Biofuelwatch response to consultation on the review of Renewable Obligation banding levels, January 2012

INTRODUCTION

Biofuelwatch's position is that all financial support for large-scale solid biomass and bioliquid electricity should be withdrawn. We are also concerned about the definition of anaerobic digestion eligible for ROCs because it includes biogas from dedicated crops rather than from waste only.

We are concerned that the proposals in this consultation will continue to promote a rapid expansion of bioelectricity in the UK. Directly and indirectly, this will lead to tree plantation expansion and more destructive logging, much of it in the global South.

The large-scale use of bioelectricity will not help the UK decarbonise its electricity sector and deliver the reductions in greenhouse gas emissions urgently needed to avoid irreversible and catastrophic climate change; instead it will increase global greenhouse gas emissions during over a period of decades or centuries.

Sustainability criteria and greenhouse gas standards intended to make bioelectricity 'sustainable' cannot and will not prevent serious negative impacts on the climate, on forests and grasslands, on forest-dependent peoples and other communities who will be affected by tree plantations and logging, and on UK communities who will be affected by more harmful air pollution.

We note that that of the 78 questions the consultation raises, 50 apply to bioelectricity, Compared this to just two on solar PV or hydro. This is indicative of the complexity and controversy of bioelectricity.

We have provided short responses to most of the consultation questions relating to bioelectricity, preceded here by a number of overall comments:

SUMMARY

- In contrast to other renewables like wind and solar, biofuel and biomass electricity produce large amounts of carbon from combustion, processing, transport and land use change. Carbon emissions from production of biomass and bioliquids fuels and from burning them will not be re-absorbed by new trees and other plants for decades or centuries, if ever.

- The banding of support for renewable energy technologies does not recognise the widely varying contribution various technologies make to reducing carbon emissions. Solid biomass electricity continues to be deemed 'renewable', even up to a carbon intensity of 285 kg CO2e per MWh (UK RO). Bioliquid electricity is deemed 'renewable' up to 463 kg CO2e per MWh (EU RED assuming a 25% conversion efficiency, and a 35% threshold). These high levels of carbon intensity are orders of magnitude greater than non-combustion renewable energy technologies. The position would be even worse if the official methodology used to calculate the carbon intensity did not erroneously ignore land use change effects and carbon debts from bioenergy production.

- Unlike other renewables, bioenergy produces significant levels of local air pollution affecting health in this country, as well as black carbon (soot), which has a very high

global warming potential because it accelerates polar and glacial ice melt and absorbs solar radiation.

- 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 and increasing the pressure on global biodiversity.

- The overwhelming majority of wood and liquid fuels to be burnt in converted and dedicated new-build power stations will be imported. The production of biofuels and biomass overseas is associated with human rights abuses, land grabs, deforestation of tropical, temperate and boreal forests, malnutrition, soil & water pollution. These environmental and humanitarian impacts are therefore exported and are not discussed in the Impact Assessment.

- The proposed cap on ROCs available to bioliquids would still allow the equivalent of five 50 MW biofuel power stations to be run near continuously. If those were run exclusively on palm oil (by far the cheapest vegetable oil), this 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.

- Biomass power generation is an inefficient process. Up to 80% of the energy available in the biomass is wasted as heat – and this figure does not account for the energy required for example to turn process wood into pellets. Coal power station conversion to biomass burning is presented as a low cost approach and therefore a priority. The consultation acknowledges that older power stations are inefficient in converting the energy in fuel to electricity but suggests that the speed of conversion, and the lower cost are adequate compensating factors. We disagree and refer to the EU RED, which states

  "Article 13.6.

  With respect to their building regulations and codes, Member States shall promote the use of renewable energy heating and cooling systems and equipment that achieve a significant reduction of energy consumption. Member States shall use energy or eco-labels or other appropriate certificates or standards developed at national or Community level, where these exist, as the basis for encouraging such systems and equipment.

  In the case of biomass, Member States shall promote conversion technologies that achieve a conversion efficiency of at least 85% for residential and commercial applications and at least 70% for industrial applications."

- The sustainability criteria for liquid biofuels inherited from the EU RED fail to address some of the most serious adverse direct effects.

- Whist it is acknowledged in the Consultation that the use of Anaerobic Digestion could lead to food crops being grown specifically for producing biogas, the proposals do not set out specific measures to avoid the problem. We understand that 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.

ROCS FOR WASTE INCINERATION

The consultation proposes to continue supporting electricity from waste, including waste, which is not biomass but is derived from fossil fuels. Specifically, it proposes to maintain ROCs for energy from waste with CHP, and fossil-fuel derived 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 Renewable Energy Directive, energy from non-biomass waste is not classed as renewable energy. Providing financial support for energy from waste is therefore not compliant with the RED.

THE CARBON DEBT FROM BURNING BIOMASS

Two important reports published in 2010 and commented on below should inform the UK's use of biomass for energy, particularly at the scale envisaged. Both show that it is erroneous to ignore the temporal aspect of so-called carbon-neutrality. In essence, they dismiss the idea that GHG emissions from burning biomass today can be immediately written down to zero because in time those emissions will be absorbed by future growth. There are in fact no guarantees that today's emissions from bioenergy will be cancelled out by future sequestration which would anyway need to be additional to allow the biomass emissions to be honestly written off.

The crucial mistake with writing down today's biomass emissions to zero is to ignore the imperative need to reduce actual emissions in the next few years, not just hope they will be absorbed at a later time and in other countries or proceed on the basis that sequestration in the future is as effective as reductions today.

The proposals included as sustainability criteria in ROO 2011 do not require that adequate re-planting is undertaken to ensure that current biomass emissions are sequestered in the future, and in adequate time. There is just a reliance on the market to ensure that such replanting occurs. This is a very risky policy.

As well as these two studies, the Scientific Committee of the European Environment Agency issued a written opinion on 15th September 2011 which strongly supports those concerns (www.eea.europa.eu/about-us/governance/scientific-committee/sc-opinions/opinions-on-scientific-issues/sc-opinion-on-greenhouse-gas).

They warn: "*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. Indeed, current harvests, while immensely valuable for human well-being, have already caused enormous loss of habitat by affecting perhaps 75% of the world's ice- and desert-free land, depleting water supplies, and releasing large quantities of carbon into the air.*"

Biomass sustainability standards proposed by the UK Government ignore the carbon debt of biomass and all land-based emissions, based on the false assumption that those are 'taken care of' by certification schemes which certify wood even from old-growth forest logging and from ecosystem and farmland conversion to monoculture tree plantations.

