

The Fifth Carbon Budget - Call for Evidence

Joint NGO response re: bioenergy in the Fifth Carbon Budget

Friends of the Earth England, Wales and Northern Ireland

NRDC

Dogwood Alliance

Southern Environmental Law Center

Question 12 *What would you consider to be important characteristics of an effective carbon budget? What is the evidence for their importance?*

Bioenergy is representing a large share of renewable energy in the UK. In 2013 bioenergy represented 70.5% of renewable energy fuel.¹ With the conversion of Drax second unit to biomass this proportion is likely to have increased further since and can be expected to grow further with the conversion of Drax's third unit in 2015/2016.

Due to the demand for wood pellets of large coal-to-biomass conversions and the lack of domestic forests the UK has now become the world's largest importer of wood pellets for energy production. It imported 3.9 million tonnes in 2013, an estimated 4.6 million tonnes in 2014 and is expected to import 5.5 million tonnes this year.²

Currently all burning of biomass is counted as carbon neutral and only peripheral GHG emissions (from harvesting, processing and transport) are accounted for. However a wealth of new scientific evidence has shown that the underlying assumption (that forest biomass removed from forest carbon stocks is immediately re-sequestered from the atmosphere) is fundamentally wrong. In fact if changes to carbon stocks are accounted for the burning of forest biomass

¹ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/337684/chapter_6.pdf

² <http://www.carbonbrief.org/blog/2015/05/investigation-does-the-uks-biomass-burning-help-solve-climate-change/>

can (depending on the circumstances) result in net life cycle GHG emissions beyond those of fossil fuels over significant time scales.

The European Environment Agency's Scientific Committee found in its Opinion on Greenhouse Gas Accounting in Relation to Bioenergy that "Producing energy from biomass is meant to reduce GHG emissions. But burning biomass increases the amount of carbon in the air if harvesting the biomass decreases the amount of carbon stored in plants and soils, or reduces ongoing carbon sequestration [...] legislation that encourages substitution of fossil fuels by bioenergy, irrespective of the biomass source, may even result in increased carbon emissions"³

The Department for Energy and Climate Change (DECC) published in 2014 its biomass carbon calculator tool BEAC. While it showed that net emissions from bioenergy vary widely depending on the sourcing scenario of the feedstock. However it also found that scenarios that involve harvesting additional roundwood from naturally growing forests or converting forests into plantations result in high GHG or very high GHG emissions.⁴ In particular "Electricity from pellets produced from additional wood (compared to cfl) generated by increasing the rate of harvest of naturally regenerated hardwood forest in Southern USA from every 70 years to every 60 years" result in carbon emissions of 3346 kg CO₂e/MWh, more than three times the 1018 kg CO₂e/MWh that result from burning coal.

A large percentage of wood pellets imported for energy use are sourced from naturally regenerating hardwood forests in Southern USA.

These results are consistent with other recent analyses. In a May 2015 study, the Natural Resources Defense Council analysed the climate pollution impacts from burning wood pellets to produce electricity and compared those emissions with coal and natural gas.⁵ The study assessed pellets that are sourced from bottomland hardwood forests in Atlantic plain of North Carolina and South Carolina and supplied to a typical power plant in the United Kingdom. The analysis is based on a carbon accounting model developed by the Spatial Informatics Group (SIG), which underwent extensive peer review.

³ European Environment Agency, Opinion of the EEA Scientific Committee On Greenhouse Gas Accounting in Relation to Bioenergy, 2011

⁴ <http://www.foe.co.uk/sites/default/files/downloads/decc-s-biomass-carbon-calculator-beac-what-it-means-bioenergy-74112.pdf>

⁵ <http://www.nrdc.org/land/files/bioenergy-modelling-IB.pdf>

The modelling shows that if the wood pellets are made of whole trees—even in relatively small proportions—they will emit carbon pollution comparable to or in excess of fossil fuels for more than five decades. Specifically, pellets comprised of 40 percent whole trees or more will emit more carbon pollution than coal; pellets comprised of 12 percent whole trees or greater will emit more than natural gas.

Several other studies have concluded that logging residuals alone may be unable to meet bioenergy demands in this region, and that pulpwood trees will likely be needed to meet the increasing demand for pellets.⁶ This suggests that pellets sourced from this region will likely be high-carbon-polluting sources of fuel.

