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Biofuels Issues in the New Legislation on the Promotion of Renewable Energy

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1. How should a biofuel sustainability system be designed?

Question 1.1: Do you think the “possible way forward” described in the document is feasible?

Yes. Based on the actual knowledge, the scheme described in the Commission’s document is well-founded and legitimate. The continuous increase in greenhouse gases (GHG) emissions in the atmosphere calls for immediate action. The time taken to refine the system as it is described here can only contribute to postponing the time when the given sustainability criteria and targets will be met. Moreover, the scheme is not set in stone and should evolve as geographical and economical landscapes evolve due to the introduction of the biofuel economy. The controlling and monitoring instruments defined in the framework of this new legislation should work two-ways and allow for yearly improvements and/or modifications based on a feed-back process.

As there is scientific evidence, that stationary energetic use of biomass leads to a higher GHG reduction, the promotion of biomass in all sectors should be closely linked with other mitigation strategies. Misallocation of biomass in the various energy sectors has to be avoided; hence promotion of biofuels should be accompanied by efficiency strategies in the transport sector.

As the share of biofuel depends strongly on the overall energy consumption in the transport sector, efficiency measures should be included, in order to achieve a 10% share. A 10% reduction in specific fuel consumption of the vehicle fleet might be easier to achieve than a 10% biofuel share. Consequently biofuels would develop a higher availability and pressure on land use will be alleviated. **Efficiency measures are a precondition for a higher share of renewable energy in the transport sector.**

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).

Each point and idea described bellow and supporting the “possible way forward” assumes by definition a direct administrative burden whether it is in the early implementation stage, the monitoring and feed-back processes or in the support. Overall, it would certainly lead to a substantial increase in the administrative burden in comparison to a more passive path. However, it is feasible and definitely worthwhile.

Question 1.3.a: Please give your general comments on the “possible way forward”, and on how it could be implemented.

The Commission’s document states premises to the “possible way forward” with the two points that the “system should 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.

An additional point as important as the two others is the general rule followed by certain developing countries concerning biofuel production. *No food for fuel*. The fuel and the food markets should be kept as independent as possible. This shall ensure that developing countries among the EU reach the standards of rich members without falling back into malnutrition and food problems and also ensure that Europe competes with non-EU developing countries with the same global rules.

On the other hand, too many rules and regulations would freeze the development of biofuels.

Based on those three points, the sustainability criteria mentioned in box 1 are a good beginning; however, they only apply to the first two steps in a biofuel cycle, which comprises i) the production of raw material, ii) the delivery of raw material, iii) the transformation of raw material into biofuel, iv) the transportation of biofuel to retailers, and finally v) the conversion into energy. “Sustainability criteria” should be fulfilled by each of the five processes.

Well-to-wheel studies for biofuels again and again showed a large spectrum of results concerning green house gas emissions, ranging from positive to negative effects. ‘Default values’ might not be appropriate to evaluate the sustainability of biofuel production, as they might also be applied to less efficient biofuel production. Especially the production of energy crops for biofuels needs clear guidelines for cultivation. Cross compliance rules should be strictly enforced. However the rules might not be enough to ensure a reduction of CO₂-emissions for each technology chain.

To ensure a sustainable biofuel production, cultivation and processing standards should be developed, comparable to standards available for organic farming. Examples for such standards are already available today, e.g. FSC standard for forestry products. Promotion of biofuel production could be coupled with these minimum standards. Biomass imports for European biofuel use also need to fulfil sustainability criteria, e.g. comply with these standards, if they are supposed to count for the biofuel target.

Moreover a sustainable biofuel production just makes sense if biofuel use is sustainable as well. Thus a use in efficient vehicles should be included in any strategy.

Question 1.3.b: Does it give an adequate level of assurance that biofuels will be sustainably produced?

The answer is yes for reasons listed below. It gives an adequate level of assurance that biofuels will be sustainably produced based on the knowledge of 2007. After the long period of passive observations showing the increase in GHG emissions and average temperatures (among other) around the world came the period of scepticism followed by the progressive

awareness were we are now. It is time to “go forward” and enter the “action” period. The actions described in the Commission’s document mark a start in promoting the sustainable production of biofuels, thus reducing the use of fossil fuels. In order to find the right path for the long term one needs to start and allow some side effects that can be corrected along the way. In other words, while sponsoring a free market for biofuels and funding R&D aiming at improving the production of biomass, the transportation, and the conversion of biofuels and while developing procedures to assess the degree of sustainability reached by biofuels the legislation can be adjusted in order to correct any negative non-sustainable side-effect identify along the way. But the most important is to start and reach the large scale.