The Manomet Centre for Conservation Sciences, Massachusetts, published '*Biomass Sustainability and Carbon Policy*' in June 2010.

Their study assessed varying rates by which regrowing forests repays the carbon debt incurred by their removal and combustion. And notes that burning biomass emits more greenhouse gases than fossil fuels: "*Forest biomass generally emits more greenhouse gases than fossil*

fuels per unit of energy produced. We define these excess emissions as the biomass carbon debt. Over time, however, re-growth of the harvested forest removes this carbon from the atmosphere, reducing the carbon debt."

Manomet estimated the size of the biomass carbon debt for different situations: if biomass electricity is used to replace electricity generated by natural gas the time to repay the carbon debt is likely to be over 90 years; if it is displacing electricity generated by coal the repayment period over 40 years. Those figures are based on the assumptions that no forests will be logged that are not being logged for timber already and that no land will be converted to new plantations. They are therefore highly conservative.

(if the electricity generation being displaced was from wind, marine and solar, or from CCS-equipped fossil fuel generation, the biomass carbon debt period would be even longer)

The Manomet report concludes: "*So, over a long period of time, biomass harvests have an opportunity to recover a large portion of the carbon volume removed during the harvest. However, this assumes no future harvests in the stand as well as an absence of any significant disturbance event. Both are unlikely.*"

In their May 2010 report, '*The upfront carbon debt of bioenergy*', Joanneum Research state that the key aspect of sustainability with regard to biomass is whether or not terrestrial carbon stocks are maintained or improved:

"GHG sustainability in the case of biomass is, essentially, a question of maintenance of carbon stocks. Except for biomass converted to extremely recalcitrant forms (e.g., fossil fuels or recalcitrant soil carbon), biomass oxidizes sooner or later, regardless of whether humans intervene or not. Thus, maintenance of carbon stocks entails sufficient biomass growth, over some time period and spatial area, to 'make up for' biomass oxidized. Requirements for biofuels to meet sustainability criteria consequently represent imposing responsibility for regrowth of biomass, e.g. for what occurs at the first step in a biofuel's value chain – its cultivation."

They go on to note: *"Globally, as has been the case at least since 1860 (Schlamadinger and Marland 2000), there is a net loss of terrestrial carbon stocks"*

Joanneum Research point out that the GHG saving methodology used for the EU RED does not account correctly for the use of woody biomass from existing forests / plantations, because its time horizon for direct land use change is too short:

"To be eligible for compliance with the D on RES, a biofuel consignment's GHG profile must be calculated. Emissions due to cultivation of biomass, direct land-use change, conversion to a fuel, and transportation must be included. No attempt is made to include emissions due to indirect land use change at this time. …Emissions from direct land use change must be annualised over 20 years. This is a sufficiently short time frame so that biomass grown on land converted from forests, wetlands or recently drained peatlands would generally fail to meet the criteria as long as actual emissions are used. However, this method of calculating GHG emissions does not address the problem of emissions from extraction of biomass where lands remain in the same land use. In particular, the formula does not address emissions due to increased extraction of wood from forests already used for wood supply. As shown in Section 4, the 'value' of such biomass from the perspective of its contribution to reductions in GHG emissions within the time frame relevant to the RES, e.g., the 2020 targets can vary greatly. Use of wood for energy from forests already in use is more likely to occur in the case of use of biomass for heat and power than for biomass for biofuels, at least in the near- to medium-term."

In the second report from 2010, Joanneum assess the carbon debt of different sources of woody biomass to replace non-biomass electricity generation. From Section 4 of the report:

4.1.1 Residues from managed forests

When harvest residues, previously left on the forest floor, are extracted for bioenergy, there is a carbon stock loss in the dead wood, litter and soil pools. It was estimated that the mitigation

potential of such bioenergy material in a 20 year time horizon is reduced by 10-40% by this loss (CN=0.6-0.9).

4.1.2 Additional fellings from managed forests

It was assessed that additional fellings for bioenergy can produce a decrease of the overall C stock in the forest that significantly affects the GHG balance of the bioenergy material. In the short-medium term (20-50 years), additional fellings could produce more emissions in the atmosphere than a fossil fuel system (CN<0). In such a case, the use of additional fellings would produce only very long term benefits, in the order of magnitude of 2-3 centuries.

4.1.3 Bioenergy from new plantations

The GHG balance of biomass from new plantations should include the C stock change due to the conversion from the previous land use (direct and indirect). The biomass source can be carbon neutral when the C stock change is zero or positive (e.g. conversion from abandoned croplands). If there is an initial carbon loss (e.g. conversion from a forest area), the biomass will produce an atmospheric benefit only after that the C stock change is fully compensated by the amount of avoided emissions in replaced fossil fuels.

Joanneum's findings show that the carbon debt from woody biomass can be as long as 300 years, but varies significantly depending on the source and previous land use. It is clearly an over simplification for the ROO 2011 sustainability and carbon saving criteria to be applied uniformly across all types of wood fuel. And of course to ignore the carbon debt altogether.

There was and still is often the claim that "young trees sequester more" as an attempt to justify cutting old growth forest and replacing with plantations. The US Center for Biological Diversity (CBD) has addressed this mistaken view:

"Contrary to popular belief, young forests do not have the highest carbon sequestration rates or net ecosystem productivity. In fact, Law et al. (2003) examined the variation in productivity and sequestration according to stand age. Net ecosystem productivity was actually the lowest in the initiation stands (9-23 years), moderate in young stands (56-89 years), highest in mature stands (95-106 years) and trended downward in the oldest stands (190-216 years), but was still greater than the youngest stands (Figure 4).

Law et al. (2003) also found that the old stands had the highest level of carbon storage in live mass by age 200 and it did not decline after that (mean 17.6 kg Cm -2). Overall ecosystem carbon storage increased rapidly until 150-200 years and did not decline in older stands (Law et al. 2003).

These findings are not new and appear to have been ignored by policy that is encouraging such rapid and uncapped expansion of bio-energy use in the UK - which can only realistically be achieved through massive new tree plantings, in turn enabled by massive clear-cutting.

VOLUME OF BIOMASS AND LEVEL OF IMPORTS

The vast bulk of planned biomass burning for electricity implied by the July 2011 UK Renewable Energy Roadmap and by the proposed banding for the Renewable Obligation will have to be supplied by imports.

