutting) is a known high-carbon bioenergy scenario.
- The report clearly states that hardwood is being harvested for pellets: "Based on current pellet demand, naturally regenerated (predominantly hardwood) forests are being harvested for fiber for pellets, especially in the upland areas near existing pellet plants in North Carolina and Virginia." (page 44)
- The questionnaire only asked about the likelihood of the BEAC high-carbon scenarios. Low-carbon scenarios were not investigated, making any comparison of likelihood impossible.

Incorrect definitions

- The report highlights a major problem with definitions, pointing out that "forest thinnings", for example, are in many instances lumped together with "residues" and that the two feedstocks have very different carbon impacts. This co-mingling of diverse feedstocks distorts the outcome of the questionnaire, as respondents have likely used the terms interchangeably.

Flawed economic modelling

- The economic modelling conducted as part of the study did not evaluate individual BEAC scenarios and thus does not allow for conclusions about individual scenarios. Instead, the authors modelled the likely impact of increased demand for pellets based on the availability and prices of various woody resources (stemwood, small roundwood, residues etc.) and the forest inventory of the U.S. Southeast and other regions in North America.

- The modelling is not able to draw conclusions about the BEAC scenarios as it examined carbon impacts on a different basis to BEAC.
- Nonetheless, the results of the modelling lead the authors to concede that plantations will replace natural hardwood forests in the Southeastern United States, a region where it is estimated that only around 20% of all pre-settlement bottomland hardwood forests remain today.
- The model relies on historic data on the elasticity of wood supply in response to different market trends, a faulty approach given the pellet export market has only existed for roughly five years. The authors acknowledge this in saying, “Price responsiveness for wood input to pellet producers is unknown since the industry is emerging and there is no history of its responsiveness to price.” (page 76)
- In modelling demand for wood from North America, the model used in the study only considered future demand from the European Union. As stated in the report, “Demand from the rest of the world was not considered.” (page 78)

Literature review does not investigate BEAC scenarios

- Like the economic modelling, the literature review conducted as part of the study does not investigate particular BEAC scenarios. Instead, it makes wider assumptions along similar lines to the economic modelling (e.g., based on regional trends).

On-the-ground evidence contradicts the results of the study

- The authors of the Ricardo report made no attempt to investigate the situation on the ground in the U.S. Southeast in order to assess the likelihood of the BEAC scenarios, despite calls from UK and U.S. NGOs to include field work. As noted above, evidence collected as part of multi-year investigations contradicts the Ricardo conclusions.
- According to the economic modelling conducted for the study, the price of biomass for pellets is too low to influence harvesting decisions. However, according to a 2014 United States Forest Service report entitled “*Effect of policies on pellet production and forests in the U.S. South*,” European biomass demand, combined with reduced inventories after years of low demand and decreased planting, and the long time it takes to increase supply of marketable-sized trees in response to increasing demand and prices, will drive the price of woody biomass causing it to double for over a decade across the entire Southeast region. Further, the authors say it is “unprecedented” for a policy to have such a dramatic a price impact over such a large region and for such a long time period.⁴

⁴ Abt, Karen; Abt, Robert C.; Galik, Christopher S.; Skog, Kenneth E., “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

- Bob Abt, one of the authors of the Ricardo study, agrees that this would represent a historic shift in the relative importance of sawtimber vs. pulpwood prices in the region. He adds that, “with current low sawtimber prices, higher pulpwood prices (including policy driven prices) might become more important to landowners in deciding how to harvest and manage their stands including whether to replant or convert to plantations.”
- A recent article from the [Fayetteville Observer from North Carolina](http://www.fayobserver.com/cf7b6457-32ee-526b-aec9-5136948d8dd8.html)⁵ indicates that pellet demand is causing owners to harvest earlier. The article quotes Robeson County assistant forester Jimmy McCullough as saying, "The demand has got some people harvesting their trees early." "In the past, you'd wait longer and let the trees grow bigger for lumber."

Conclusions

On-the-ground evidence from the region directly contradicts the findings of the Ricardo report and shows a continuing and disturbing pattern that high-carbon wood harvesting for the pellet export market is occurring.

Neither the Ricardo report's literature review nor the economic modelling conducted answer the question the report was meant to examine: which BEAC scenarios are likely to occur.

The questionnaire shows that there is agreement between industry and NGOs that some high-carbon scenarios are likely or moderately likely to occur. However, there is no agreement on the likelihood of a large number of the scenarios occurring, a result which does not support the conclusion that those scenarios are not happening. Further, the study made no attempt to establish the likelihood of the low-carbon scenarios as a basis for comparison.

The study lacks basic and vital field work and was based primarily on a questionnaire dominated by industry responses. Its conclusions also contradict the European Commission's findings in its study "[Environmental Implications of Increased Reliance of the EU on Biomass from the South East US](#)."⁶

As such, the report does not provide a reliable basis for drawing any conclusions about the actual net carbon impacts of current and future use of North American wood pellets for electricity generation in the UK. Neither can it reliably serve as a basis for UK and EU bioenergy policy.

Assessment, Gen. Tech. Rep. SRS-202, Asheville, NC: U.S. Department of Agriculture Forest Service, Southern Research Station. 33 p., <https://www.srs.fs.usda.gov/pubs/47281>, (Accessed June 2017).

⁵ <http://www.fayobserver.com/cf7b6457-32ee-526b-aec9-5136948d8dd8.html>

⁶ <https://publications.europa.eu/en/publication-detail/-/publication/8005fb30-81e9-4399-9b19-01af823fa42d>

Recommendations for UK bioenergy policy

- On-the-ground investigations into the wood harvesting practices of UK pellet suppliers are needed in order to draw sound conclusions about the carbon impacts of UK bioenergy production. Until this information is available a temporary freeze on all subsidies must be implemented.
- Once the supply chain has been fully investigated subsidies should be restricted only to known low-carbon sources of biomass excluding the burning of whole trees and other large-diameter wood,
- An urgent review of the 2012 UK bioenergy strategy is needed to ensure that its core principles —“policies that support bioenergy should deliver genuine carbon reductions” (including changes to carbon stocks)— are achieved.
- Subsidies for coal-to-biomass conversions should be ramped down, and public support instead be invested in solar and wind power.

Specific Recommendations for Reforming biomass electricity provisions in the RED Recast

To avoid subsidizing high-carbon bioenergy and high-risk feedstocks under the guise of ‘renewable energy’, the revised EU Renewable Energy Directive for 2030 must include the following:

- A comprehensive, binding set of environmental and social sustainability criteria for biomass sourcing;
- An end to the use of biomass in inefficient electricity-only power plants without allowing the loopholes currently included in the Commission’s proposal, such as long grace periods before installations have to meet efficiency standards and the exclusion of power plants below 20MW from the standards.
- In the absence of full carbon emissions accounting, at a minimum exclude high-carbon feedstocks, such as Roundwood, and limit forest biomass to low-risk feedstocks, such as strictly defined wastes and residues.