Energy and Climate Change Committee call for evidence on proposed Biomass one-off session

April 2013

1. In our view, the root causes of manmade climate change and environmental damage are excessive consumption of energy and materials. Bioenergy by itself does nothing to address this, and instead gives a false sense of hope that consumption patterns can continue largely unchanged.

2. The Committee was critical of policy last year when commenting on 'Consumption Emissions', saying " *We recommend that the Government acknowledges the extent of our responsibility for these emissions in developing countries, in order to encourage a more equitable approach to reducing emissions globally".* As we discuss below, many of the emissions resulting from UK use of bioenergy arise overseas, including in developing countries. UK bioenergy policy does not in our view adequately consider these emissions.

3. In our comments, we use the term 'biopower' to mean electricity generation using biomass fuel.

4. A growing number of scientific studies show that large-scale biopower and the policies promoting it will increase, not reduce carbon emissions over several decades, at a time when climate science shows that emissions must decline rapidly if we are to have any hope of avoiding the worst impacts of climate change. The carbon accounting methodology which leads to biopower being generally viewed as low-carbon is deeply flawed. Furthermore, there is growing evidence of the threats of freshwater and soil depletion and of land-grabbing, human rights abuses and hunger from tree plantation expansion overseas for UK biopower.

What contribution can biomass make towards the UK's decarbonisation and renewable energy targets? Are the Government's expectations reasonable in this regard?

5. The aim of current Government biomass policy appears to be to meet EU RE targets in a way which benefits big energy companies and allows them to maintain reliance on existing infrastructure, including coal power stations – rather than by a wish to address carbon emissions. Policy also appears to give inadequate weight to what happens with emissions after 2020.

6. Currently, bioenergy carbon assessments fail to take full account of all emissions resulting from: 1) the production of biopower fuel, including land use change, 2) the combustion of biomass, 3) the ongoing indirect effects of biopower fuel production such as displacement of feedstock from other uses including construction and more efficient energy conversion, and 4) the emissions from the construction of infrastructure to support biopower, such as roads, pellet plants, material handling facilities at ports. The Secretary of State has publicly challenged other EU Member States to resolve the current impasse over Indirect Land Use Change as it relates to transport biofuels, yet DECC's proposals for biomass sustainability ignore many indirect effects of wood fuel production.

7. Most wood imports for biopower currently come from countries that have opted out of the Kyoto Protocol (US, Canada) while in future many are expected to come

from developing countries. The resultant emissions should be accounted for by the UK.

8. Biomass carbon debt is given insufficient attention. Adding biopower carbon emissions to the atmosphere now in the expectation that they will all be sequestered in the future is not sound policy and ignores the climate consequences of front-loading emissions.

9. Biopower is currently eligible for support under the Renewable Obligation at a carbon intensity of up to 285 kgCO2e / MWh. By 2030 this threshold intensity will be very significantly higher than the grid intensity of 50 kgCO2e / MWh recommended by the Committee on Climate Change.

10. Even using the current incomplete biopower lifecycle carbon accounting method (discussed below), and ignoring the temporal nature of biopower carbon emissions, it is evident that biopower will slow the decarbonisation of the UK grid.

11. The focus on RE targets rather than emissions (or indeed demand reduction) has the perverse outcome that large-scale 'renewable' biopower at a high carbon intensity of up to 285 kgCO2e / MWh is treated the same as lower carbon sources like solar, wind and marine. And the more of it that is deployed the better.

How well have the Government's bioenergy principles (set out in the 2012 Bioenergy Strategy) been translated into policy?

