

Biofuel issues in the new legislation on the promotion of renewable energy

Public consultation exercise, April – May 2007

Energy and Transport Directorate-General, European Commission

April 2007

This document has been prepared by the Commission services as a basis for comments. It does not prejudge the final form of any decision to be taken by the Commission.

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Introduction

On 10th January 2007 the European Commission made proposals for a new Energy Policy for Europe.¹ These included a renewable energy roadmap² proposing:

- a binding 20% target for the overall share of renewable energy in 2020 – the effort to be shared in an appropriate way between Member States;
- a binding 10% target for the share of biofuels in petrol and diesel in each Member State in 2020, to be accompanied by the introduction of a sustainability scheme for biofuels.

The Commission is now drafting proposals to incorporate these targets in legislation.

In doing so, the Commission will take into account the views of stakeholders as expressed in last year's consultation exercises on heating and cooling and biofuels³ and the recent consultation exercise on administrative obstacles to the increased use of renewable energy in electricity generation.

The present consultation document complements those exercises. The Commission would like to know the views of public authorities, businesses, non-governmental organisations and other interested parties on the following questions:

- 1) How should a biofuel sustainability system be designed?
- 2) How should overall effects on land use be monitored?
- 3) How should the use of second-generation biofuels be encouraged?
- 4) What further action is needed to make it possible to achieve a 10% biofuel share?

The rest of the document explains the questions in more detail.

Responses should be sent to TREN-BIOFUELS-CONSULTATION@ec.europa.int by **Monday 4th June 2007**. This document exists only in English, but responses can be in any Community language.

If you have views on some questions and not others, do not hesitate to send an answer covering only these questions.

Contributions will be published, on http://europa.eu.int/comm/energy/res/legislation/biofuels_en.htm.

For data protection reasons, the Commission will not process any specified personal data that you include with your reply.

¹ See http://ec.europa.eu/energy/energy_policy/documents_en.htm

² COM (2006) 848

³ Reports can be found at http://ec.europa.eu/energy/res/legislation/biofuels_consultation_en.htm and http://ec.europa.eu/energy/res/consultation/heating_cooling_en.htm.

1. How should a biofuel sustainability system be designed?

The Commission intends to bring forward a proposal for a simple incentive/support system for biofuels. Its objective is to further increase the greenhouse gas benefits of EU biofuel policy and to minimise environmental risks. The system could discourage:

- the conversion of land with high biodiversity value for the purpose of cultivating biofuel feedstocks;
- the use of environmentally harmful systems for biofuel production.

It should avoid any discrimination between domestic production and imports and should not act as a barrier to trade. Its operation should be monitored with a view to making it more sophisticated in future.

A possible way forward

One option for the initial design of the scheme (before it is reviewed and steps are taken to make it more sophisticated) would be as follows:

- a) The legislation would list the "sustainability criteria" to be fulfilled by the biofuels that are used to fulfil the biofuels target.

There could be three of these criteria (see box 1).

- b) Biofuels that failed to meet one of these criteria would not count towards national biofuel targets. They would not count towards national "biofuel obligations"⁴. They would not be eligible for tax reductions and similar types of financial support.
- c) Member States would be responsible for ensuring that the criteria were respected.

The legislation would set out some procedural requirements (for example on reporting, verification and monitoring).

The legislation would define types of evidence that Member States would have to accept as evidence that the sustainability criteria were fulfilled (see box 2).

⁴ *Biofuels obligation*: a measure requiring a fuel supplier to incorporate a given proportion of biofuel in the fuel it sells.

BOX 1

POSSIBLE ENVIRONMENTAL SUSTAINABILITY CRITERIA FOR BIOFUELS

Sustainability criterion 1 – achieving a minimum level of greenhouse gas savings

Biofuels used to fulfil the requirements of the legislation should not emit more greenhouse gases in production than they save by avoiding the use of petrol or diesel – or (to give a safety margin) should achieve at least a given amount of greenhouse gas savings (for example 10%).