Biofuelwatch has summarised all of the currently announced UK company proposals for biomass power stations as well as existing ones (www.biofuelwatch.org.uk/biomass_map/). Those plans, if implemented, will require around 60 million tonnes of wood to be burnt annually for electricity generation. Yet, according to the Forestry Commissions 2011 statistics, total annual wood production in the UK is just under 10 million green tonnes a year.

The Forestry Commission's Woodfuel Strategy aims to develop an additional 2 million tonnes of biomass per year, though we have serious concerns over the impacts of greater deadwood, whole tree and even stump removal on biodiversity, forest carbon storage, forest soils and their ability to support trees in future. Two million tonnes, however, does not even meet one third of biomass capacity planned by just one large generator - Drax.

ConFor estimated that imports at the level indicated to satisfy UK bio-energy aspirations would almost double the present global trade in wood pellets and chips.

WIDER EFFECTS OF THIS EXPANSION OF WOOD IMPORTS

The proposed UK expansion of biomass usage should be seen in the context of the global market for timber. The UNECE reported in August 2010:

"The only segment of the [wood] market that grew in 2009 was wood used for energy (graph 4). Government policies to mitigate climate change and to improve energy security boosted renewable energy sources, of which wood is the key component. In the European Union, wood accounts for more than 50% of renewable energy sources. Incentives to promote wood energy have intensified competition for wood supplies. Demand for wood began to increase in early 2010, and in combination with the record low harvests, roundwood prices rose."

"Forest products markets are now global, as illustrated by China's meteoric rise over the past decade to become a major producer, consumer and trader of wood and paper products (graph 5). China has competed successfully on price and quality to seize market share from former leaders, such as Italy for furniture. However, to take advantage of lower manufacturing costs and to maintain competitiveness, UNECE region companies are now increasingly investing in production facilities in other countries in southeast Asia and South America."

In simple terms, there is already a global land grab to secure future supplies of wood for both construction and furniture and for energy. A UK biomass strategy reliant on a near doubling of global wood pellet and woodchip production in the next few years will only exacerbate this, with all the consequential sustainability impacts and uncertainties.

As Europe and the UK use an ever-greater proportion of their own wood for bioenergy, wood imports for other markets increase. The direct and indirect impacts on land-use change, biodiversity and climate are likely to be similarly deleterious as those of bioliquid fuels, with the additional likelihood of greater forest degradation.

The expansion of wood-based bioenergy is already leading to an expansion of monoculture tree plantations, for example in West Papua, where Medco holds a concession for converting a large area of rainforest to dedicated tree plantations for woodchips and wood pellets for export, and in Brazil, where eucalyptus plantations are being expanded rapidly, at the expense of highly biodiverse and carbon-rich wooded savannah. Tree plantations for biomass exports to Europe are being established in the Republic of Congo.

In many parts of Scandinavia, old growth forest logging and other highly destructive logging has been documented and appears to be accelerating, due to attempts to 'harvest' ever more wood, not least for bioenergy. A letter signed by over 200 scientists worldwide as well as by thousands of individuals and many groups warns against the destruction of the last of Sweden's old growth forests and states: *"The Swedish Government and the Swedish Forest Industries Federation advocate further forestry intensification, with methods such as stump extraction, increased use of non-native tree species, restoration of ditches, and fertilization, which threaten the biodiversity even more.*" (http://protecttheforest.se/upprop/en).

In 2007 an Open Letter against the destruction of old growth forests in Northern Finland was signed by 257 researchers who said: " *...it can be reasonably stated that logging of natural forests causes irreversible change of habitat, and destroys an important part of our national heritage as well as genetic and species diversity. As a result, present and intended loggings in forested Lapland...are unsustainable and in obvious conflict with the biological diversity conservation agreements to which Finland is committed.*" The letter also warned that logging practices are seriously affecting the livelihood of the indigenous Sami people in Lapland (tinyurl.com/2veoj9b).

A study by Marshall Wise et al showed that carbon reduction policies which only account for fossil carbon will result in all natural forests and virtually all natural grasslands being destroyed by 2065

(www.sciencemag.org/cgi/content/abstract/324/5931/1183).

Another recent study by Robert McDonald et al shows that bioenergy for electricity is the most inefficient use of land, requiring 2,844 – 4,294 km2/GW, more than any other type of electricity generation. By comparison, onshore wind requires 199-243 km2/GW, solar thermal 26-52 km2/GW and solar PV 52-130 km2/GW

(www.plosone.org/article/info:doi/10.1371/journal.pone.0006802).

Subsidies for bioenergy inevitably lead to maximum land conversion and thus ecosystem destruction and humanitarian impacts compared to other forms of renewable energy.

SOCIAL AND HUMANITARIAN IMPACTS IN PRODUCING COUNTRIES

The sustainability criteria for bioliquids in the RED and RO, and those proposed for biomass in the UK ignore human rights, land rights, hunger and malnutrition, pesticide poisoning and all other impacts on people in producing countries

They have been condemned by hundreds of civil society organisations, many of them from the global South.

Forest-dependent peoples and other communities will be seriously affected by greater industrial logging and by tree plantation expansion. New plantation concessions are already being granted, for example in Brazil, Guyana, Republic of Congo and West Papua. In West Papua, for example, Medco has been granted a large concession for rainforest land to establish plantations for bioenergy woodchips and pellets for export. In Brazil, Suzano Papel e Celulose is investing $1.3 billion in the production of wood pellets from eucalyptus for export to Europe. They have recently signed a Memorandum of Understanding for the supply of pellets to MGT Power, a UK energy firm whose plans for a 295 MW biomass power station in Teesside have been approved and who have also applied for a similar power station in Tyneside.

Suzano is heavily involved in the development and promotion of Genetically Engineered eucalyptus. The wood is expected to come from Piaui, where the last remnants of the Atlantic Forests are being destroyed for eucalyptus and other plantations. Suzano and other Brazilian plantation companies have been denounced by civil society groups in Brazil for evicting indigenous peoples, Afro-descendent people and peasants (tinyurl.com/3x5jr8x).

Human rights abuses, including evictions and pesticide poisoning, slave-like working conditions, more hunger and malnutrition as people are displaced from their land, forests and pasture are turned into plantations – those realities of tree plantations are entirely ignored under the RO and RED sustainability criteria.