- ***Are genuine carbon reductions being achieved?***

12. The accounting systems in place to assess whether carbon reductions are being achieved are simplistic and have been the subject of criticism including from scientists, listed on the Biofuelwatch website including an opinion from the European Environment Agency in Sept 2011 :

13. *"Several European Union energy directives encourage a switch from fossil fuels to renewable energy derived from plant biomass based on the premise that biomass combustion, regardless of the source of the biomass, would not result in carbon accumulation in the atmosphere.* ***This mistaken assumption results in a serious accounting error****. …The potential consequences of this bioenergy accounting error are immense. Based on the assumption that all burning of biomass would not add carbon to the air, several reports have suggested that bioenergy could or should provide 20% to 50% of the world's energy needs in coming decades. Doing so would require doubling or tripling the total amount of plant material currently harvested from the planet's land. Such an increase in harvested material would compete with other needs, such as providing food for a growing population, and would place enormous pressures on the Earth's land-based ecosystems."*

14. DECC is in the process of developing a new bioenergy carbon calculator (BEaC) which sets out to improve accounting. In our view, the fact that DECC is carrying out this work admits the flaws in the current scheme. It is unfortunate that the latest review of ROC banding – which gave continued and grandfathered support to biopower – took no account of the outcome of this work, and that DECC' s announced biomass sustainability standards do not reflect this nor other research.

15. DECC has stated that using whole trees to fuel production of heat or electricity is a higher carbon option than leaving the trees to grow in the forest, and producing the energy by burning fossil fuels. *"The use of harvested wood from UK managed*

forests exclusively for bioenergy (replacing fossil fuels) has higher relative GHG emissions than leaving the trees unharvested in the forest. This means that on the basis of GHG emissions, there is not a strong case to produce bioenergy in this way." (www.decc.gov.uk/assets/decc/11/meeting-energy-demand/bio-energy/7014-bioenergy-strategy-supplementary-note-carbon-impac.pdf)

16. Biofuelwatch has estimated the combustion emissions from the units that Drax is now converting from coal to biomass. Based on fuel calorific value, thermal conversion efficiency, and the carbon content of wood pellets, our calculation is that the carbon intensity of Drax biopower will be 1071 kg CO2 / MWh. Additional emissions will arise from the growing, processing and transporting of fuel. This estimate has been provided to DECC and has not been disputed. It is very similar to the level of emissions used for coal power.

17. Of critical importance in any evaluation of the carbon impacts of biopower is the question of future sequestration. Long-term carbon neutrality can only be guaranteed if new biomass is grown and can be guaranteed to replace all lost carbon stock, including soil carbon and carbon in other forest vegetation. Even then, decades commonly elapse before all CO2 released through combustion can be re-sequestered. Under proposed biomass sustainability standards, responsibility for ensuring this happens does not rest with the biopower generator who benefits from ROCs. Furthermore, climate change and invasive pests and diseases mean that future healthy forest regrowth cannot be guaranteed in any case.

18. Future sequestration is the most important part of the so-called 'carbon-neutral' bioenergy cycle. Yet this is not measured, not managed and impossible to predict. If the market fails to deliver sufficient future sequestration, how would that be detected and rectified?

19. What is happening with the conversion of coal power stations can be likened to a carbon-offsetting scheme:

    Offsetting. A coal burning power station pays money into a carbon-offsetting scheme which they claim will plant trees and absorb carbon from the atmosphere. The organisers of the scheme say they intend to plant enough trees and to ensure they grow to maturity to offset all the carbon emissions, although they do not accept liability for failure to do so. The power station operator believes it is reasonable to claim this will make them 'carbon neutral'

    Biomass conversion. A coal-burning power station intends to switch fuel to burn imported biomass and some bioliquids. They understand the biomass fuel supply market will plant enough additional trees to absorb the combustion emissions from the power station, although since the power station business does not produce the fuel, they can offer no absolute guarantees that this will actually happen.

    - Is either scenario credible?
    - Should government pay the power station operator through some form of subsidy/consumer levy to do this?
    - Do either make a reliable contribution to tackling climate change?

- ***Is bioenergy making a cost effective contribution to carbon emission objectives?***

20. As the science has shown, biopower, particularly if sourced from whole-trees (as is increasingly the case and unavoidable in view of the scale of demand) increases carbon emissions – it does not contribute to reducing them.

