



# WHY THE UK'S NEW SUSTAINABILITY AND GREENHOUSE GAS STANDARDS FOR BIOMASS CANNOT GUARANTEE SUSTAINABILITY OR LOW CARBON IMPACTS

## SUMMARY AND CONCLUSIONS

The UK's biomass [i] sustainability and greenhouse gas standards are ineffective and contradict the principles of the UK Bioenergy Strategy 2012, as well as scientific findings published by DECC and evidence about biomass greenhouse gas emissions contained in a large number of peer-reviewed studies.

Furthermore, they rely on self-reporting which is open to fraud as well as inadvertent misrepresentations. This problem could only be overcome with a well-funded new regulatory body with relevant expertise, something the Government has never proposed.

Biofuelwatch believes that ending subsidies for biomass electricity is the only feasible way of avoiding high carbon emissions and forest destruction due to the UK demand for bioenergy.

## BACKGROUND

Bioenergy is the single biggest source of energy classed as renewable in the UK. It has expanded more rapidly than wind, solar or other renewable energy sources since 2013. [1] Most bioenergy comes from burning solid biomass, mainly wood.

The UK Bioenergy Strategy, [2] approved in 2012, emphasised: "Bioenergy is not automatically low carbon, renewable or sustainable." It warned that bioenergy could cause indirect land use change, i.e. the conversion of carbon-rich natural ecosystems; that some forms of bioenergy could lead to greater greenhouse gas emissions than fossil fuels; and that "poor resource management can lead to significant environmental, social and economic impacts that could outweigh bioenergy's wider energy benefits". The Strategy recommended sustainability and greenhouse gas standards for biomass and biogas. The Coalition

Government announced that such standards would be introduced from October 2013 [3] and that biomass and biogas feedstocks which did not comply with them would no longer attract subsidies.

Those standards finally came into effect on 1st December 2015, [4] although they had already been introduced for non-domestic biomass heating during October. [5]

Since the publication of the UK Bioenergy Strategy in 2012, substantial new evidence - including a significant number of peer-reviewed studies [6] - has been published which shows that biomass electricity can be worse for the climate than equivalent amounts of electricity from burning fossil fuels when considered over a period of several decades. This was confirmed in a report about the carbon impacts of

wood-based bioenergy imported from North America, published by DECC in July 2014. [7]

Furthermore, conservation NGOs [8] and scientists [9] have published significant evidence to show that a sizeable proportion of wood pellets imported into the UK are sourced from the clearcutting of coastal forests in the southern US, which are amongst the most biodiverse temperate forest and aquatic ecosystems worldwide. [10]

This briefing looks at whether the newly introduced biomass sustainability and greenhouse gas standards (or criteria) meet the objectives of the UK Bioenergy Strategy and whether they can be expected to help avoid the worst impacts of wood-based bioenergy, such as increased clearcutting of biodiverse southern US forests to meet UK biomass demand.

[i] The standards apply to biogas as well as solid biomass; however this briefing focusses on solid biomass from wood only. Wood accounts for the great majority of solid biomass in the UK.

## PROBLEM 1: GREENHOUSE GAS CRITERIA

In order to be eligible for subsidies, biomass electricity must be deemed to result in no more than a set amount of greenhouse gas emissions. Until 2020, the maximum level is stricter for biomass power plants that started operating before April 2013 than it is for older biomass plants or for co-firing with coal or for coal-to-biomass conversions (such as Drax power station, which burns more wood than any other plant in the world). The maximum emissions level is then reduced in 2020 and again in 2025.

Until April 2025, biomass electricity will be subsidised even if it results in significantly greater greenhouse gas emissions than those from burning natural gas. Even after 2025, some of the biomass may still result in greater emissions, as long as the average burned in one power station meets the maximum level. [ii] For older biomass plants and for burning biomass in coal power stations, the maximum allowed greenhouse gas level until 2020 is even higher than the average carbon emissions from an oil power station.