MONITORING AND CERTIFICATION

A stretched international supply chain is inherently much more difficult to monitor and virtually impossible to control. The experience with timber extraction for construction, furniture and paper production bears this out. It was necessary for the EU to legislate in 2010 to ban imports of illegally harvested timber even though voluntary certification schemes run by the FSC and PEFC have been in operation for many years. It is implausible that illegally harvested timber will not find its way into the biomass supply chain, as demand is stimulated by renewable energy financial incentives.

Primary forests logged industrially for the first time - certified or otherwise - are destroyed and what remains is often permanently ecologically damaged. Logged primary forests' carbon stores, biodiversity and ecosystems will never be the same. Selectively logged rainforests become fragmented, burn more and are prone to deforestation.

Best estimates are that the FSC for example has already certified first time industrial logging of sixty million hectares of primary and old-growth forests, and an equal amount is threatened. This is an area the size of South Africa.

A significant proportion biomass imports are likely to come from countries where governance arrangements are weak. An example is given in the Environmental Investigation Agency report, '*UP FOR GRABS - Deforestation and Exploitation in Papua's Plantations Boom*':

"Between 2000 and 2005 massive illegal logging and timber smuggling activities focusing on merbau timber in Papua led to 300,000 cubic metres of logs flowing unimpeded to China every month for the flooring sector. This was a billion dollar a year racket coordinated by international criminal syndicates facilitated by corrupt officials and security apparatus at the highest levels. In Indonesia commercial stocks of merbau are only found in Papua. Papuans were being robbed, typically receiving just US$ 10 for timber fetching over US$250 in China and sold as flooring for US$2,288 in the EU."

(http://www.eia-international.org/files/news566-1.pdf)

The 2010 *"Report from the Commission to the Council and the European Parliament on sustainability requirements for the use of solid and gaseous biomass sources in electricity, heating and cooling"* commented in relation to certain countries outside the EU, that:

"At a global level, deforestation and forest degradation continue...Among the root causes for deforestation and forest degradation are weak governance structures for forest conservation and sustainable management of forest resources, in particular in developing countries. A large number of countries are party to intergovernmental initiatives to put in place criteria and indicators to monitor sustainable forest management, but they are not entirely based on common principles and criteria and do not have a mechanism for verifying compliance with the agreed principles."

BLACK CARBON AND SOOT

Black Carbon is considered by some scientists to be the second largest contributor to global warming after CO2. Yet the biomass sustainability criteria and the carbon saving thresholds in the RED and the RO do not attempt to deal with the issue or apply any factor to allow for this deleterious impact of burning biomass.

The UN's Economic Commission for Europe found that, "*Urgent action to decrease (black carbon) concentrations in the atmosphere would provide opportunities, not only for significant air pollution benefits (e.g. health and crop-yield benefits), but also for rapid climate benefits, by helping to slow global warming and avoid crossing critical temperature and environmental thresholds,*" (UNECE's Executive Body for the Convention on long-range transboundary air pollution, meeting in Geneva, 15-18 December 2008).

James Hansen's report in 2003, 'Soot climate forcing via snow and ice albedos' concluded:

"Summary. The soot effect on snow albedo may be responsible for a quarter of observed global warming. Restoration of snow albedos to something approaching pristine preanthropogenic values would have the double benefit of reducing global warming and raising the global temperature threshold at which dangerous anthropogenic interference with climate occurs.

Already, soot emissions from coal are decreasing in many regions with transition from small users to power plants with scrubbers. The largest source of soot in developed countries is now diesel fuel, and in developing countries biofuels are also important."

(http://www.pnas.org/content/101/2/423.long)

Mark Jacobson, director of Stanford University's Atmosphere / Energy Programme has written:

"Controlling soot may be the only method of significantly slowing Arctic warming within the next two decades. We have to start taking its effects into account in planning our mitigation efforts, and the sooner we start making changes, the better."

AIR POLLUTION

Both local and transboundary air pollution will be increased by expansion of bio-energy.

The UK Renewable Energy Strategy 2009 reported that up to 1.75 million life years would be lost in the UK in 2020 due to emissions caused by bioenergy expansion. Although it is believed the majority of the mortality effects will arise from biomass heating systems sited in urban areas, nonetheless the presence of large biomass electricity power stations that are operated typically 8000 hours a year, and will consume many millions of tonnes of wood fuel per annum, must be a major concern. Particulate emissions are very difficult to effectively screen, especially the very small and most harmful ones. Several planned power station developments are sited in areas close to residential areas.

BIOMASS DEMAND WILL LEAD TO GENETIC ENGINEERING OF TREES

The growing demand for bioenergy is being used by companies such as ArborGen, Suzano and Weyerhaeuser to speed up the development of Genetically Engineered trees, such as cold-resistant eucalyptus and faster-growing trees. The UK Government's proposed 'sustainability standards' do not preclude use of woodchips and pellets from GE trees. In the UK, MGT Power's main woodchip supplier is now expected to be Suzano Papel e Celulose who are strongly involved in the development of GE tree plantations in Brazil. Forth Energy, who are proposing four large biomass power stations in Scotland, state that they want to burn large amounts of eucalyptus and list four regions for supplies (Florida, Baltic States, Scandinavia and UK) where eucalyptus is not commercially grown at present. They state that most of the wood will come from Florida. ArborGen have permission from the US government to plant 250,000 GE eucalyptus trees in the Southeastern US, including Florida (subject to a legal challenge by environmental organisations) and seek to commercialise GE eucalyptus in the region.

GE trees pose a serious risk to forests because they can spread across large areas, cross-pollinate with non-GE trees and mutate in ways which cannot be predicted. Furthermore, eucalyptus is highly invasive, requires large quantities of water and thus worsens groundwater depletion and droughts, and is very flammable. Furthermore, commercial release of GE trees would increase companies' financial incentives to replace forests and other ecosystems with such plantations. For more information, see: www.globaljusticeecology.org/stopgetrees.php

RESPONSES TO SPECIFIC CONSULTATION QUESTIONS

Relevant Questions:

18. *Do you agree that we should not exempt existing generators from future changes to the UK's sustainability criteria for solid and gaseous biomass? Please explain your response with evidence.*

Not exempting existing generators will not address the issue of sustainability, since the future changes to the UK's sustainability criteria outlined are not fit for purpose. They do not include full lifecycle carbon emissions, Indirect Land Use Change, carbon debt, human rights abuses, land grabs, food security and food sovereignty issues, pesticide issues, virtual water importation, all soil and water issues, most habitat & biodiversity loss. For further evidence on these serious issues that have been omitted from sustainability criteria, please see:

http://www.biofuelwatch.org.uk/wp-content/uploads/ROCS-impacts-briefing.pdf

19. *Do you consider that the 90% biomass purity threshold is still appropriate? Please explain your response with evidence.*

The 90% figure includes energy or plant matter and the background to this question arises from industry, that some high biomass content material and wastes can still contain small levels of fossil based contaminants which cannot be easily removed. They are therefore seeking to lower 90% level. The review proposes to keep retain the existing level, clearly any reduction would not be large. The 90% biomass purity threshold is not appropriate as biomass is not appropriate to provide ROCs for biomass as it is not sustainable and increases carbon emissions. At the same time, for the reasons described above and below, we believe that ROCs for burning, gasifying or pyrolysing fossil-fuel derived waste should also be stopped due to their impacts on waste reduction and recycling (and thus greenhouse gas emissions) and on air quality and public health.

