

Public Consultation exercise - Biofuel issues in the new legislation on the promotion of renewable energy

Reponse of VITO – the Flemish Institute for Technological Research

1. biofuel sustainability system

General remarks:

Ensuring the sustainability of biofuels put on the market is crucial in the following years, (1) to keep the 'green' image of biofuels which is important to have the support of the public, (2) to optimize the impact of biofuel introduction on GHG reduction, (3) to make sure that biofuels do not have counterproductive socio-economic and environmental side-effects, especially in developing countries.

Nevertheless the sustainability system with all criteria proposed should not be overregulated. If overregulated, investors could be discouraged to invest in biofuel production, which again strengthens the domination of the fossil fuel market. Every GJ of biofuel not put on the market, is an extra GJ of fossil fuel (usually oil) on the market, and the 'extra' crude oils are currently far from environment friendly (see tarsands in Canada). Mind that WTW criteria for fossil fuels to be marketed are much less stringent or sometimes non-existing. So indeed the system needs to be simple and clear for the stakeholders involved, so the biofuel option is not abolished because of overregulation.

Current discussion focuses on the production of *biofuels* from 'sustainable biomass'. Nevertheless the requirement of sustainable biomass should also be valid for food, animal feed, industrial purposes and other energy applications. Otherwise we risk that only part of the biomass (the part destined for biofuels for Europe) is produced in a sustainable way, while there would be no sustainability requirements for the other biomass. The objective should be to go to a world-wide valid system, which is also applied for other biomass applications.

We should start from existing worldwide or local initiatives, like the charters on forestry (FSC, PEFC), sustainable palm oil (RSPO), soybean (RTRS), BSI (better sugarcane initiative), ..., which already include a number of sustainability criteria (excl. GHG).

Question 1.1:

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

It will be difficult to find a system which is simple, clear and easy to check, however the proposed approach seems reasonable.

It is important to have an accepted methodology for GHG calculation (world-wide) and a list of reference WTW performances of various biofuel pathways, which can be taken as default values. If industries perform better, they should have the possibility to show it.

There is a need of an extensive database (worldwide) of which land does and which land does not qualify for sustainable biomass exploitation in terms of carbon stock or biodiversity. There may also be restrictions in the type of biomass which can be grown there in a sustainable way.

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.)

If the management of the databases (land use & reference WTW performances) is done centrally, the administrative burden should be feasible. If industries have to prove all details themselves, the administrative burden will be too high, especially for smaller players.

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.

Anyway we need to go step by step. Some countries are now taken the lead in this, and in the following years some cases and pilot applications will be demonstrated. In the first stage it is important to demonstrate that reporting on different indicators and requirements is possible, later on the indicators can be used more actively.

Countries and/or regions should be stimulated to take action on sustainability requirements. It should however be clear that we grow towards a common European approach, so actions should be streamlined.

3. Encouragement of 2nd generation biofuels

General remark:

To my opinion, future biofuel feedstock will not only be based on cellulose, but 'traditional' feedstock like vegetable oils, sugars and starch will remain important. The production of cellulose may have a lower environmental impact than the other feedstocks (e.g. through lower use of manure, pesticides, ...), but the conversion process itself takes much more energy. About 50% of the energy content of the biomass feedstock is lost in the process for cellulose conversion. For conversion of the 'traditional feedstock' like oils and sugars it is much easier to convert these to fuels and the energy need in the process is much lower.

So it would be important to focus both on development of new (second generation ?) processes with high GHG reduction and on further GHG reduction in existing 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)?**

Second generation biofuels are generally considered to be biofuels from cellulosic material, which have a high overall GHG reduction (>85%) and a high net energy potential per hectare (energy in transport, conversion, ... should be subtracted). Priority should also be given to valorisation of waste streams, which are now unused or not efficiently used.

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.

The distinction of biofuels for the mandated amounts (10% in 2020) should be done through objective factors, not by a coincidental definition of current vs future biofuel techniques. The objective factors could be the **overall GHG reduction per GJ fuel replaced**. 1st generation biofuels could as well reach very low GHG emissions. A reduction of GHG emissions in the 1st generation biofuel production processes should be promoted as much as possible, as this can have result in the short term. So a distinction in GHG performance would be most logical when it comes to mandated volumes.

Nevertheless there is a need for research and development to further explore and develop certain pathways, e.g. cellulose based biofuels, which have potential for low overall GHG emissions. Some credit should be given to these technologies while they still are in the development stage. This could be in the form of a sufficient R&D budget, higher subsidies for 1st phase and demonstration conversion plants and temporary higher tax reductions (as long as their production costs are significantly higher).