The directive would define 'default values' for net greenhouse gas savings from different types of biofuel. These could, for example, be based on the ranges given in the JRC/EUCAR/Concawe "well-to-wheel" study.⁵ They would cover greenhouse gases in general, not just carbon dioxide.

Biofuel suppliers could choose to use these default values, or to provide more precise information on the savings from their particular production process.

Sustainability criterion 2 – avoiding major reduction in carbon stocks through land use change

Biofuels used to fulfil the requirements of the directive should not use raw material from land that was in certain land uses before a certain date (for example, the date of the Commission proposal).⁶ These land uses would be those that are associated with high carbon stocks (for example, wetlands). IPCC guidelines⁷ could be used to identify them.

The directive would define the land uses in question.

Sustainability criterion 3 – avoiding major biodiversity loss from land use change

Biofuels used to fulfil the requirements of the directive should not use raw material from land that was in certain land uses before a certain date (for example, the date of the Commission proposal). These land uses would be those that are associated with exceptional biodiversity.

The directive would define the land uses in question.

⁵ <http://ies.jrc.cec.eu.int/wtw.html>. The study shows that the main factors influencing biofuels' greenhouse gas balances are the raw material used, the energy source used in the transformation process and (in some cases) the use made of by-products.

⁶ This wording is not meant to rule out different verification systems being used. Examples include:

- "track and trace", under which a certificate accompanies the raw material/biofuel from farm to filling station;
- "book and claim", under which raw material/biofuel producers acquire certificates and fuel sellers have to obtain them, but the certificates are not necessarily transmitted along with the biofuel;
- "mass balance", based on figures for the proportion of material meeting the sustainability criteria that is contained in each load of raw material/biofuel.

⁷ Intergovernmental Panel on Climate Change

BOX 2

POSSIBLE TYPES OF EVIDENCE TO SHOW THAT ENVIRONMENTAL SUSTAINABILITY CRITERIA ARE RESPECTED

1. Some EU Member States and other countries are developing national schemes to measure greenhouse gas impacts. Once accredited for EU use through a comitology process, these would be evidence of greenhouse gas emissions in production (for sustainability criterion 1). The same approach could apply to international schemes that may be developed.
2. There are voluntary, international schemes setting standards for the production of agricultural and forest products. Some include requirements that would prevent land use change of the types described by criteria 2 and/or 3. Once accredited for EU use through a comitology process, these would be evidence that these criteria have been respected.
3. The European Community could negotiate bilateral or multilateral agreements with third countries, confirming that these countries have in place procedures to ensure that the types of land use change described by criteria 2 and/or 3 do not happen. The existence of such an agreement would be evidence that these criteria have been respected.
4. In the absence of these types of evidence, it would be for Member States to determine how to verify the fulfilment of the criteria. The directive could lay down minimum requirements for how this should be done.

This option is put forward as a starting point for discussion and to give an indication of how a system could work in practice.

General questions

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.

Questions relating to individual criteria in box 1

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 focusses 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?

2. How should overall effects on land use be monitored?

The problem

Two of the sustainability criteria in the "possible way forward" in section 1 relate to the direct conversion of land for biofuel production from other uses.

Increased demand for biofuels is also likely to have an indirect effect on land use, leading to an increase in the total amount of land devoted to forestry and crop production.

This land use change will be associated with greenhouse gas savings from biofuel use. It will have other environmental effects. These could be positive or negative. The environmental effect of using land that would otherwise have been used for an out-of-town housing development is different from the effect of using land that would have been a biodiverse habitat.

It seems clear that these indirect effects cannot be linked to individual consignments of biofuel. But they should still be monitored.

Possible way forward

The legislation could ask the Commission to report regularly on:

- how land use would have developed if biofuel use had remained constant;
- how land use has in fact developed; and
- the estimated effect on overall land use of increasing biofuel use.

