

Briefing background for your MP/AM on the ROC Banding Consultation

Note: A DECC Consultation on changes to the Renewables Obligation banding (i.e. changes to which types of energy classed as renewable should attract which level of subsidies) has been published and runs until 12th January 2012. It relates to England and Wales only (there is a separate Scottish consultation). The consultation paper can be downloaded from

www.decc.gov.uk/en/content/cms/consultations/cons_ro_review/cons_ro_review.aspx . For background information about subsidies for electricity (Renewable Obligation Certificates or ROCs) for bioenergy and waste as well as the proposed changes, see www.biofuelwatch.org.uk/2011/rocs_introduction/ . For a discussion of the impacts of ROCs for bioenergy and waste, see www.biofuelwatch.org.uk/2011/rocs_impacts . Please see these two Biofuelwatch briefings for full references and a more detailed discussion of points raised in this guide.

Introduction and Summary

The consultation on Renewable Obligation banding states: *'One of the primary aims of the banding review is to contribute to the effective delivery of wider energy and climate change goals to 2050, including Greenhouse Gas (GHG) emissions reductions, decarbonising of the UK grid and energy security'*.

The proposals in the consultation to greatly expand the use of biomass for power generation, far from reducing greenhouse gas emissions will further increase them, whilst not improve energy security. Most of the biomass fuel will have to be imported, requiring millions more hectares of land to be dedicated to energy crops, leading to more deforestation and land-grabbing and thus exacerbating the problems already being caused by the production of transport biofuels.

By 2020, the UK public will be paying in the order of 3 billion a year in subsidies to companies generating electricity from biomass, purportedly to reduce carbon emissions – even though those will in fact be further increased. Biomass electricity will therefore be a wholly unnecessary burden on the UK economy, reducing our economic competitiveness and driving more people into fuel poverty. It will also, directly and/or indirectly, contribute to more land-grabbing and thus hunger and human rights abuses in countries in the global South.

What are the problems with industrial-scale bioenergy?

- ⤴ In contrast to other renewables like wind and solar, biofuel and biomass produce carbon from combustion, processing, transport and land use change. Indeed, the upfront carbon emissions from burning biomass are around 50% higher than those from burning coal per unit of energy and that carbon will not be re-absorbed by new trees and other plants for decades or centuries, if ever.
- ⤴ Unlike other renewables, bioenergy produces significant levels local air pollution affecting health in this country, as well as black carbon (soot) which accelerates polar ice melt.
- ⤴ Biofuel and biomass are not 'renewable' because they require land to be dedicated for decades to growing energy crops, taking land out of use for growing food.

- ⤴ The production of biofuels and biomass overseas is associated with human rights abuses, land grabs, rainforest deforestation, malnutrition, soil & water pollution.
- ⤴ Biomass power generation is an inefficient process. Up to 75% of the energy available in the biomass is wasted as heat.
- ⤴ The Government proposes a cap on subsidies for bioliquids (liquid biofuels, mainly biofuels). That cap would be equivalent to five 50 MW biofuel power stations. If those were run exclusively on palm oil (by far the cheapest vegetable oil), they would require at least 110,000 hectares of new oil palm plantations. For other types of vegetable oil, even more land would be needed. This will mean more deforestation (directly or indirectly) and more land-grabbing.

ROCs for waste incineration

The consultation proposes to continue making subsidies available for electricity from waste, including waste which is not biomass but derived from fossil fuels. Specifically, it proposes to maintain ROCs for energy from waste with CHP, and waste (as well as biomass) gasification and pyrolysis. There are serious concerns about the impacts of waste incineration (including pyrolysis and gasification) including on air pollution and public health and on recycling and overall resource use. Under the EU's Renewable Energy Directive (RED), waste that is not derived from biomass cannot be classed as renewable energy. The Renewables Obligation is one of the main instruments by which the UK Government intends to meet the European 15% renewable energy target. ROCs for energy from waste is incompatible with the RED and could potentially lead to a legal EU challenge.

What are the key issues with the Consultation?

