

**Review of EU biofuels directive, Public consultation exercise, April-July 2006  
Input from Novozymes A/S.**

**Question 1.1:**

*Is the objective of promoting biofuels still valid?*

Answer: Yes.

Novozymes finds that developments since the directive was adopted in 2003 have reinforced the case for biofuels. The importance of security of supply has been underlined as the costs of oil have increased. The challenge of climate change is still there and alternatives to liquid fossil fuels are still very limited.

The technologies involved in biofuels have improved continuously over the last years thereby allowing biofuels to become increasingly cost effective. However it is also the opinion of Novozymes that Europe should not base itself on only one alternative to fossil fuel, but look at all potential ways of securing energy supply and reducing greenhouse gas emissions, so the possibilities of biofuels should be pursued in parallel with other technologies.

Novozymes would like to add that whereas security of energy supply and climate changes may seem to be the main reasons for a continuous promotion of biofuels in Europe the effect on job creation should also be emphasized. The biofuel area requires intensive R&D resources, which allows for the creation of a significant amount of knowledge based jobs and the agricultural sector will benefit from job creation in rural areas, which is particularly important after the CAP reform in Europe.

Furthermore the development of advanced technologies will potentially allow for future technology export from Europe.

**Question 2.1:**

*With existing policies and measures, will biofuels achieve a market share of 5,75% in the European Union by the end of 2010?*

Answer: Since the adoption of the directive it has become very clear that when trying to predict the future for biofuels one must make a distinction between first generation products (bioethanol based upon grains or sugar beets and biodiesel based upon oil crops) and second generation products ( bioethanol based upon lignocellulosic material and biodiesel based on waste from slaughter houses and similar or building on biocatalytic conversion instead of chemical conversion ).

Data from the market shows that first generation biofuels already are close to being competitive and only a minor raise in oil prices is required to make these products fully competitive with the existing policies and measures for tax exemptions and/or similar incentives.

Based on this we believe that the market share of biofuels will go up in the coming years, but it may move too slowly to reach 5.75% in 2010 unless something extra is done.

For second generation products it is not possible to get a move with the present policies and measures.

**Question 2.2:**

*What are the main factors favouring the development of biofuels use in the EU? What are the main obstacles?*

Answer: Factors favouring the development of biofuels use in the EU include rising oil prices and the Kyoto requirements. But hopefully also the various initiatives from the EU Commission including the biomass action plan, the strategy for biofuels as well as the Technology Platform for Biofuel will catalyze industry-, university- and government cooperation and thereby push the market towards biofuels.

Main obstacles include "unbalanced" taxation or incentive systems, but also import tariffs, which are considered to be too low and therefore stimulate import of cheap ethanol from countries such as Brazil or Russia.

Furthermore the reluctance from the existing oil market, which seems to favour using bioethanol for MBTE replacement more than for direct blending with gasoline may be seen as an obstacle.

From a purely technical point the Reid Vapour pressure is a technical obstacle which needs to be solved.

**Question 3.1:**

*Looking towards 2010 is the present European system of indicative targets and support to biofuels appropriate or does it need to be changed?*

Answer: The present system is not appropriate; since it does not provide a guarantee that the goal of 5.75 % is reached. Only mandatory targets can guarantee that the goals are reached. In particular for second generation products, which for sustainability reasons are the preferred solution, indicative targets and support is not enough.

**Question 3.2:**

*What are your views on the advantages and disadvantages of the options described in section 3.2 of this paper?*

Answer: As already stated it is necessary to distinguish between first generation biofuels and second generation biofuels. Over the last years there has been a growing understanding that second generation biofuels represents the better solution from a sustainability point of view. It is however the position of Novozymes that it will take 5-10 years before the second

generation market is established, and one of the prerequisites for its establishment is a well functioning first generation market where solutions have been found to logistics and similar. Among the various options listed in the questionnaire the following are considered to be best.

Option A: The biofuels directive is amended to fix targets for each Member State. These targets are mandatory – that is failure to achieve them automatically places the Member State in breach of Community law.

Option D: The biofuels directive is amended to require Member States to use biofuels obligations (requiring fuel suppliers to incorporate a given percentage of biofuels in the total amount of fuel they place on the market) as a tool to achieve national targets.

Option E: A biofuels obligation is imposed at Community level on each fuel supplier

Option I: All fuel is labelled to show the proportion of biofuels it contains (At present only fuel with a biofuels content above 5% has to be labelled)

Option J: A campaign is organized to inform consumers of the benefits of biofuels.