Question 1.3.c: If you think the problem should be tackled in a different way, please say how, giving details of the procedure that would be used.

Even if the system described in the Commission’s document fails in reaching sustainability, the administrative, financial and infrastructural framework developed for its implementation would still be easier to adapt to a different system than starting from nothing. We don’t see a different way to tackle the problem but if there is one it would definitely benefit from the proposed system.

Import of biofuels will play a certain role, especially for ethanol, which has a much better GHG balance from sugar cane than bioethanol produced from European biomass.

There must be global agreements in order to ensure that all agricultural land use goes in line with sustainability criteria. Otherwise there is the risk that just biofuel produced for European countries is grown on those areas previously used for biomass cultivation while “new” areas will be developed for previously grown crops for other products, e.g. for sugar.

It might be worthwhile to consider a global procedure to approve “biofuel”-projects by a United Nations commission, similar to the UNFCCC for CDM projects.

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?

No, it is sufficient to have criteria 2 as the rule is put on page 4 that the failure of one of these criteria is sufficient to lead to disqualification (“Biofuels that failed to meet one of these criteria...”.)

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?

Yes, based on previous experiences for example the production of organic food, it is possible to include buffer lands, thus enhancing the level of confidence in ensuring survivability of exceptionally biodiverse areas. One should take profit from those existing rules and regulations even if they are now at a much smaller scale. The definition should be based on the one already in use for protecting biodiversity both for wildlife and plants and allow for future improvements.

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

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.

A tremendous amount of research and resources were devoted in the past decade to monitor the environmental changes and to relate them to human activity. Every developed country has participated in probing mother earth from space, land and sea. As a result, there is already an existing infrastructure for monitoring that can be used in the early stages of the biofuel revolution. Moreover, the massive data collected on the present situation ensures that the reference state is well defined. It will be used for future comparison as described in the “possible way forward”. These same countries that agreed on actively reducing the levels of GHG emissions will be eager to use and develop further their monitoring system in order to report any reduction (hopefully) in GHG emissions or any other positive effect related to the shift from fossil fuels to biofuels. However, global monitoring should be transferred and also adapted to local monitoring. Then, the Commission’s reporting procedure described in the “possible way forward” would have tools for assessing local developments and changes related to the production and consumption of biofuels.

Sustainability in the carbon cycle should not be separated from the pollution problem and the water shortage. Therefore, monitoring the land use related to the biofuel production should be integrated to a global monitoring system. One can possibly allow for changes in the land use if the overall impact is positive. Only a global and accurate monitoring system will enable assessing this overall impact and state if it is actually positive.

Public debates and consultations will help define and improve the regulations.

It is rather evident, that biofuel production will not only have an effect on the quantity of land used for agricultural or forestry production, but even more on the quality of land use, causing intensification of cultivation on the limited available land. Monitoring land use changes between various sectors might be possible using remote sensing data and can thus be quantified. However, the effect of intensified land use on the environment might even be larger but much more difficult to detect.

To confine intensification, standards for biomass production could be set, restricting biomass output of a given area. Biofuel producers should provide a minimum area for their biomass production, if they want to be eligible for any promotion, so the overall intensity of cultivation could be restricted (comparable to restrictions in animal farming).

It does not seem feasible to report “how land use would have developed if...”. Other factors like rising sugar prices may also have an impact.

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?

Yes, we think so. For cultivation, harvesting, transportation to conversion unit, transportation to consumer, indirect land use might occur. In the sense of a sustainable biofuel production, all of these individual steps in the chain should use as less additional land as possible by utilizing e.g. water- and railways for transportation and by trying to keep transportation distance as short as possible. The energy content and its efficiency should be optimized. In

this sense, the concept of a biorefinery should serve as a promising example to be supported and further investigated.

No, not at all feasible to link it to the biofuel consignment itself. However it might be possible to link it to a dedicated approval process for the “biofuel project site”, which gives certain credits according to the overall land use of the country. The more land is used for biofuels, the less credits were given for the site. In this way it gets less interesting the more biofuel is already produced.

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

Question 3.1: How should second-generation biofuels be defined?

The definition should be based on other criteria than the type of raw material or the type of technology used to produce the biofuel.