21. The cost of biopower (per MWh) is broadly similar to that of onshore wind, which can offer significant carbon reduction. Arup (2011) estimated levelised costs for biopower of between £97 (co-firing) and £145 (large dedicated biomass) per MWh. DECC is targeting the cost of offshore wind to come down to £100/MWh by 2020.

22. Biopower, particularly if import-reliant (which the Government expects it will be to 80%) creates little employment. We calculate the each job created by a dedicated biomass plant attracts around £1.7 million in annual subsidies (ROCs).

Is sufficient attention being given to potential impacts in other areas, such as food security and biodiversity?

23. No, it is not. The factors that should be considered when deciding if bioenergy is to be adopted are: land use, water use, biodiversity impacts, social impacts, energy balance and full life cycle carbon balance. The overriding issue is scale at a global level. The UK Bioenergy Strategy fails to give sufficient weight to many of these points, having almost as an afterthought the following loosely worded objective:

    "At regular time intervals and when policies promote significant additional demand for bioenergy in the UK, beyond that envisaged by current use, policy makers should assess and respond to the impacts of this increased deployment on other areas, such as food security and biodiversity."

24. This objective does not trigger reviews at specific times or when specific circumstances arise. It is far too vague. In our view a properly drafted and enforceable objective covering all the possible adverse effects of bioenergy use should be the primary objective for the strategy, taking precedence over all the others.

25. There is no scientific or credible way of accurately assessing the full climate, social and biodiversity impacts of large-scale import-dependent bioenergy. Indirect impacts are not just about hectare for hectare displacement. They are also about the interaction between land prices and speculation, the impacts of roads, ports and other infrastructure on forests, about policy changes which affect land rights, about poorly understood interactions between biodiversity, ecosystems and the climate.

To what extent will UK be able to provide its own biomass and how much is likely to be imported?

26. We understand that the UK is already the world's fourth largest importer of timber. According to the Forestry Commission, we are already reliant on 80% net imports for wood consumption. The projected consumption of woody biomass for biopower will be several times the total UK harvest by 2020. The Forestry Commission has estimated that better management of existing English woodlands could generate up to 2 million tonnes of woodfuel per year, which would make only a very small contribution to biopower demand. More aggressive logging practices such as brash and stump removal mean that generating even this amount of additional woodfuel risks depleting soil and forest carbon and biodiversity. Efforts to stimulate energy crop growing in the UK have been

markedly unsuccessful, and we see no reason to believe that biopower generators will find a fragmented UK supply chain attractive compared to the volume sourcing they are establishing in North America and elsewhere.

27. Between now and 2020, the majority of imported solid biomass fuel is likely to come from North America, but African and South American imports are expected to become important, particularly from new plantations of fast growing species. In South America, development is expected to follow a similar path to the paper and pulp industry, where extensive plantations of water-hungry eucalyptus and pine crowd out local people, food production and biodiversity. UK energy firm MGT has signed an MoU with a Brazilian plantations company, Suzano, to source most biomass for a power station in Teesside from Brazilian eucalyptus. In the tropics, land and labour are cheap, weather conditions give high growing yields, and weak governance means land can be acquired more readily. Further information about the threat of new tree plantations to feed power stations including in the UK can be found in a World Rainforest Movement report.

28. Many studies have estimated the availability of land in other countries, attempting to show how much might be available for growing biomass, however those projections are highly controversial and ignore both future climate change impacts on yields and local communities' reliance on land which is often inaccurately described as 'abandoned' or 'marginal'.

29. The UN FAO has commented, *"contrary to widespread perceptions there is very little 'empty' land as most remaining suitable land is already used or claimed, often by local people. While they offer opportunities for development, there is a risk that the rural poor could be evicted or lose access to land, water and other related resources. Many countries do not have sufficient mechanisms to protect local rights and take account of local interests, livelihoods and welfare."* (*State of the World's Land and Water Resources for Food and Agriculture* (SOLAW), 28 November 2011.