As already mentioned we believe that targets must be mandatory and based upon a general EU regulation. Leaving the decisions to Member States may create barriers to trade. We cannot judge which of options A, D or E is the most suitable. Option I and J cannot stand alone, but we believe that such kind of consumer/public information should be used as a supplement to in order to encourage pull from the market.

**Question 3.3:**

*How should the options you favour be put into practice?*

Answer: By EU legislation.

**Question 3.4:**

*Should other options than those in section 3.2 be considered?*

Answer: Oil companies, gasoline- and diesel distribution companies as well as car manufacturers obviously play an important role in the sense that if the consumer does not have access to flex fuel cars and cannot find places where he can buy biofuels then the industry will not grow.

Novozymes believes that efforts should be made to ensure that the whole value chain from “straw- of- wheat to speed-of-wheel” is involved when considering options for measures to adapt the system of targets. The Swedish model might be taken as a better practice, which should be encouraged by the Commission.

**Question 3.5:**

*If your preferred option(s) would have implications for granting tax reductions/exemptions for biofuels, for example if these fiscal measures had to be prohibited, would that change your answer?*

Answer: Tax reductions/exemptions can be a very visible way of stimulating the market. However such measures also contribute to making the market distorted and less transparent

and should therefore first and foremost be used for a limited period of time in order to establish the market. It might be a better idea to support the market by ensuring enough fundings for R&D and technology developments

**Question 3.6:**

*Should Member States be able to provide tax reductions/exemptions and lay down biofuels obligations at the same time – or should it be “one or the other”?*

Answer: Novozymes does not have any comments to this question except that we find it important that distortion of the market is avoided and transparency ensured.

**Question 4.1:**

*Should there be a system – for example, a system of certificates – to ensure that biofuels have been made from raw materials whose cultivation meets minimum environmental standards?*

*If so,*

- *what should be addressed in the standards?*
- *How should the system work? Are there good models to draw on?*
- *Should the biofuels directive be amended so that only biofuels which comply with environmental sustainability standards count towards its targets?*

Answer: We definitely believe that it will be important to be able to monitor the impact that an increasing demand on biofuels may have on the land in agricultural use. There is a risk that uncultivated land is brought into cultivation (in Europe or in particular in third countries). This could include land with a high environmental value and under some circumstances cultivation could reduce the environmental value and release CO<sub>2</sub> into the atmosphere. On the other hand we also think that the consequences of land use may not always be evident, and that in order to avoid that conclusions are drawn on a too loose basis thorough analysis of land use should be made.

We agree that it is relevant to note that some biofuels deliver greener house gas benefits than others, and some deliver more security of supply benefits than others. But at the same time there are some uncertainties connected with the estimation and measurement of the green house gas benefits of biofuels.

For the sake of good order Novozymes would like to mention that the best way of evaluating the impact of biofuels and other energy providers is by using consequential Life Cycle Analysis.

**Question 4.2:**

*Should a wider system of certificates be introduced, indicating the greenhouse gas and/or security of supply impact of each type of biofuels?*

*If so*

*-How should this certification system work?*

*-How should the greenhouse gas and/or security of supply benefits of different biofuels be measured?*

*- Should biofuels with good greenhouse gas and/or security of supply performance be rewarded within biofuels support systems for biofuels? If yes, then how?*

Answer: Novozymes finds that certification systems can be a good solution in many areas where certain benefits are “invisible” for the user, examples of this are the various “eco” and “organic” certification- and labelling systems, and we believe that experience from these well established systems could be built upon. Very complicated and bureaucratic systems however should be avoided.

**Question 4.3:**

*Should there be a scheme to reward second-generation biofuels (made with processes that can accept a wider range of biomass) within biofuels support systems?*

Answer: Definitely yes. As already described first generation biofuels get closer to being competitive the higher oil prices get. First generation products are needed in order to establish the market for the second generation products. The second generation biofuels are even more sustainable than the first generation products and therefore the market must be nursed and stimulated.

**Question 5.1:**

*Should the EU continue acting in favour of biofuels after 2010?*

Answer: The answer to this question certainly depends on the results obtained up to 2010 and it might for instance be feasible to make a distinction between first generation and second generation products.

It should however be noted that the energy supply situation will not become much different less than 5 years from now ( the fuel cells for instance will still not be available) and that it would therefore probably be unwise if the EU suddenly stopped the momentum of biofuel development in 2010.

Coordination with the USA approach might also be advisable.