20. *Do you agree with the Arup assessment of costs and deployment potential for biomass conversion? Please explain your response with evidence.*

This question concerns itself with fiscal matters. It is based on economics and takes no account of environmental costs.

21. *Do you agree that 1 ROC/MWh is an appropriate level of support for biomass conversions? Please explain your response with evidence.*

We do not agree any ROCs are appropriate for biomass conversions. Biomass power stations produce 50% more upfront carbon emissions than coal power stations. DECC claim: '*Co-firing is effective in abating carbon emissions from coal plant and is a cost-effective source of large-scale renewable electricity*.', DECC ignore stack emissions as they consider those emissions from biomass to be carbon neutral. 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. [Unknown A1]]

Unsustainable demand for wood and wood-products – together with demand for land for monocultures - is already a key driver behind the destruction of forests worldwide (tinyurl.com/3mwbt5l). In this context, the creation of another vast market for wood, this time for bioenergy, can only accelerate deforestation and forest degradation. The global wood bioenergy market is still in the very early stages, though growing rapidly as a result of subsidies across Europe and North America. The impacts of this demand are likely to be very similar to those which result from the unsustainable demand for paper, particularly since both bioenergy and pulp and paper companies can use fast-growing, 'low quality' wood, albeit plans are to grow trees on even shorter rotations for bioenergy than for paper. Millions of hectares of forests, in Sumatra, Tasmania, Brazil and many other countries, have been 'pulped' and turned into plantations for paper. A recent article published in the scientific journal *Nature* confirms that tree plantations are one of the reasons for the destruction of tropical forests "with potentially dire consequences for tropical biodiversity"(tinyurl.com/3n2lxll). There are no reasons to expect the impacts of a large new wood demand for bioenergy to be any different. Not only tropical forests, but also boreal and temperate forests are being targeted for ever more intense and destructive logging and for conversion to plantations. It is estimated that deforestation is responsible for 25-30% of greenhouse gas emissions worldwide (tinyurl.com/3vbuqou).

Studies have shown that even if forests were not destroyed for bioenergy and if, instead, every tree felled was replaced by a new one – a highly unrealistic assumption – burning wood in power stations nonetheless leads to a 'carbon debt' of decades or centuries (e.g. tinyurl.com/3x25bcg and tinyurl.com/35lb35e), making global warming worse exactly during at a time when CO2 emissions must be brought down as fast as possible. Biomass power stations are particularly inefficient and CO2 smokestack emissions tend to be around 50% higher per unit of electricity produced than those from coal burning (tinyurl.com/3xsvxb2).

Biomass combustion causes similar levels of air pollution as coal burning – though, per unit of electricity produced, 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 life years being lost just from additional small particulates.

Biomass combustion raises nitrogen and ammonia levels that have an adverse affect on local marine ecosystems.

23. *Do you agree that all former fossil fuel generating stations which convert their entire generation to biomass before April 2013 should be transferred to the biomass conversion band? Please explain your response with evidence.*

No, for the reasons outlined above. To reiterate just one point, this would lead to more carbon emissions than if they were to remain fossil fuel generators. Such an act would also lead to all the other adverse sustainability issues outlined above. See same evidence. [Unknown A2]

24. *Do you agree that support under the biomass conversion band should be grandfathered at the rate set from 1st April 2013? Please explain your response with evidence.*

ROCs for any type of biomass electricity should not be grandfathered for the reasons outlined above as this not only guarantees revenue for generators but also ensures continuation of environmental and social abuses.

25. *We would welcome evidence on the differential in generation costs, the costs of making biomass conversion economically viable for industrial auto-generators, and deployment potential for auto-generating coal to biomass conversion.*

Such a question takes no account of environmental costs.

26. *Do you agree with the Arup assessment of costs for enhanced co-firing? Please explain your response with evidence.*

Such a question takes no account of environmental costs. When reviewing ROC banding, the Secretary of State must also consider sustainability and carbon emission reduction.

27. *Do you agree that 1 ROC/MWh is an appropriate level of support for enhanced co-firing? Please explain your response with evidence.*

No. We are calling for no ROCs for enhanced co-firing for the reasons and evidence already submitted. This represents a doubling of the previous incentive.

28. *Do you agree that generating stations should generate at least 15% of their electricity from biomass in order to qualify for the enhanced co-firing band? Please explain your response with evidence.*

No. We are calling for no ROCs for enhanced co-firing for the reasons and evidence already submitted. This intention openly encourages generators to use a feedstock that not only produces more direct carbon emissions than coal but has a myriad number of undesirable consequences. The consultation professes: '*we would very much like to see the full conversion of existing coal plants to biomass.*'

29. *Do you agree that generators should meet this minimum 15% threshold on a monthly averaged basis? Please explain your response with evidence.*

No, for the same reasons as above.

30. *Do you agree that support under the enhanced co-firing band should be grandfathered? Please explain your response with evidence.*

Enhanced co-firing should not be grandfathered for the previously outlined reasons as this not only guarantees revenue for generators but also ensures continuation of environmental and social abuses.

31. *Do you agree with the Arup assessment of costs and generating potential for standard co-firing of biomass? Please explain your response with evidence.*

This question concerns itself with fiscal matters. It is based on economics and takes no account of environmental costs. When reviewing ROC banding, the Secretary of State must also consider sustainability and carbon emission reduction.

32. *Do you agree with the proposed level of support of 0.5 ROCs/MWh for standard co-firing of biomass? Please explain your response with evidence.*

No. We are calling for no ROCs for standard co-firing of biomass for the reasons and evidence already submitted.