Included in the criteria is a methodology for calculating greenhouse gas emissions from biomass. There are no EU-wide criteria or methodologies and every member state can design their own. The UK government has chosen to adapt the EU's methodology for calculating greenhouse gas emission from bioliquids (i.e. liquid transport fuels as well as plant oils and animal fats used for heat and electricity), set out in the Renewable Energy Directive. Under that methodology, emissions from burning fossil fuels during harvesting activities (including logging)<sup>4</sup>, processing (e.g. from turning wood into wood pellets) and from transport must be accounted

for. Greenhouse gas emissions from fertiliser use on tree plantations must be reported, as must be emissions from 'carbon stock changes caused by land-use change'. It is important to note that clearcutting a natural forest is not classed as 'land-use change', even if the forest might never fully regenerate. Replacing a carbon-rich and biodiverse natural forest with a monoculture tree plantation is also not classed as 'land-use change'. Thus carbon emissions resulting from such clearcuts or conversions do not need to be reported.

### Why the greenhouse gas methodology is deeply flawed:

For fossil fuels, the amount of CO<sub>2</sub> emitted from smokestacks is accounted for but for bioenergy, all of the CO<sub>2</sub> emitted is ignored, on the assumption that it will be reabsorbed by new plant growth in future. This is being justified by accounting for the greenhouse gas emissions that incur during logging, processing and transport of biomass instead. It is therefore vital for all emissions associated with bioenergy to be accounted for.

According to the UK Bioenergy Strategy:

"Policies that support bioenergy should deliver genuine carbon reductions that help meet UK carbon emissions objectives to 2050 and beyond. This assessment should look – to the best degree possible – at carbon impacts for the whole system, including indirect impacts such as ILUC [Indirect Land Use Change], where appropriate, and any changes to carbon stores."

The Strategy highlights that both direct and indirect emissions from all carbon stock changes of land should be

accounted. It also emphasises the importance of accounting for emissions "resulting from re-directing biomass from other uses" – such as using wood to make paper, furniture and construction materials – and of calculating the carbon lost when trees are burned rather than left in a forest.

The biomass greenhouse gas criteria do not accord with the principles set out in the UK Bioenergy Strategy. They ignore:

- All of the carbon emitted from soils and vegetation when forests are logged;
- All of the carbon lost to the atmosphere when natural forests are converted to monoculture tree plantations;
- The 'carbon debt' that is incurred when a tree is cut down and burnt, thus emitting into the atmosphere all the carbon which that tree had sequestered over many decades – and which cannot be sequestered again until a new tree has grown and sequestered the same amount of carbon, which might take 70 years (if it happens at all);
- All Indirect Land Use Change emissions;
- All (indirect) emissions that are incurred when wood is diverted, for example from wood panel production to bioenergy.

DECC's report about the carbon impacts of wood-based bioenergy imported from North America had warned that "bioenergy scenarios that could lead to high GHG [greenhouse gas] intensities (e.g. greater than electricity from coal, when analysed over 40 or 100 years)" could nonetheless be classed as low carbon under the greenhouse gas methodology now adopted by the Government. This means that, the greenhouse gas criteria can be met

[ii] According to [Defra's reporting guidance](#), natural gas results in 51.42 grams of CO<sub>2</sub> per Megajoule of electricity. The maximum GHG emissions for subsidised biomass electricity are 79.2 & 66.7 grams of CO<sub>2</sub> equivalent per Megajoule until 2020 and 55.6 grams/Megajoule from then until 2025. Only from April 2025 does the level fall below the emissions from natural gas, to 50 grams/Megajoule.

even if the biomass is, per unit of energy, worse for the climate than coal when considered over the next century.

In May 2014, 61 US scientists wrote to the UK Government [11] warning against inadequate carbon accounting which ignored the major emissions

associated with logging biodiverse forests in the southern US. Their appeal, it appears, has been ignored by DECC.

## PROBLEM 2: SUSTAINABILITY STANDARDS & LAND CRITERIA

In order to qualify for subsidies, 70% of wood-based bioenergy used in a power plant must be classed as 'sustainable'.