- ⤴ The consultation proposes to not reward renewable technologies based on how much carbon they save, let alone how sustainable they are. If it did, biomass, including bioliquids could not be incentivised.
- ⤴ The consultation highlights that the UK has among the best wind resource in Europe; wind is a free resource. In contrast biofuels & biomass are globally traded commodities that will inflate food and wood prices and be subject to supply constraints.
- ⤴ DECC recognises that there are many other uses for and demands on biomass and that the overwhelming majority of wood to be burnt in power stations will be imported.
- ⤴ Even though burning biomass creates 50% more carbon emissions than coal per unit of electricity, the government would like to convert much of our coal power generation to biomass.
- ⤴ The Committee on Climate Change has advised that there is no place for biomass electricity after 2020 due to high carbon emissions, low conversion efficiency and security of feedstock due to lack of global land.
- ⤴ The sustainability criteria for liquid biofuels used in power generation omit some of the most serious adverse direct effects and a suggested cap on the use of biofuel electricity could still lead to 110,000 hectares of new oil palm plantations resulting indirectly, if not directly (given the complete lack of auditing of 'sustainability' claims) in up to 110,000 hectares of rainforest destruction and/or land-grabbing.
- ⤴ DECC recognise that subsidising Anaerobic Digestion could lead to food crops being grown specifically for producing biogas, but they do not propose to address this risk, even though some other countries, such as the Netherlands, have restricted biogas subsidies to certain types of waste only.
- ⤴ The consultation suggests that cost is the only issue the review needs to consider. It omits to inform the public that when reviewing ROC banding, the Secretary of State must also consider sustainability and carbon emission reduction.
- ⤴ Waste incineration will continue to be eligible for ROCs, despite the concerns and potential legal problems with this explained above.

Context of other renewables

The consultation states that *'The UK has among the best wind resource in Europe. This is a free energy source where the costs reside only in the manufacture, construction and maintenance of the infrastructure'*. Compare this with importing biofuels and biomass from around the globe, a technology that requires land overseas and is a commodity that competes with food prices and other uses for timber and waste. *'Even taking into account the intermittency of wind energy, onshore wind is one of the lowest-cost renewables technologies. Arup's analysis concludes that onshore wind within the UK still has significant deployment potential. Non-financial barriers represent the most significant constraints to deployment... The UK has the largest potential wind energy resource in Europe and wind power is currently one of the more developed and scalable technologies available... The UK is now the global leader for offshore wind... The UK has one of the best tidal range resources in the world. Various studies have estimated the UK's theoretical tidal range resource is enough to supply around 12-15% of current electricity demand. Tidal range faces barriers to deployment largely related to the construction costs and environmental effects... Hydro electricity - the most modern plants having energy conversion efficiencies of 90 percent.'* Compare this to the 25% DECC attribute to biomass electricity efficiency. This is directly contrary to the EU RED which asks Member States to promote the use of high efficiency in biomass conversion of greater than 70% and to the new draft EU Energy Efficiency Directive.

Biomass Introduction

The consultation recognises that biomass is *'also an essential fuel for heat and transport as well as a multitude of uses outside energy'*. The consultation later highlights the problems inherent in this competition: *'use by the power sector may reduce the quantity of biomass available at given prices for use in the heat sector, and in other industries. Increased use of biomass in the energy sector could however affect the prices at which other sectors can access similar feedstocks'*. The implications of this are writ large – more deforestation to meet demand to reduce commodity prices. The following sentence is interesting for anyone hoping that fuel will be local: *'As supply chains for biomass are well developed in North and South America and Europe, we expect that the overwhelming majority of fuels for the expansion of biomass electricity will be imported. Discussions with industry indicate that this is already happening'*. Elsewhere when listing supply sources it scrupulously manages to avoid mentioning forests.

Biomass Co-firing

A new banding and new incentive to co-fire 15% or more biomass with coal is proposed, even though it is acknowledged that *'existing plants may use biomass feedstocks less efficiently than new power stations, this policy offers reduced costs'*. The consultation suggests that co-firing *'helps build the global biomass supply chain which still represents a barrier to investment in large-scale biomass electricity'*. In other words it is promoting and funding expansion of tree plantations and increased logging worldwide. The consultation professes: *'we would very much like to see the full conversion of existing coal plants to biomass.'* It also discusses the merits of burning coal or biomass in terms of relative fuels costs and profitability – it later explains that this price volatility already dictates what fuel a powers station burns on a monthly basis. DECC claims: *'Co-firing is effective in abating carbon emissions from coal plant and is a cost-effective source of large-scale renewable electricity.'*, despite evidence to the contrary. By 2020 the government expects significant conversion from coal to biomass because of *'closure of existing fossil fuelled generation due to the Large Combustion Plant Directive, and inability to continue co-firing if constrained by the measures needed to comply with forthcoming tighter Industrial Emissions Directive environmental performance requirements'*. Yet biomass combustion causes similar levels of air pollution as coal burning – though even higher levels of small particulates and nitrogen oxides (with the Government already expecting to fail to implement EU legal limits for NO₂ in 40 areas by 2015).

