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4 June 2007

**The Danish Energy Authority's comments on the Commission's consultation on *Biofuels issues in the new legislation on the promotion of renewable energy***

*Question 1.1:*

**Do you think the "possible way forward" described above is feasible?**

*Question 1.2*

**What do you think the administrative burden of an approach like the "possible way forward" would be? (If possible, please quantify your answer.)**

*Question 1.3*

**Please give your general comments on the "possible way forward", and on how it could be implemented. Does it give an adequate level of assurance that biofuels will be sustainably produced?**

**If you think the problem should be tackled in a different way, please say how, giving details of the procedures that would be used.**

*Answer to question 1.1*

A biofuels certification scheme can help promote the most sustainable biofuel technologies in terms of energy accounting, biodiversity and social circumstances. The Commission's intention to table a proposal on this later in the year is therefore a very positive step.

Any certification scheme should be a simple scheme with the focus on a major environmental impact at low cost. General instruments are the most cost-effective basis. If external factors can be sufficiently internalised in market prices through suitable quotas, taxes and general rules then the markets themselves can be expected to promote acceptable biofuels.

One should therefore ask to what extent the need for special certification of liquid biofuels for transport purposes springs from shortcomings in the general environmental rules governing production in agriculture, forestry, the processing industry, etc., which could be better remedied using general instruments rather than introducing a certification scheme.

One of the problems may be to ensure that the same requirements are genuinely set on the sustainability of biofuels or raw biomass imported into the EU as are set on what is produced in the EU. An international certification scheme may be needed to adequately guarantee that.

Developing certification systems and criteria takes time and we therefore welcome the fact

that the Commission is proposing a simple system based on environmental sustainability. The introduction of a certification system is urgent given the high speed of developments in the biofuels sector. At the same time analyses can be started up to permit the later inclusion of further aspects. The certification system should deal with parameters that are not covered by other general instruments and the basis should as far as possible be aggregated variables rather than detailed rules. For example, the impact on food prices can be a parameter for the inclusion of social sustainability. Similarly, the monitoring of agricultural land use should be based on macro analyses rather than inspection of individual areas.

#### *Answer to 1.2*

There are bound to be administrative burdens regardless of how a certification system is set up. This is difficult to quantify while it is still unclear what kind of control and verification requirements there will be. It is important to guarantee a scheme that is transparent for businesses, which means, for instance, that the certification system should not include aspects that could just as easily be regulated by other means, see above. There is not much Danish experience with the certification of agricultural products.

#### *Answer to 1.3*

The method described is an initial step towards a simple method which can be continually improved and extended. Criterion 1 should cover all greenhouse gas emissions, not just CO<sub>2</sub> emissions.

The proposed target for reducing greenhouse gas emissions by replacing conventional gasoline/diesel with biofuel is definitely felt to be too low (10%) given the typical replacement rate, which the Commission estimates<sup>1</sup> at ca. 30-50% for the cheapest EU-produced first-generation biofuels, and a replacement rate of ca. 90% for imported bioethanol produced from sugar cane and future second-generation fuels. The environmental purpose of using biofuels is to reduce greenhouse gas emissions by the transport sector. The Commission should also consider the possibility of gradually adjusting the target so as to promote the development and cost-effective use of new, more efficient technologies.

A prerequisite for a certification system is that there is agreement on a common method for calculating greenhouse gas emission savings from the use of biofuels.

Another aspect which it is important to include is energy efficiency. A lot of energy is consumed in converting biomass into biofuel using current biofuel production methods, plus there is the energy consumed in growing the crops. Even if the biofuels produced using CO<sub>2</sub>-neutral energy, e.g. biomass, show a handsome reduction in greenhouse gas emission compared to other biofuels, this does not mean that energy consumption is low. There will therefore be a need to evaluate the overall energy efficiency in the future, because biomass for energy is a limited resource.

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<sup>1</sup> Review of economic and environmental data for the biofuels progress report, 5389/07 ADD 1, Brussels, 16 January 2007.