**Question 5.2:**

*If the EU is to continue acting in favour of biofuels after 2010, should this action include or exclude the definition of a quantified target for biofuels?*

Answer: Novozymes believes that it would be a good idea to continue with quantified targets.

**Question 5.3:**

*Should EU action include the following measures (which could be pursued without defining a quantified target):*

- a) *Support for research, development and dissemination of good practice?*
- b) *Continued Community financial support for the supply of biofuels and their feed stocks?*
- c) *Continued scope for Member States to support biofuels through tax reductions/exemptions?*
- d) *The labelling of all fuel to show the proportion of biofuels it contains?*

- e) *A campaign to inform consumers of the benefits of biofuels?*
- f) *Any other options?*

Answer: Yes. This kind of measures will be important with or without a quantified target. In particular for the second generation products support for research and development as well as tax reductions/exemptions may be of importance. Labelling of products including consumer information campaign will without any doubt also be very useful to support pull from the market.

**Question 5.4:**

*If the EU is to define a quantified target for biofuels after 2010, what should it be? What years should it relate to – 2015? 2020? Or both?*

Answer: Both 2015 and 2020.

**Question 5.5:**

*If the EU is to define a quantified target for biofuels after 2010, should this be expressed in terms of:*

- market share (as in present directive)?*
- greenhouse gas savings from biofuels use?*
- reduced oil consumption from biofuels use?*
- reduced fossil fuel consumption from biofuels use?*

Answer: If a quantified target is defined it should be set in a way which is most likely to drive technology development and pull from the market. Novozymes has the following comments to the options:

Market share as in the present directive where the targets are indicative is not sufficient. Targets must be mandatory.

Greenhouse gas savings will encourage efficient production of biofuels in all steps in the production chain and is therefore preferable.

Reduced oil consumption focuses on fuel displacement but ignores impacts and resource consumption in biofuel production itself and should be avoided

Fossil fuel saving include all steps in the biofuel product chain and is at the same time a pretty good indicator for greenhouse gas emissions.  
At the same time it is much easier to monitor than green house gas emission savings and is therefore preferable.

**Question 5.6:**

*If the EU is to define a quantified target for biofuels after 2010 should this remain a purely political step (accompanied by monitoring) or should it be given concrete form?*

*If the latter, should this be in the form of:*

- a) *Adding reference values for the later years to the biofuels directive as presently drafted?*
- b) *One or more of the options in section 3.2*
- c) *Some other form?*

Answer: see answer to 3.2

**Question 6.1:**

*Do you have any comments on the following issues, listed in the biofuels directive for inclusion in the Commission's progress report?*

- a) *The cost-effectiveness of the measures taken by Member States in order to promote the use of biofuels and other renewable fuels?*
- b) *The economic aspects and the environmental impact of further increasing the share of biofuels and other renewable fuels?*
- c) *The life cycle perspective of biofuels and other renewable fuels (and) possible measures for the further promotion of those fuels that are climate and environmentally friendly, and that have the potential of becoming competitive and cost-efficient?*
- d) *The sustainability of crops used for the production of biofuels, particularly land use, degree of intensity of cultivation, crop rotation and use of pesticides?*
- e) *The assessment of the use of biofuels and other renewable fuels with respect to their differentiating effects on climate change and their impact on CO<sub>2</sub> emission reduction?*
- f) *Further more long-term options concerning energy efficiency measures in transport?*

Answer: It is important that the economic impact and the environmental impact of further increasing the share of biofuels build on the same set of assumptions and a market consequence line of thinking.

**Question 6.2:**

*What are the prospects for second-generation biofuels that can be made from a wider range of biomass? Can they be expected to be cost-competitive with first generation biofuels and if so why?*

Answer: On a longer term we expect that the second generation biofuels will be cost-competitive with the first generation biofuels. The second generation processes and products are not fully developed and therefore not yet economically and technically mature. As soon as manufacturers/producer/investors have confidence in a long term, clear and coherent supportive energy strategy from the EU this optimization work will start and there is no reason to believe that it would not lead to a situation where first and second generation products are competitive.

**Question 6.3:**

*It is sometimes suggested that vehicles can travel more kilometres on a given amount of biofuels than on an equal amount (measured by energy content) of conventional fuel. Are any data or explanations available on this point?*

Answer: Novozymes does not have any comments to this question

**Question 6.4:**

*Problems have been reported in interpreting the directive's requirements on the calculation of the contribution of certain types of biofuels (notably ethers such as ETBE). Could the drafting of this directive be improved on this point? If so, how?*

Answer: Novozymes does not have any comments to this question.