33. Do you agree that standard co-firing of biomass should continue not to be grandfathered? Please explain your response with evidence.

Enhanced co-firing should not be grandfathered for the previously outlined as this not only guarantees revenue for generators but also ensures continuation of environmental and social abuses.

34. *Do you agree with the Arup assessment of costs and deployment potential for dedicated biomass? Please explain your response with evidence.*

This question concerns itself with fiscal matters. It is based on economics and takes no account of environmental costs. When reviewing ROC banding, the Secretary of State must also consider sustainability and carbon emission reduction.

35. *Do you agree with the biomass fuel price assumptions for domestic and imported fuel from AEA, and the use of a 10:90 domestic to imported ratio for average fuel*

costs for large (>50MW) dedicated biomass and 90:10 for small (<50MW) dedicated biomass based on the Arup report? Please explain your response with evidence.

We have no comment on the assumptions regarding the prices of domestic and imported biomass fuel supplies. Other than to re-emphasise that the costs of fuel supply should not be the only consideration in setting energy policy.

36. ***Do you agree with the proposed level of support of 1.5 ROCs/MWh for dedicated biomass until 31 March 2016, reducing to 1.4 ROCs/MWh from 1 April 2016 ? Please explain your response with evidence.***

No. We are calling for no ROCs for dedicated biomass for the reasons and evidence already submitted.

37. ***Do you agree that the support level proposed for dedicated biomass manages the risk of locking supplies of feedstock in to this sector? Please explain your response with evidence.***

Throughout the consultation references are made to creating a supply chain e.g.: It suggests that co-firing '*helps build the global biomass supply chain which still represents a barrier to investment in large-scale biomass electricity*'. So one hand we seem to be being told that expanding a market will build a supply chain (or put another way, deforestation) but this question appears to be asking if the public subsidy is sufficiently high to allow generators to compete in the globalised free-market to outbid other timber uses (e.g. panel industry, paper & pulp, construction, etc) to 'lock-in' their supply.

38. ***Do you agree with the Arup assessment of generation costs and deployment potential of bioliquids, and the bioliquid fuel prices as set out in the Impact Assessment? Please explain your response with evidence.***

This question concerns itself with fiscal matters. It is based on economics and takes no account of environmental costs. When reviewing ROC banding, the Secretary of State must also consider sustainability and carbon emission reduction.

39. ***Do you agree that support for bioliquids should be the same as for solid and gaseous biomass under the dedicated biomass, biomass conversion, enhanced co-firing and standard co-firing bands? Please explain your response with evidence.***

No. We are calling for no ROCs for bioliquids as well as the various forms of biomass. Virtually all current biofuels have been shown to be worse for the climate than the fossil fuels they replace if all direct and indirect impacts are considered. Palm oil is by far the cheapest type of biofuel that can be burned for heat and power and that is widely available. According to a 2007 report by the UN Environment Programme, palm oil is the main cause of permanent forest loss in Indonesia and Malaysia (tinyurl.com/3uexbdk). It is also increasingly a driver of deforestation in many other countries, including the Philippines, Papua New Guinea, Cameroon, Uganda, Benin and Mexico. Emissions associated with palm oil biofuels can be even higher than those from tropical deforestation in general: Particularly in Indonesia and Malaysia, a high proportion of new oil palm plantation is on peatlands. One study found that CO2 emissions from peat fires in 2006 Indonesia alone were 900 million tonnes (tinyurl.com/y8ko6jk) – far more than the UK's annual greenhouse gas emissions.

Even burning European rapeseed oil has been shown to be worse for the climate than burning mineral oil, due to emissions linked to fertiliser use and indirect land use change are considered (tinyurl.com/42l7a5a). Used cooking oil and some types of residues, such as tall oil, are often considered to be the most 'climate friendly' biofuels, however both are in very short supply and are already in high demand, for example for transport biofuels in the case of used cooking oil and by the chemical industry in the case of tall oil. Burning them in power stations will simply cause more palm oil or fossil fuels to be used elsewhere.

Bioliquids also have an adverse affect on the issues listed in answer 18 and once again we present our impacts briefing as evidence.

41. *Do you agree that a cap should be put in place on the amount of electricity generated from bioliquid that suppliers can use to meet their renewables obligation? Please explain your response with evidence.*

No as we are calling for no ROCs for bioliquids bands for the reasons and evidence already submitted.

42. *Do you agree with the level of the cap being set at 4% of each supplier's renewables obligation, broadly equivalent to a maximum level of generation of 2TWh/y in 2017? Please explain your response with evidence.*

No as we are calling for no ROCs for bioliquids bands for the reasons and evidence already submitted. Also, the consultation refers to sustainability: '*It is important that the RO does not incentivise a high level of bioliquid deployment that reduces the availability of bioliquids 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 bioliquid 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 bioliquid 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 bioliquid ROCs. This should broadly equate to an overall cap of 2TWh/y in 2017*'. This all sounds rather vague but clearly DECC has concerns over the amount of sustainable bioliquids available. To put 4% into context, this would amount to five powers stations the size of planned W4B plant in Avonmouth, Bristol. W4B have delayed construction until this consultation has set the ROC banding for bioliquids as this may affect the project viability and profitability. 4% equates to 450,000 tonnes of biodiesel, which is equivalent to adding 450,000 polluting diesel cars to adversely affect our air quality; 110,000 hectares of direct or indirect rainforest destruction if palm is used and more land if other feedstocks; ten times the amount of palm oil currently used for transport biofuels; represents the use of enough land to feed 562,500 UK citizens on an average diet.

43. *Do you agree that from 1 April 2013, bioliquids should be treated in the same way as solid and gaseous biomass for the purposes of our grandfathering policy? Please explain your response with evidence.*

Bioliquids should not be grandfathered for the previously outlined reasons as this not only guarantees revenue for generators but also ensures continuation of environmental and social abuses.

44. *Do you agree with the Arup analysis on costs and potential on EfW with CHP, including the estimates of gate fees used? Please explain your response with evidence.*

This question concerns itself with fiscal matters. It is based on economics and takes no account of environmental costs. When reviewing ROC banding, the Secretary of State must also consider sustainability and carbon emission reduction.

45. *Do you agree that 0.5 ROCS is an appropriate support level for EfW with CHP? Please explain your response with evidence. We would particularly welcome evidence relating to levels of gate fees received by generators and additional capital costs relating to heat offtake.*

No, since there are serious concerns that this sector should even be in this public consultation. 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.