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, or at least have the potential to have very low GHG emissions.

4. Actions to achieve 10% biofuel share in 2020

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. Most existing diesel vehicles are compatible with B10. It could be wise to first have B10 as a separate marked fuel (at the same or lower selling price as diesel or B5), so car manufacturers have time to find out and decide which of their existing models would be compatible and which not. This should be clearly stated to customers.

There should be a requirement at European level that new diesel vehicle types are at least compatible with B10 (and preferably B30 or more). The same goes for new gasoline vehicle types, which should at least be compatible with E10.

The requirement could be increased to B20 and E20 after some time (e.g. vehicle models from 2010) to make sure that the majority of the vehicle fleet in 2020 is compatible with 20% blends (B20, E20) or higher. Mind that a considerable fraction of vehicles sold in 2007 will still be driving in 2020, so action is needed now.

Question 4.2:

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

Yes. It is not possible to reach 10% by energy, only by using a general blending of B10 or E10. Also BTL will not be available in sufficient quantities by 2020. So there will be a need for high blends.

- A vehicle tax advantage (purchase tax or yearly tax) could be given to vehicles compatible with higher blends (E85, B30, B100). This would create a market demand.
- To some extent, compatibility of vehicle models for high blends could be counted for lower CO₂ emissions in the type approval (see ACEA agreement). This would give an incentive for car manufacturers to invest in biodiesel-compatible vehicles or FFVs. The same is done in the USA for ethanol FFVs, which received a (small) advantage in the CAFÉ countings.
- Marketing of low blends can be achieved either through tax reduction, either mandates (or combination of both). However mandates do not favour the introduction of high blends. High blends should have lower fuel tax for a number of reasons:
 - Lower *energy content* per litre. The same tax per litre as diesel or gasoline is actually a higher tax per GJ on the biofuel. The energy content should be accounted for.
 - Biofuels have a different *external cost* compared to fossil fuels. This can be accounted for through the fuel tax. At first instance this could be limited to the value of reduced GHG emissions.
 - As a temporary measure, while production technology is in development and production costs are still higher than fossil fuels, a further tax reduction can be given to account for the *higher production cost*.

Question 4.3:

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

It is worth looking at different options, although these fuels may be limited to certain niche markets. All these fuels have the potential to reach very low GHG emissions (~90% reduction compared to fossil). The vehicles need to be adapted and approved by the vehicle manufacturers, and separate fuel distribution systems need to be installed.

Promotion could be through

- demonstrate feasibility through funding of local demo's and testing programmes. Especially local use of waste streams (e.g. for biogas production) should be promoted.
- vehicle tax advantage of vehicles compatible with these fuels,
- reduction (exemption) of fuel tax while these fuels are more expensive than their fossil counterpart.

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?

There should be intermediate targets before 2020 so as to avoid that member states only start acting one or two years before 2020 (as was the case with the 2005 target, for which most countries only started to prepare legislation in 2005).

At least for 2015 there should be an intermediate target (7 or 8%).

The EC should indeed review on regular basis whether the targets are likely to be met, or if more action is needed. The intermediate targets would help in this process.

I would say that 2010, 2015 and 2018 are important reflection moments, but of course this is to be discussed.

Actions if the target is unlikely to be met:

- Compatibility with the existing fleet is likely to remain a point of discussion with the vehicle manufacturers. Requirements of compatibility with certain minimum blends (10% now, 20% for future models) may be needed. Compatibility with higher blends (B30, B100, E85) can be further promoted through incentives for vehicle manufacturers.
- The evolution of cellulose based biofuels (e.g. BTL, cellulose ethanol) needs to be monitored. It is likely that the market share of these fuels will be maximum 1% in 2020 (increase expected after 2020). The evolution of cellulose based biofuels cannot be used as an excuse to wait with the introduction of biofuels.
- It is likely that some countries will take the lead, while other countries are lacking behind. It may indeed be more cost-efficient that some countries do more (as e.g. they have more feedstock available locally) and others less. In some way these extra efforts should be compensated for. This could be done through a trading system of biofuel certificates between countries, or between companies in different countries (comparable to green power certificates, but then valid on European level).

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)?

See question 4.2.

Taxation will be less important for low blends of biodiesel and ethanol, as the European trend is to impose mandates for fuel distributors.

High blends would still need tax reduction as they are not favoured by mandates.

2nd generation biofuels should obtain tax reduction as long as they are in development stage. GHG reduction performance can be taken into account.