[iii] The remaining 30% of biomass may breach the criteria and still attract subsidies, as long as a 'risk assessment' is provided which shows that the wood comes from a region with a low risk for example of illegal logging, threats to forests of high conservation value, or conversion of natural forests to tree plantations. Large pellet producers in the US already hold 'risk assessments' according to which no relevant risks exist in the entire southern US [12] – even though a US government report [13] shows that there is rampant conversion of natural forests to tree plantations in the region which is expected to continue.

Wood classed as "sustainable" [iv] is defined as:

- Wood from a forest (or tree plantation) managed according to the Forest Europe Sustainable Forest Management Criteria approved in 1998 (i.e. not the updated criteria agreed in 2002 nor those agreed in 2015) [14];

OR

- Wood from a forest (or tree plantation) managed according to "a set of international principles for the sustainable management of land" which must have been agreed by a multi-stakeholder forum.

The main principles according to which forests and plantations must be managed require wood suppliers to:

- Minimise harm to ecosystems, including through assessing logging impacts and drawing up plans to minimise negative impacts, and through protecting water, soil, and biodiversity;

- Maintain the productivity of a forest or tree plantation through keeping an inventory, providing training to workers and drawing up relevant plans and procedures;

- Maintain "the health and vitality of ecosystems" through adopting relevant plans and taking measures to protect the land from unauthorised activities;

- Maintain biodiversity by implementing safeguards and "conserving key ecosystems in their natural state", as well as protecting "features and species of outstanding or exceptional value";

- Comply with national health and safety and labour legislation and safeguard workers' health and safety;
- Have regard to "legal, customary and traditional rights of tenure and land use" and have "mechanisms for resolving grievances and disputes."

There are two ways of 'proving' compliance with these criteria:

- 1) One is for 70% of the wood to be certified by a voluntary certification scheme, i.e. by the Forestry Stewardship Council (FSC), the Programme for the Endorsement of Forest Certification (PEFC), the North American Sustainable Forestry Initiative

(SFI), or the Sustainable Biomass Partnership [15]

- 2) The other is for generators of wood-based bioenergy to provide their own evidence to "prove" compliance, for example using paperwork from their suppliers.

The only voluntary certification scheme which is deemed to 'prove' compliance with all the relevant land criteria is the Sustainable Biomass Partnership. If other types of certification schemes are used then generators will need to supply additional evidence regarding some of the criteria.

### Why the land criteria cannot guarantee sustainability:

Firstly, the land criteria are extremely vague and based largely on principles rather than detailed standards. They focus heavily on policies and procedures, rather than outcomes. It is entirely open to companies' own interpretation, for example, what minimising environmental harm, or protecting water, soil and biodiversity means in practice. Whilst there is a requirement for plans and procedures to be adopted, there are few details of what those should contain nor do the standards say that those procedures than need to be fully complied with.

Secondly, the land criteria are extremely weak - missing, for example, key criteria and indicators agreed by Forest Europe (the pan-

[iii] Waste wood is exempt from the land criteria, though processing residues, such as sawmill residues, are not exempt.

[iv] Note that there are different rules for special types of wood. This briefing should not be read as an exhaustive list of the standards but instead summarises the ones that apply to the majority of wood-based bioenergy.

European Ministerial Conference on the Protection of Forests in Europe). For example, Forest Europe's indicators on biodiversity include diversity of tree species, common forest bird species,

and the volume of deadwood in a forest – but the UK government's criteria, whilst stating that biodiversity should be maintained, only specifically refer to rare, endangered and threatened

species, key ecosystems and 'features and species of outstanding or exceptional value' – which are restrictive as well as highly subjective terms.

## PROBLEM 3: LACK OF INDEPENDENT AUDITING AND VERIFICATION

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The UK's energy regulator Ofgem assesses whether the reports contain all of the relevant information – but verification and auditing of the reports sent to them by companies falls outside their remit.

Companies can choose to rely entirely on reports compiled by any consultancy of their choice (as long as it is a separate company). Paperwork from pellet or woodchip suppliers can serve as evidence, even if that supplier's practices may be under serious criticism from NGOs, reporters or even

scientists (as is currently the case with Drax's main supplier, Enviva).