No as we are calling for no ROCs for EfW with CHP as incineration adversely affects air quality, the climate and is not an efficient use of resources:

Waste incineration emits hundreds of different chemicals, many of them toxic and many of unknown composition (tinyurl.com/6x2vyvx). Those include, amongst others, small particulates, dioxins and other halogenated organic compounds, mercury, heavy metals and nitrogen oxides. Some of them, such as dioxins and mercury, remain in the environment for a long time, accumulate over time and are toxic even in very low doses. Health impacts of dioxins include cancer, birth defects, immune system damage, behavioural disorders, IQ deficits and disruption of normal hormone production. Mercury is a powerful neurotoxins, which means it attacks the central nervous system, as well as heart, kidney and lungs. Like many other toxins, it is particularly harmful to young children and to unborn babies.

Waste incineration produces black carbon – please see previous comments on this.

The RO only covers EfW with CHP and considers it '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 (tinyurl.com/275hqmm). 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. Waste incineration in the UK and elsewhere in the world discourages reusing, recycling and, where appropriate, composting materials, whether fossil-fuel based plastics, or organic waste, including paper (tinyurl.com/6d9zso5). It thus encourages more overconsumption of natural resources, such as wood and fossil fuels and thus contributes to ecosystem degradation and destruction.

46. In addition to municipal solid waste, do you consider that there are any other types of wastes which could benefit from provisions deeming their biomass content or benefit from more flexible fuel measurement and sampling procedures? If so, please specify and provide evidence on how we might determine accurately the renewable content of these wastes.

No as we are unaware of any wastes (not already) identified in the consultation that does not adversely affect air quality, or climate change when incinerated.

47. *Do you agree with the Arup analysis on costs and potential on AD and AD with CHP, including the estimates of gate fees used? Please explain your response with evidence.*

This question concerns itself with fiscal matters. It is based on economics and takes no account of environmental costs. When reviewing ROC banding, the Secretary of State must also consider sustainability and carbon emission reduction.

48. *Do you agree with the proposed level of 2 ROCs/MWh for Anaerobic Digestion, stepping down to 1.9 ROCs in 2015/16 and 1.8 ROCs in 2016/17? Please explain your response with evidence.*

Most people in the UK associate biogas with energy from food waste. The consultation also refer to, sewage, slurries as well as food waste. When organic waste rots in landfill it emits methane, which is more than 20 times as powerful a greenhouse gas as carbon dioxide when calculated over a century. Turning such waste into biogas rather than putting it into landfill is clearly beneficial for the climate, provided that biogas does not compete with composting and thus lead to more synthetic fertilisers being used.

What the experience with biogas in Germany has shown, however, is that generous subsidies for biogas that do not discriminate between biogas from waste and biogas from whole crops, especially maize, result in large-scale land conversion and create the same food versus fuel

conflict as biofuels. In Germany, even carbon-rich moorlands and nature reserves are being ploughed up and turned into maize monocultures and then cultivated with fertilisers which result in high emissions of nitrous oxide, a greenhouse gas some 300 times as powerful as CO2 – all of that to feed the country's 6,000 biogas digesters. The direct and indirect climate impacts of maize biogas are thus likely to be very negative (tinyurl.com/3g2o482).

The consultation is aware of this sort of 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.*' Yet this evidence clearly already exists – from Germany. Biogas feedstock is not globally traded but tends to be far more local than that for biofuels and biomass. Nonetheless, large-scale biogas production from whole crops such as maize will cause the same food-versus-fuel competition and is likely to further push up food prices in the same way as is the case for European and US biofuel production from corn and wheat.

Given these concerns, we are against any ROCs for biogas made from crops.

Biogas made from sewage, slurries and true food waste seems sensible but this may well be better used from the point of view of efficiency for transport (an issue raised over bioliquids in the consultation) or piped into the mains gas infrastructure for heating.

49. *Do you agree with the proposal to replace the standard and advanced pyrolysis and gasification bands with two new ACT bands? Please explain your response with evidence.*

No. Advanced conversion technologies (ACT) treat waste and biomass fuel to produce syngas and/or liquid fuels, which can be used to generate electricity. There is no evidence that gasification and pyrolysis are any more efficient than conventional mass burn waste incineration. To the contrary, according to a report by the UK's Fichtner Consultant Engineers, both are even less efficient than mass burn incineration (tinyurl.com/6d9zso5). And a study commissioned by the German government shows that small-scale gasification for electricity has been developed for over 30 years, but that virtually all projects have faced serious technical problems as well as having very low efficiency (tinyurl.com/36ywgl7).

We are calling for no ROCs for ACT since gasification and pyrolysis emits hundreds of different chemicals, many of them toxic and many of unknown composition (tinyurl.com/6x2vyvx).

50. *Do you agree with the eligibility criteria for the new standard ACT and advanced ACT bands? Please explain your response with evidence.*

No, please see above.

51. *Do you agree with the proposed levels of support for the new standard ACT and advanced ACT bands? Please provide evidence on the relevant technology capital and operating costs (including levels of gate fees) to support your comments).*

No, please see above.

53. *We would welcome information on the nature and scale of actual or potential air emissions produced in the generation of electricity from pyrolysis oil.*

It is a cause for concern that this consultation proposes to subsidize an technology with customers money, when asking the public: *'There is limited evidence available on the likely air emissions that may result in using pyrolysis oil for electricity generation. We therefore invite information about the nature and scale of actual or potential air emissions produced in the generation of electricity from pyrolysis oil'*. This question suggests that DECC are also concerned about air quality issues. Why in that case are they not concerned about air quality (AQ) from combustion of biomass, bioliquids, waste & AD of dedicated crops? Why are there no similar question to (53) in the relevant sub-sections? Please see our evidence supplied above regarding adverse affects of pyrolysis on AQ.

60. ***Do you agree with the Arup assessment of generation costs and deployment potentials for CHP technologies, and with the fuel prices used in the analysis? Please explain your response with evidence.***

This question concerns itself with fiscal matters. It is based on economics and takes no account of environmental costs. When reviewing ROC banding, the Secretary of State must also consider sustainability and carbon emission reduction.

61. ***Do you agree that 2 ROCs/MWh is an appropriate level of support for dedicated biomass with CHP? Please explain your response with evidence.***

No, as we are calling for no ROCs for dedicated biomass with CHP for the reasons and evidence already submitted.

Biomass CHP, as defined under the EU Cogeneration Directive, has never been implemented in this country as there is clearly a lack of market interest and suitable heat distribution infrastructure.