According to a report commissioned by the previous government biomass expansion could by 2020 lead to 1 ¾ million live years being lost just from additional small particulates. The Committee on Climate Change has advised that there is no place for biomass for electricity

after 2020 due to carbon emissions, plant efficiency and security of feedstock due to lack of global land.

'The Arup report suggests that there is significant coal fired generation which could convert to deliver up to 2.6GW of dedicated solid biomass deployment.' – This is a great deal of imported woodlands, equivalent to 26 million tonnes of timber.

Biomass Sustainability

'Alongside this consultation, the Government is developing a UK Bio-energy Strategy which will aim to set out our strategic framework for the use of bio-energy. The strategy will consider three main issues:

- *The availability of sustainable feedstocks to 2020 and beyond;*
- *The potential impacts (economic and carbon) of using biomass in the energy sector against alternative uses; and*
- *The possibilities and implications of different uses of biomass feedstocks in the energy sector (electricity, heat and transport) to 2020 and beyond taking into account wider government objectives, such as cost effectiveness, carbon abatement potential, renewables targets and security of supply.'* These complex issues do not apply to other renewables.

DECC recognize that there are emissions associated with transport, processing and land use change but that is an underestimate of full lifecycle emissions. Regarding Indirect Land Use Change, the consultation says: *'We also intend to consider how any proposals to address indirect land use change (ILUC), currently being considered by the European Commission for biofuels and bioliquids, could apply to biomass and biogas.'* This is meaningless as the EC had by the time the consultation was published already decided not to address Indirect Land Use Change emissions at all for at least seven years. There is no mention of the considerable carbon debt which is decades or even centuries. The Committee on Climate Change (CCC) said in their Renewable Energy Strategy earlier this year that they saw no place for biomass electricity only power generation after 2020. They cited concerns over tight limits on land due to increased demand to feed a growing population and questions over the life-cycle emissions associated with biomass production. Furthermore, regarding contributions to Renewable Energy Directive (RED) 2020 targets, CCC advised that biomass would be better used for heat and expressed concern over relying on biomass long term, especially without Carbon Capture and Storage (CCS) – they acknowledge uncertainties over CCS viability.

Bioliquids (liquid biofuels, mainly vegetable oil)

DECC expect *'bioliquids to play a limited role in the generation of electricity to 2020'* as bioliquids should be prioritised for transport and *'availability of key bioliquid feedstocks that will meet the sustainability criteria will be limited'*. Given that bioliquid powers stations granted planning permission could use second-hand marine diesel engines, we are surprised to read: *'The cost analysis undertaken for the banding review suggests that using bioliquids for electricity generation constitutes a relatively expensive set of renewable technologies and that support needs to be significantly increased if we are to see widespread deployment in the electricity sector'*.

Bioliquids sustainability

The consultation recognises *'that certain bioliquids may be sustainable and cheaper than suggested by the evidence for the banding review, and may therefore play a role in delivering some renewables generation for the 2020 renewables target.'* Yet even palm oil remains eligible for ROCs, particularly now that the European Commission has ruled against taking indirect land use change emissions into account and in Germany around 2000 CHP plants are running on palm oil, by far the cheapest type of vegetable oil.

The consultation reminds us that *'In order to be eligible for support the bioliquids must meet the sustainability criteria imposed by the Renewable Energy Directive'*. Unfortunately this takes no account of ILUC, most land use change emissions, most habitat and biodiversity loss, any human rights abuses and social justice issues such as food security, food sovereignty and

resulting increase in hunger. The consultation endeavors to ensure the public that generators must also provide an independent audit (which is an un-audited report compiled by a contractor chosen by the generator) to Ofgem to demonstrate compliance with the sustainability criteria.

Bioliqids Sustainability Cap

The consultation notes: *'It is important that the RO does not incentivise a high level of bioliqid deployment that reduces the availability of bioliqids for use in other sectors, or on sustainability. To reduce the risk of creating these effects we are proposing to apply a cap on the number of bioliqid ROCs that an electricity supplier can use to meet their obligation. The proposed level of the cap is broadly based on the amount of electricity that can be generated from estimates of available sustainable bioliqid without impacting on heat and transport. We have adopted a cautious approach, in setting the cap at a low level, to take into account uncertainties in the data. We propose that suppliers may meet up to 4% of their annual renewables obligation within this banding review period using bioliqid ROCs. This should broadly equate to an overall cap of 2TWh/y in 2017'*. Clearly DECC has concerns over the amount of sustainable bioliqids available. To put 4% into context, this would amount to five power stations the size of the controversial W4B plant in Avonmouth, Bristol. i.e. five power stations of 50 MW each. W4B have delayed construction until this consultation has set the ROC banding for bioliqids as this may affect the project viability and profitability. 4% equates to 450,000 tonnes of vegetable oil which would require 110,000 hectares new oil palm plantations or even more land should some of the feedstock come from other types of vegetable oil.