Why should new definitions be discussed since they will lead to new regulations and implementations schemes? The criteria defining the overall level of sustainability of a biofuel (sustainability criteria developed in question 1) apply to any type of biofuel. One can talk about improvements in the quality of the raw material, in the production efficiency, in the conversion technology etc ..., which should definitely lead to greater advantages through the support system.

Biofuel labelling with a grade defining what has been called so far the “level of sustainability” will alert the consumer. Higher grades should receive higher subsidies and advantages, thus leading to lower prices, both in manufacturing and retail. Then, lower grades should gradually be taken out from the market and distribution system. The reactivity in this system lays in the degree of versatility of the energy conversion process. The Commission should support the research towards (bio)fuel flexible devices (automotive engines, distribution logistic, gas turbines, heat generators,).

Also second-generation biofuels could either be defined by a specific technology or by a minimum GHG reduction per end use (km or GJ).

Based on Other criteria second generation biofuels should be defined by a certain amount of GHG saved.

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.

As reduction of GHG is the ultimate goal, second generation biofuels should be classified in regard to their achievements. Defining a minimum level of GHG savings seems appropriate.

No, 2nd generation biofuels should not count double or some other factor as this would change the original intention of the proposal. Legislation should also reflect cost-efficiency criteria to avoid that technologies that are too expensive are subsidised.

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?

Yes.

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

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?

Yes. Regarding the biofuel production, industries should receive a support ranging from financial advantages (taxes, subsidies ...) to sponsored research and development strategies. Industries concerned with the use of biofuels must offer fuel-flexible concepts and must guarantee a secure operation e.g. considering sealing etc. A net with a sufficient number of refuelling stations (gas stations for the car industry) must exist. The level of acceptance in buying a fuel-flexible car will increase with measures such as partial reduction of taxes or a partial reduction of the additional costs.

Research concerning every single step, from production to legislation, should be encouraged and sponsored. The scheme introduced by the EU Commission shows a high level of priority and should therefore receive a substantial support.

Focus of the biofuel promotion must not only be on ethanol and biodiesel, which are already in the market. Rather should other biofuels be promoted as well, to increase the over all share. Especially gaseous biofuels (biogas) feature economical and ecological advantages and provide a higher CO₂-reduction potential than liquid biofuels.

Legislation should not enforce the amount of biodiesel on the market as this would discriminate other biofuels such as bioethanol and biomethane. There is also no need to intervene by legislation on the percentage of a fuel mix of fossil diesel and synthetic biodiesel, as EN590 only limits FAME (fatty acid methyl esters) i.e. "biodiesel of the first generation".

Question 4.2: Should the legislation include measures to encourage the use of ethanol and biodiesel in high blends? If so, what?

Yes for the blending of synthetic biodiesel (2nd generation biodiesel) as there is anyway a shortage of fossil diesel. No for ethanol as bioethanol of the first generation as it bears high costs per tonne CO₂ avoided. Instead encourage the use of ETBE to the maximum (15% of all gasoline).

The proposal does not foresee blending alone. Instead the promotion of pure synthetic biodiesel as a fuel should be supported in line with support of the development of engine technologies to meet the other environmental targets like particle emissions.

Push E85 and flex fuel vehicles only with celullosis based ethanol which proves a certain GHG balance.

Question 4.3: Should the legislation include measures to encourage the use of biomethane, methanol and, DME in transport? If so, what?

Biomethane: yes, the present infrastructure for natural gas can easily be adapted.

Methanol: No, very volatile and poison.

DME: Yes.

Gaseous biofuels such as biomethane offer advantages compared to liquid biofuels. Thus they deserve a higher regard in the biofuel strategy, even if an alternative infrastructure needs to be developed. Here the strategy could include rather a support of investment into the new infrastructure rather than focusing on first generation biofuels. For biomethane a strategy to feed it into the gas grid is essential, due to the decentralized production capacity (and distributed potential of biomass) This will open new opportunities for distribution of biomethane, making it area wide available and increasing potential. For a higher share of gas vehicles tax incentives might be helpful, as well as investment incentives for the distribution system.

The use of biomethane should be encouraged as it is compatible to fossil natural gas, thus avoiding extra costs on vehicle technologies and infrastructures besides CNG-vehicles on the market. Moreover, biomethane has a very good GHG balance and good biomass potential. In addition, research on flexible gasoline engine technologies which can use the maximum energy potential from gasoline as well as CNG and biomethane should be encouraged.