On May 27, 2015 Southern Environmental Law Centre published a study estimating carbon emission for Drax biomass power plants in the UK sourcing from Enviva Pellet Mills in U.S. South-eastern hardwoods using the BEAC model. It concluded that electricity derived from biomass sourced through additional hardwood harvests in the southeastern US is associated with emissions exceeding the UK's emission standard for coal stations converted to biomass of 285 kg CO₂e/MWh by over eleven times.⁷

However the currently used carbon calculator (B2C2) to determine compliance with the GHG emissions limit for biomass under the RO and CfD sustainability criteria does not pick up these emissions as it assumes the burning of biomass to be carbon neutral. As the BEAC report points out: “bioenergy scenarios that could lead to high GHG intensities (e.g. greater than electricity from coal, when analysed over 40 or 100 years) (...) would be found to have GHG intensities less than 200 kg CO₂e/MWh by the Renewable Energy Directive LCA methodology”.

This means currently bioenergy that resulting in higher net GHG emissions than fossil fuels is potentially certified as “sustainable” and competes with true low-carbon energy technologies for the same limited government subsidies.

Scientists around the world are increasingly worried about this development. E.g. in April 2014 60 eminent US scientists wrote an open letter to the UK Secretary of State Edward Davey urging him to rectify the current policy.⁸

⁶ <http://naldc.nal.usda.gov/download/46157/PDF>
<https://nicholasinstitute.duke.edu/sites/default/files/publications/forest-biomass-supply-in-the-southeastern-united-states-implications-for-industrial-roundwood-and-bioenergy-production-paper.pdf>

⁷ A copy of the report “Carbon Emission Estimates for Drax biomass powerplants in the UK sourcing from Enviva Pellet Mills in U.S. Southeastern Hardwoods using the BEAC model” is attached

⁸ <http://im.ft-static.com/content/images/0ee06ecc-d3ae-11e3-8d23-00144feabdc0.pdf>

The Government needs to urgently introduce a carbon calculator based on the BEAC methodology to assess the carbon intensity of biomass feedstocks so that RO/CfD subsidies are awarded only to bioenergy that is truly low carbon.

Expectations and targets for what share of renewables bioenergy can deliver in 2020, 2030 and beyond need to be scaled down to sustainable levels.

Question 3 Based on the available evidence, does the EU 2030 package reflect the best path to its stated 2050 ambition? How might this package change, specifically its targeted emissions reduction, either before the end of Paris or after Paris?

Bioenergy represented 62% of EU's renewable energy use in 2012. In the light of the EU's 27% renewable energy target for 2030 the total amount bioenergy is set to further increase significantly.

Under the currently used RED methodology the burning of bioenergy is counted a carbon-neutral. As laid out in question 12 this assumption has been shown to be deeply flawed.

There are currently no mandatory EU-wide sustainability criteria for bioenergy.

There is a danger that a renewable target without a cap on the amount bioenergy can deliver towards this target, without a carbon accounting methodology for biomass that accounts for changes to forest carbon stocks and without mandatory sustainability criteria for bioenergy could result in unsustainable pressure on global forests and in bioenergy that fails to contribute to a reduction of global GHG emissions and might even result in an increase in emissions.

Four main safeguards must be included in the EU's 2030 Climate and Energy Policy Framework to ensure that bioenergy makes a sustainable contribution after 2020.

- Introduce a cap to limit the use of biomass for energy to levels that can be sustainably supplied

- Ensure efficient and optimal use of biomass resources, in line with the principle of cascading use
- Include correct carbon accounting for biomass based on the BEAC methodology
- Introduce comprehensive and binding sustainability criteria

Liquid biofuels from crops for use in cars pose similar risks to those of bioenergy from solid biomass. However in this case it is primarily the emissions from indirect land use change (ILUC) that are of particular concern from a climate change perspective. The ILUC emissions resulting from the current EU renewable energy in transport target - if it was met by crop-based biofuels - could lead to additional GHG emissions equivalent to an extra 26 million cars on Europe's roads.⁹ Additionally the growing of crops for biofuels competes with food production over land and water and exacerbates global food price volatility¹⁰.

It is encouraging that the EU Commission's current proposals for 2030 do not include a further target for renewable energy in transport, which would (just as the current 2020 target) have to be met primarily through the use of biofuels. Additionally the Commission has announced that state aid for crop-based biofuels is to be ended after 2020.

We believe both these proposals re: transport biofuels should be supported by the UK Government.

Additionally we believe that the UK Government should begin the phase out of crop-based biofuels to 2020 and should in particular resist industry pressure to introduce an E10 (10% bioethanol) blend.

⁹ http://www.foe.co.uk/resource/briefings/driving_to_destruction.pdf

¹⁰ http://www.foe.co.uk/resource/press_releases/un_launches_biofuels_report_26062013