The only voluntary certification scheme which is deemed to prove full compliance with the land/sustainability criteria is the Sustainable Biomass Partnership (SBP). This is made up entirely of large European energy companies, without any NGO membership. The SBP is chaired by the Chief Executive of Drax, the UK's (and possibly the world's) biggest user of biomass for electricity generation.

Various recent scandals – for example the horsemeat scandal of 2013 or the recent scandal over the Volkswagen diesel emissions – illustrate how companies can flout regulations even when there are provisions for some level of regulatory oversight. In the case of biomass standards, however, there is no regulatory oversight at all. There is no way of finding out whether any companies misreport data – either deliberately or because of insufficient or wrong information from their supply chain.

## REFERENCES

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[1] [http://gov.uk/government/uploads/system/uploads/attachment\\_data/file/450298/DUKES\\_2015\\_Chapter\\_6.pdf](http://gov.uk/government/uploads/system/uploads/attachment_data/file/450298/DUKES_2015_Chapter_6.pdf)

[2] [http://gov.uk/government/uploads/system/uploads/attachment\\_data/file/48337/5142-bioenergy-strategy-.pdf](http://gov.uk/government/uploads/system/uploads/attachment_data/file/48337/5142-bioenergy-strategy-.pdf)

[3] <http://gov.uk/guidance/sustainability-standards-for-electricity-generation-from-biomass>

[4] [http://legislation.gov.uk/uksi/2015/1947/pdfs/uksi\\_20151947\\_en.pdf](http://legislation.gov.uk/uksi/2015/1947/pdfs/uksi_20151947_en.pdf)

[5] <http://ofgem.gov.uk/environmental-programmes/non-domestic-renewable-heat-incentive-rhi/policy-and-regulations/october-2015-changes-non-domestic-rhi-regulations-sustainability-and-biomass-suppliers-list>

[6] See studies listed at <http://biofuelwatch.org.uk/biomass-resources/resources-on-biomass/>

[7] Life-cycle impacts of biomass electricity in 2020: Scenarios for assessing the greenhouse gas impacts of and energy input requirements of using North American woody biomass for electricity in the UK, Anna L. Stephenson and David J.C. MacKay, DECC, July 2014, [http://gov.uk/government/uploads/system/uploads/attachment\\_data/file/349024/BEAC\\_Report\\_290814.pdf](http://gov.uk/government/uploads/system/uploads/attachment_data/file/349024/BEAC_Report_290814.pdf)

[8] E.g. <http://nrdc.org/energy/files/southeast-biomass-exports-FS.pdf>, <http://www.dogwoodalliance.org/wp-content/uploads/2013/05/Enviva-Mill-in-Ahoskie-Dogwood-Report.pdf>

[9] E.g. [http://southernenvironment.org/uploads/publications/NWF\\_Biomass\\_Wildlife\\_FuII\\_Report.pdf](http://southernenvironment.org/uploads/publications/NWF_Biomass_Wildlife_FuII_Report.pdf) - Note that the report does not refer to the UK, however it refers to pellet producer Enviva. Drax plc is Enviva's biggest customer.

[10] How global biodiversity hotspots may go unrecognized: lessons from the North American

Coastal Plain, Reed F. Noss et.al., Diversity and Distributions, 12th November 2014

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

[12] See for example <http://fsc.force.com/servlet/servlet.FileDownload?file=00P3300000XsjQuEAJ>, a Controlled Wood FSC certificate for Enviva, who are a major supplier of Drax

[13] Southern Forest Futures Report, US Department of Agriculture, 2011, <http://srs.fs.usda.gov/futures/>

[14] [http://foresteurope.org/ministerial\\_conferences/lisbon1998](http://foresteurope.org/ministerial_conferences/lisbon1998), compared with current Forest Europe SFM criteria at [http://foresteurope.org/sfm\\_criteria/criteria](http://foresteurope.org/sfm_criteria/criteria)

[15] [http://ofgem.gov.uk/sites/default/files/docs/ro\\_sustainability\\_criteria\\_guidance\\_esw.pdf](http://ofgem.gov.uk/sites/default/files/docs/ro_sustainability_criteria_guidance_esw.pdf), Table 9