62. ***Do you agree that 2 ROCs/MWh is an appropriate level of support for dedicated energy crops with CHP? Please explain your response with evidence.***

No, as we are calling for no ROCs for dedicated energy crops with CHP for the reasons and evidence already submitted.

63. ***Do you agree that 1 ROC/MWh is an appropriate level of support for standard co-firing of biomass with CHP? Please explain your response with evidence.***

No, as we are calling for no ROCs for standard co-firing of biomass with CHP for the reasons and evidence already submitted.

64. ***Do you agree in principle that 1.5 ROCs/MWh is an appropriate level of support for standard co-firing of energy crops with CHP? It would be helpful if you could provide evidence on costs and deployment potential to inform our decision.***

No, as we are calling for no ROCs for standard co-firing of energy crops with CHP for the reasons and evidence already submitted.

65. ***Do you agree with the arrangements for transition from the CHP uplift to RHI support as set out in this chapter (i.e. no RHI for projects accrediting under the RO; one-off choice between RHI and CHP uplift for projects accrediting between April 2013 and March 2015; no CHP uplift for projects accrediting after that date, unless the RHI is unavailable for that technology on 1 April 2015)? Please explain your response with evidence.***

No, as we are calling for no ROCs for standard co-firing of biomass with CHP for the reasons and evidence already submitted.

66. ***Do you agree that we should adopt a policy of grandfathering the CHP uplift for eligible projects from 1 April 2013? Please explain your response with evidence.***

The CHP uplift should not be grandfathered for the previously outlined reasons as this not only guarantees revenue for generators but also ensures continuation of environmental and social abuses.

67. ***Do you agree in principle that we should consider extending the CHP uplift to the new biomass conversion and enhanced co-firing bands until 31 March 2015? It would be helpful if you could provide evidence on costs and deployment potential to inform our decision.***

No, as we are calling for no ROCs for CHP uplift on all biomass for the reasons and evidence already submitted.

68. ***Do you consider it would be appropriate to introduce a CHP uplift into the RO for ACTs? If so, please provide evidence on capital and operating costs of plant***

operating in CHP mode, together with likely deployment potential between now and 2020 and, if possible, 2030?

No, as we are calling for no ROCs for CHP uplift on ACT for the reasons and evidence already submitted.

69. ***Do you agree that we should narrow the definition of energy crops to limit its scope to only the short rotation coppice and perennial grass species as described above? Please explain your response with evidence.***

Narrowing the definition is welcomed as it previously included for example, eucalyptus monocultures or palm oil from oil palm plantations that had been planted on previously rainforested peatlands. However it is not narrow enough as it is still combustion of biomass that has an adverse affect on AQ, climate change (carbon & black carbon emissions) and an acceleration of monocultures of short rotation coppice might well replace natural grassland and other ecosystems in the UK. There is also an issue with these plantations being water-intensive. When additional UK land is turned over to energy crops this will create the same conflict and displacement issues as existing energy crops between food and fuel. The result can be food insecurity or more deforestation in for example the tropics to grow food.

70. ***Do you agree that we should grandfather the energy crop uplift from 1 April 2013, but only for those crops meeting the new definition? Please explain your response with evidence.***

Energy crops should not be grandfathered for the previously outlined reasons as this not only guarantees revenue for generators but also ensures continuation of environmental and social abuses.

71. ***Do you agree with the proposed level of 2 ROCs/MWh for dedicated energy crops, stepping down to 1.9 ROCs in 2015/16 and 1.8 ROCs in 2016/17? Please explain your response with evidence.***

No, as we are calling for no ROCs for energy crops for the reasons and evidence already submitted.

72. ***Do you agree with the proposed level of 1 ROC/MWh for standard co-firing of energy crops? Please provide evidence on costs and deployment potential.***

No, as we are calling for no ROCs for standard co-firing of energy crops for the reasons and evidence already submitted.

73. ***Do you consider that we should extend the energy crop uplift to the new biomass conversion and enhanced co-firing bands? It would be helpful if you could provide evidence on costs and deployment potential to inform our decision.***

No, as we are calling for no ROCs for energy crops, biomass conversion and enhanced co-firing for the reasons and evidence already submitted. The latter two represent a staggering amount of biomass feedstock and the government would like to convert all coal to biomass. If the uplift were actually increased how many additional hectares of UK or foreign land would be converted to energy crop monocultures so that generators could reap a higher reward for burning it in power stations?

74. ***Do you agree that the co-firing cap should be removed completely from 1 April 2013? Please explain your response with evidence.***

No as this only exacerbate all the myriad problems we have raised. Co-firing 15% or more biomass with coal (called 'enhanced co-firing') will attract double those subsidies. This is to encourage larger coal power stations to partly switch to biomass. So far, ROCs could only be claimed for co-firing up to 12.5% biomass with coal and that cap will be removed. 15% is not an unappreciable amount of biomass. Drax currently co-fires 222 MW of electricity, which is approximately 6% of generation, which equates to 1.1 million tonnes of biomass. It is clearly profitable to increase this mix from 6% to beyond 15% and will become far more so is an Enhanced Co-Firing banding was introduced. Drax intend to convert 4 GW of coal to biomass

and with the likes of Eon have joined forces with the REA in their Back Biomass to lobby DECC to increase subsidies for co-firing.

Current proposals are likely to result in much more co-firing of biomass with coal, which is additional to the burgeoning biomass electricity power station sector and dedicated biomass combustion. This is increased demand for wood is still further compounded by full conversion from coal to biomass. This year RWE was granted permission to convert its 1,131 MW (1.1 GW) coal power station at Tilbury to a 750 MW 100% biomass power station. This will be far larger than any existing biomass power station worldwide and will burn an estimated 750 million tonnes of biomass, mainly imported wood, a year.

75. *If you think that the cap should be increased (i.e. to allow more co-firing) or restricted to standard co-firing of biomass, please state what an appropriate level for the cap would be and why? Please support your response with evidence.*

The cap should be restricted to zero percent so that there is no incentive to co-fire for the reasons and evidence already submitted.

78. *In addition to the specific questions asked throughout this consultation document, do you have any other comments on any aspect of our proposals? In each case, please explain your response with evidence.*

Please take our introductory comments into account under this question. In addition:

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:

'I*n 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.'*

Our view is that there is very little evidence that these other 'wider strategic issues' have been given more than cursory attention in the proposals for banding. Indeed they appear to have intentionally excluded.