*Question 1.4*

**Carbon stock differences between land uses would be taken into account under criterion 2. Should they also be taken into account under criterion 1? If so, what method should be used to determine how the land in question would have been used if it had not been used to produce raw material for biofuels?**

*Question 1.5*

**As described in the "possible way forward", criterion 3 focuses on land uses associated with exceptional biodiversity. Should the criterion be extended to apply to land that is adjacent to land uses associated with exceptional biodiversity? If so, why? How could this land be defined?**

*Question 1.6*

**How could the term "exceptional biodiversity" (in criterion 3) be defined in a way that is scientifically based, transparent and non-discriminatory?**

*Answer to 1.4*

Carbon storage in the ground and forests is an important parameter in recording greenhouse gas emissions. However, that does not mean that a certification system has to contain a detailed verification of the use and monitoring of all the EU's land. For EU-internal production in any case the question is whether a certification system is the correct instrument for a detailed regulation of land use for different purposes. We should try to find a simple system which is capable of monitoring and verifying production outside the EU.

*Answer to 1.5 and 1.6*

Biodiversity is an important criterion in a certification scheme. At the 2002 UN World Summit in Johannesburg a resolution was adopted aimed at achieving a substantial reduction in the loss of biodiversity by 2010.

Protecting land with a high asset value, which is characterised by extensive farming practices, is a key element in achieving the target in 2010 but this also applies to cultivated land. We should therefore ensure that agricultural and forestry land in the broad sense does not experience a reduction in biodiversity as a result of an increase in biomass production. This should be based as far as possible on a macro-analysis of impacts.

*Question 2.1:*

**Please give your comments on the "possible way forward" described above. If you think the problem should be tackled in a different way, please say how.**

*Question 2.2*

**Do you think it is possible to link indirect land use effects to individual consignments of biofuel? If so, please say how.**

*Answer to 2.1*

The described, more general monitoring of the evolution of agricultural land use is a good solution since it is definitely a difficult problem to tackle.

*Answer to 2.2*

No, it is very difficult to imagine how indirect effects can sensibly be included directly in a certification system. We should try to take account of indirect effects via the general monitoring of land use evolution and regulate them via other environmental measures.

*Question 3.1:*

**How should second-generation biofuels be defined? Should the definition be based on:**

- a) the type of raw materials from which biofuels are made (for example, "biofuel from cellulosic material")?**
- b) the type of technology used to produce the biofuel (for example, "biofuels produced using a production technique that is capable of handling cellulosic material")?**
- c) other criteria (please give details)?**

*Answer*

On the whole it is appropriate to promote biofuels using the desired general characteristics and not detailed production-method specifications.

The decisive factor is to what extent biofuels, in technological terms, have been developed sufficiently to be nationally competitive and environmentally sustainable, i.e. contribute to reducing greenhouse gas emissions and be sustainable as regards energy accounting, biodiversity and social circumstances. In contrast, whether the specific production method can be described as first- or second-generation technology is less important.

Also, there is no sharp distinction between first and second generation technologies. An example can be taken from the most advanced Danish trials on producing bioethanol from straw in DONG Energy's IBUS plant. DONG Energy apparently envisages the future industrial-scale production of bioethanol from straw as being integrated with bioethanol production from wheat germ since the production lines can come together, e.g. at the distillation stage, so that the end-product is an inseparable mixture of straw- and wheat-ethanol. The integration can be done, for instance, to minimise costs in collecting the biomass and to gain economies of scale in the production process.

It is generally true that when biofuel is first produced it is in practice very difficult to determine its origin. Large bioethanol storage tanks can be expected to contain bioethanol of varying origin.

Some technologies, including gasification, can without problem use the whole grain, e.g. whole maize plants, or special energy crops on a single production line.

Definition (b) is the most relevant in the sense that the decisive feature is that second generation technology extends the potential biomass base to cover cellulosic material. But the definition cannot always be used in practice to assess whether a given quantity of biofuel should be characterised as first or second generation.

*Question 3.2:*

**Please give your comments on the "possible way forward" described above. If you think the problem should be tackled in a different way, please say how.**

*Question 3.3*

**Should second-generation biofuels only be able to benefit from these advantages if they also achieve a defined level of greenhouse gas savings?**

*Answer:*

We can envisage a number of problems in granting special aid for the use of second-generation biofuels.

First, it is not possible in practice to make a clear distinction between first and second generation biofuels, see the answer to question 3.1. Second, a given political objective can usually be promoted most cost-effectively via general instruments designed in relation to the objective.

The political desire in the EU to replace a certain amount of conventional gasoline/diesel in the transport sector with biofuels, which is typically justified by the increase in energy security, CO<sub>2</sub> reduction and the promotion of rural development, can, for instance, be satisfied by a general order to the oil companies that biofuels must make up a certain percentage of sales, after which it can be left to the oil companies themselves to decide the cheapest way they can satisfy that requirement in terms of the choice of fuels, the blending percentages, regional variations, etc.