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.

3. How should the use of second-generation biofuels be encouraged?

The Commission intends to bring forward a proposal to encourage the production and use of second-generation biofuels.

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)?**

Possible way forward

The legislation could require Member States to give an advantage to second-generation biofuels in their support systems.

For example,

- Under national biofuel obligations, second-generation biofuels would count extra (for example, double) – this would mean that an obligation to achieve a 2% share of first-generation biofuels could be fulfilled, instead, with a 1% share of second-generation.
- The legislation would confirm that second-generation biofuels may receive higher subsidies than first-generation biofuels (subject to Community state aid rules and applicable Community tax legislation).

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?

4. What further action is needed to make it possible to achieve a 10% biofuel share?

The problem

The proposed target for biofuels is a 10% share, by energy content, in 2020.

The easiest way to get biofuels into the market is by blending them directly with ordinary fuel and using them in low blends in ordinary vehicles.

The most widely available biofuels today are ethanol (replacing petrol) and biodiesel⁸ (replacing diesel) - although other petrol and diesel replacers exist.

The fuel quality directive (directive 98/70/EC) limits the direct blending of ethanol in petrol to 5% by volume. This equates to 3.4% by energy content.

The diesel standard (EN590) limits the direct blending of biodiesel in diesel to 5% by volume. This equates to 4.4% by energy content.

If the 10% (energy content) target is to be met mainly by direct blending of ethanol and biodiesel, these limits will need to be changed. They will also need to be changed if the existing 5.75% (energy content) target for 2010 is to be met mainly by direct blending of these fuels.

The current situation

As a first step, the Commission has proposed amending the fuel quality directive to increase the maximum blending of ethanol in petrol to 10% by volume (6.8% by energy content). This proposal is under consideration by the Council and the European Parliament.

The Commission has given the European Committee on Standardisation (CEN) a mandate to amend the diesel standard to allow a 10% biodiesel blend (8.8% by energy content). This process may take a long time – perhaps 4 years – and may not lead to widespread availability of fuel containing 10% biodiesel.

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?

Other options for solving the problem

Even if the changes described in the last section come to fruition, they will not be enough for the 10% target to be met – if it is to be met mainly by direct blending of ethanol and biodiesel.

⁸ The term "biodiesel" in this section refers to the fuel also known as FAME (Fatty Acid Methyl Ester).

The target could be met through other means than the direct blending of ethanol and biodiesel:

1. More ethanol can be added to petrol in the form of the fuel additive ETBE. However, limits on ETBE blending in the fuel quality directive mean that even with maximum use of ETBE, the 10% target will not be reached.
2. Ethanol and biodiesel can be used in high blends – 85% or 95% ethanol, 100% biodiesel, for example – outside the scope of the fuel quality directive and the diesel standard. However, unlike low blends, these fuels need specialised vehicles and distribution systems.
3. Other biofuels that can be used are biomethane (made from biogas), methanol (made from biomass-based synthesis gas) and dimethyl ether (DME). However, these fuels also need specialised vehicles and distribution systems.
4. New types of biofuel or ways of using them could avoid the blending constraints in the fuel quality directive and the diesel standard. An example is the second-generation biofuel "BTL" ("Biomass-to-liquid" or Fischer-Tropsch diesel). However, it is not certain when or if these fuels and technologies will come onto the market on a wide scale.

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?

Possible way forward

If none of these methods can be relied on to ensure that the target will be met, it will be necessary to allow a further increase in the share of ethanol that can be blended in ordinary petrol – up to 20%, for example – and perhaps also to allow a further increase in the share of biodiesel that can be blended in ordinary diesel – up to 15%, for example.

For manufacturers to take these requirements into account in designing the vehicles that will be on the roads in 2020, a decision should be made soon.

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)?⁹

⁹ See also the Green Paper on market-based instruments for environment and related policy purposes, COM (2007) 140