Energy from Waste (EfW)

The RO only covers EfW with CHP and waste as well as biomass gasification and pyrolysis. The consultation claims that EfW is *'a highly efficient renewable technology that offers significant carbon savings.'* which is questionable as we reduce waste and there other uses for it. Incinerators tend to be built with PFI funding so developers enjoy two taxpayers subsidies. The energy generated by incinerating waste is a small proportion of that which would be saved by recycling and reducing the same materials. For example, recycling paper saves over 9 times as much energy than incinerating it, recycling plastics saves 3 times more and reducing computer waste saves 1,700 times as much. There is no mention of the large range of toxic pollutants emitted by waste incineration nor black carbon. Furthermore, as discussed above, under EU law, the legal basis for including energy from fossil-fuel derived waste in ROCs is very dubious.

Anaerobic Digestion (AD)

AD makes biogas from sewage, slurries and food waste – but also, potentially, from crops such as maize grown for this purpose. In Germany a great deal of agricultural land has been converted to growing maize for AD to make biogas, making biogas one of the main causes of biodiversity losses in the country as well as competing for food and feed. DECC acknowledge this threat: *'If evidence shows large-scale use of crops in AD and a resulting change in land used, we will consider measures to exclude from RO support the large scale use of crops in AD. We are exploring how such a mechanism could work in practice.'* Experience in Germany has already demonstrated the effects of biogas subsidies which do not distinguish between waste and energy crops. Other countries such as the Netherlands have decided to only subsidise biogas from certain types of waste.

Advanced Conversion Technologies (ACT) (Gasification and Pyrolysis)

Advanced conversion technologies (ACT) treat waste and biomass fuel to produce syngas and/or liquid fuels which can be used to generate electricity. Neither pyrolysis nor gasification are proven, reliable technologies. According to a report by the UK's Fichtner Consultant Engineers, both are even less efficient than mass burn incineration. A report commissioned by the German government describes the German experience with biomass gasification: *'Driven by high prices for fossil fuels, about 50 wood gasifiers have been built and installed in Germany between 2000 and 2010...However, some of these plants never worked according to plan. Many have been taken out of operation after some months of trial. Some plants went up*

in flames and developers went bankrupt. The few plants that achieved more or less continuous operation were operating under special circumstances: They were part of university research programmes or were operated by the developers themselves.' (<http://www.gtz.de/de/dokumente/gtz2010-en-small-scale-electricity-generation-from-biomass-part-I.pdf>). In Caithness, Scotland, a biomass gasification CHP project has recently failed in a similar manner. As well as being inefficient technologies which will further increase the demand for biomass with all the problems described above, they are also unreliable and unproven.

Summary

The Ministerial Foreword by Chris Huhne makes the role of biomass clear: *'maximise deployment of the cheapest renewable technologies, such as coal-to-biomass conversions and co-firing.'* One of the primary aims of the banding review is to *'contribute to the effective delivery of wider energy and climate change goals to 2050, including Greenhouse Gas (GHG) emissions reductions, decarbonising of the UK grid and energy security'*. We are later told that *'Before making any changes to those banding provisions, the Secretary of State is legally required to have regard to a number of matters. These are set out in primary legislation - Section 32D(4) of the Electricity Act 1989 (as amended by the Energy Act 2008) In summary this implies that any issues to consider are confined to likes of costs, income, the long term growth, and economic viability.'* In other words, only economic factors have been considered, not sustainability or carbon emissions. However, paragraph 2.8, of the Renewable Obligation Banding Review Process, published in March 2010 says: *'In setting the bands, the Secretary of State will need to have regard to the primary legislation'*. This states that *'before making any banding provision, the relevant minister must have regard to the following matters) wider strategic issues, such as sustainability, carbon emission reduction, cost effectiveness and Government strategies for waste management and biomass.'*

Furthermore, the consultation says: *'The UK Renewable Energy Roadmap sets out our approach to unlocking UK renewable energy potential and focuses on the technologies that have either the greatest potential to help the UK meet the 2020 renewables target in a cost effective and sustainable way, or offer great potential for the decades that follow'*. Biofuels and biomass are not sustainable.