If the oil companies are told to sell more biofuel than can be used in existing vehicles without technical and environmental problems costs are liable to rise substantially.

A set of suitably general rules on greenhouse gas emissions with quotas, taxes, etc., can ensure that the oil companies take the necessary account of the CO<sub>2</sub> impact. The general environmental rules, see the answer to questions 1-2, can ensure that poorer solutions in environmental terms are discouraged *a priori* or wholly ruled out.

If there is a political desire to promote special production methods thought should be given to whether this can be done most effectively by direct support to research, development and demonstration projects for the technologies. Or the support could be linked to the effect, in particular the replacement of greenhouse gases, rather than specific production technologies.

*Question 4.1:*

**Should the legislation include measures to ensure that diesel containing 10% biodiesel (by volume) can be placed on the market, and is in fact placed on the market?**

*Answer:*

In general terms, opportunities to use larger quantities of biofuel can be promoted by implementing EU-wide rules and standards allowing biofuels to be added to conventional gasoline/diesel at the highest percentages possible without causing technical problems in respect

of use in existing cars without modifying them, and without this being at the expense of essential environmental considerations. This must depend on a precise technical assessment of where the upper limit lies. The Commission is asked to ensure that this assessment is carried out with the necessary thoroughness.

If the compulsory sale of diesel with a specific amount of biodiesel is forced through this will be at the expense of cost-effectiveness by comparison with a solution in which it is left up to the oil companies to decide how to comply with a specific requirement on the sale of biofuels, cf. the answer to questions 3.2-3.3.

*Question 4.2:*

**Should the legislation include measures to encourage the use of ethanol and biodiesel in high blends? If so, what?**

*Question 4.3:*

**Should the legislation include measures to encourage the use of biomethane, methanol and DME in transport? If so, what?**

*Answer:*

The Commission should try to draw up common European rules, norms and standards both for vehicles and for fuels which ensure that special biofuels can only be used at high percentages in special vehicles in a way that essentially complies with the same environmental and technical requirements as apply to fossil fuels and normal vehicles.

As we have already mentioned, special technologies can be promoted by strengthening development efforts.

*Question 4.5:*

**Should the legislation ask the Commission to review, by a given date, whether it is possible to be confident that the 10% target can be achieved through:**

- a) rules that allow 10% blending by volume of ethanol in ordinary petrol, plus**
- b) rules that allow 10% blending by volume of biodiesel in ordinary diesel, plus**
- c) the four options listed under 'other options for solving the problem';**

**If so, what should the date be?**

**If the review were to conclude that the target is unlikely to be met, what action should the Commission take?**

*Question 4.6*

**More generally, what role should taxation play in the promotion of biofuels (considering different situations such as low blends, high blends and second-generation biofuels)?**

*Answer*

It is important to evaluate the targets set at EU level. The 10% biofuel target must be conditional on the development of second-generation biofuels and on sustainable production. There are also requirements on cost-effectiveness, cf. the conclusions of the European Council of 8-9 March 2007.

The legislation should therefore also contain a requirement that the Commission should perform a mid-term evaluation, e.g. in 2015, to verify that the conditions have been fulfilled and that the 10% target appears to be achievable in a cost-effective manner under the rules on fuels and vehicles valid at the time.

The lowest unit costs can be realised if specific and binding targets for biofuels are restricted to a level than can be achieved in existing vehicles without technical or environmental problems or extraordinarily high additional costs, as also mentioned in our answer to questions 3.2 and 3.3.

The initiatives that would be taken on the basis of a mid-term evaluation in 2015 are difficult to assess at the present time.

With regard to the addition of ETBE we must stress that for environmental reasons this is not a desirable course of action in Denmark. ETBE's properties are very similar to MTBE's, and even in very small quantities the latter can make drinking water undrinkable. High concentrations of MTBE have been found in Denmark in the groundwater surrounding relatively old service stations. Drinking water supplies in Denmark are based to a very large extent on untreated groundwater. The Danish oil sector has therefore promised the Danish environment minister not to add MTBE to 92 and 95 octane gasoline. The addition of ETBE would be unacceptable for the same reason. MTBE is only added to 98 octane gasoline, which accounts for some 1% of total gasoline sales and is sold from specially protected service stations. Considerations of clean, untreated drinking water are therefore an obstacle to the use of ETBE in Denmark.

It should be left to individual Member States to decide whether to stimulate the use of special biofuels or blending percentages with the aid of a system of taxes.