30. The same FAO report comments, *"Rates of growth in agricultural production have been slowing in many areas and are today only half of what they were during the heyday of the Green Revolution. Overall, the world is experiencing an increasing imbalance between availability and demand for land and water resources at the local and national levels. The number of areas reaching the limits of their production capacity is fast increasing."*

31. A European Parliament report, Impact of EU Bioenergy Policy on Developing Countries, finds: *"First and foremost, the rising demand for woody biomass energy is likely to push the global price for wood, thus adding pressure on forests and other ecosystems and increasing conflicts between different land uses. More specific risks are deforestation corresponding with the replacement of natural forests by monoculture plantations. Rural communities are potentially harmed in their access to land and water, their food and energy security for decades given the long-term nature of most investments and projects."*

What factors will have to be addressed to ensure that biomass is sustainable and to what extent is it possible to assess the sustainability of imported biomass?

32. If all biomass power stations, including coal-to-biomass conversion, plans announced by energy companies in the UK were to proceed (excluding those rejected by planning authorities or withdrawn), more than 81 million green tonnes of wood would be burned every year, most of it imported. Industry and policy

makers agree that this represents a major step change in the scale of the biomass fuel supply chain. For example, DECC has published the following data with its BEaC carbon calculator, showing that just the UK biopower demand will impact very significantly on N. American wood production:

Current North American wood production in million oven dry tonnes/ year:

	USA	Canada	Total	Use
Wood harvest	140	60	200	Traditional wood products
Potential Forest Residues	20	10	30	Generally unused
Saw Mill Residues	-	-	13	12 already used for pulp, boards, fuel, animal bedding

(FAOSTAT average yearly roundwood harvest 2008 – 2011. Assuming 30% of FAOSTAT harvest is residue, and 50% of this can be removed for bioenergy. USDA North American Wood Pellet Sector Report. 2009)

33. The European Pellet Council estimated in 2012 that global trade in wood pellets could reach 60 million tonnes by 2020, and DUKES records that UK imports of woody biomass were 1m tonnes in 2011.

34. In our view it is highly unrealistic that sustainability criteria which aim to record the source of biomass fuel and its carbon footprint can be applied effectively to a global supply chain growing twenty-fold or more in 6 years. The intention is to monitor the supply chain at the point of consumption through industry certification schemes and self-reporting by biopower generators who are claiming ROCs. The many recent high profile failings of 'light touch' regulation ought to give the Committee cause for doubt – adulterated meat supplies, unsatisfactory hospital and care home services, poor quality breast implants, banking collapses, insurance mis-selling etc.

35. After decades of voluntary arrangements, the EU has had to enact legislation to outlaw the import of wood harvested without proper permits in overseas countries. What evidence is there to show that the certification and monitoring of imported biomass will be any more effective than previous attempts to control imports of timber or to regulate other industries? On this point, please refer to Biofuelwatch's 2012 report '[Sustainable Biomass: A Modern Myth]'

36. In July 2010, DECC lodged a defence in the High Court against an action by a campaign group challenging the grant of planning permission to a biomass power station (Helius Energy – ref CO/7004/2010.) In its Summary Grounds of Resistance, DECC stated:

"36. The biomass fuel needed for this and many other installations is likely to come from outside the UK. The UK government has no way of imposing, or enforcing, a standard for 'sustainability' on forestry operations in other EU Member States or third countries, and to do so could involve an unlawful restraint on trade."

37. This admission of impotence regarding foreign forestry standards is entirely inconsistent with the recent proposals put forward for managing biomass sustainability. These proposals rely on UK-developed standards being adopted by

commercial undertakings in other countries. They also depend on precise, complete and auditable tracking of biomass fuel from original source. In our view it is unrealistic to believe that a multi-million tonne supply chain across several continents can be monitored in this way.