

Policy toolkit to improve the support mechanisms for advanced biofuels¹

Living document from EBTP

Over the past five years, barriers for advanced biofuels have been moving from technology to policy and financing. Commercialization depends now on political leadership and adequate policies, as it has to be acknowledged that new innovative energy technologies like advanced biofuels are not yet cost competitive against conventional biofuels and fossil fuels. The issue of financing innovative biofuels pathways is crucial to ensure large scale deployment across Europe.

By introducing the double counting rule, the European Union has tried to diversify the supply of biomass used to produce biofuels. This measure can provide an effective support to some advanced biofuels pathways². However, Member States' failure to effectively implement the rule in their national renewable energy initiatives is a discouraging signal to the emerging advanced biofuels industry³.

Long term vision and political commitment are key for the industries and the investors to take a decision of investment of this order of magnitude. Unfortunately divergence in interpretation, imperfection of the measure and most of all short term political decisions creates a lot uncertainty which is fully incompatible with the industrialization of these pathways.

Without additional policy measures to stimulate investment in scale-up, supply of relevant feedstocks and up-take of advanced biofuels, Europe is missing a unique, sustainable industrialization opportunity within the wider concept of bioeconomy that offers leveraging with biotechnology and thermochemistry based industries. In comparison the tremendous amounts of public money committed to advanced biofuels R&D, demonstration and flagship plants invested during the last three years in the US⁴ is a very convincing illustration of what is at stake.

A combination of the incentives shown below will help to overcome the obstacles inhibiting investment into advanced biofuel scale-up and bring advanced biofuel technologies across the “valley of death” between R&D and commercialization – a valley we need to cross to ensure future low cost and EU-based production of advanced biofuels. It will be necessary to take into account the singularity of the European fuel market that is extremely dieselized and dependent from diesel imports: additional attention and support will have to target pathways that will contribute to the European energy security.

1- On the demand side:

- **The double counting** measure gives an administrative energy bonus and thus economic value to some biofuel pathways (those that produce biofuels from wastes, residues or lignocellulose). It has no budgetary impact. However this instrument seems not to be sufficient to create conditions for investment in breakthrough technologies and to boost advanced biofuels deployment. Also in the 27 National Renewable Action Plans very little consideration is given to article 21.2 material-based biofuels. The tool suffers from uneven

¹ **Advanced biofuels** are defined either by a wider range of feedstocks (including cellulosic feedstocks from residual/ waste biomass, dedicated energy crops as well as new concepts (e.g. algae, etc) or by enhanced fuel properties of the end product, when compared to current biofuels (ethanol and FAME biodiesel), or are chemically closer or identical to fossil fuels, and hence allow the use of current fuel infrastructures (pipe, storage, engines) without technical limitation. Advanced biofuels can be produced via thermochemical or biological process steps or a combination of both. (definition taken from the EBTP strategic research agenda) .

² The valuable contribution of sugar based advanced conversion technologies has been omitted, although their contribution could be very significant to address the European needs of advanced biodiesel and other advanced molecules.

³ So far only the Netherlands and France have transposed this measure for residues only. Germany, Austria and Denmark are about to implement it partially in their national regulations. Sweden and Finland have introduced broader policy packages with incentives for advanced biofuels.

⁴ Furthermore the return of investment seems to be quite short: the 15 initial public offering of start-ups involved in bioeconomy-related technologies that occurred in the USA during the last 12 month total 1.1 Billion USD up Solazyme, Gevo, Amyris, Kior are some of the recent start-ups. The order of magnitude is about 2 billion USD of public money. The last measure was announced in August 2011; it consists in a 510 MUSD support for advanced, drop-in biofuels for aviation, marine and other commercial use. This public money will be invested by the departments of Energy, Agriculture and Marine will be mobilized through a public/private partnership.

implementation across Member States. If larger volumes of advanced biofuels were available, the tool would likely be of use.

Once this measure is adjusted to cover adequately all advanced biofuels pathways, without offering windfall profits to some specific sectors or creating conflicts of use of feedstocks, the double counting could become an excellent way to accelerate the industrialization of advanced biofuels. In order to reduce regulation uncertainty and accelerate private investment, an ambitious European tender that would give well targeted advanced biofuel pathways projects the benefit of the double counting during a fixed period of time (15 to 20 years) could substantially accelerate the implementation of these advanced routes. Biofuel consignments from double counting plants would benefit from the mutual recognition by Member States. Further explanation about the need to adjust the double counting rule is given in annex.

- **Binding blend-in target.** A ramping-up, achievable sub-target for advanced biofuels would secure a market share. It would also reduce investment risk and lower competition with well established biofuel pathways. Mandatory targets will only be effective if they are combined with high and stable, mandatory penalties for non-compliance – the proceeds of which could be returned to producers or contribute to the financing of demonstration and flagship plants. Advanced biofuels would remain eligible for the rest of the blending target, once the sub-target is fulfilled. Technology neutrality is critical for this measure- no winners should be picked upfront. With this measure the market would settle the price needed to ensure sufficient production. There would therefore be no budgetary implications for the EU or its Member States.
- **Tax incentives.** These could be implemented in the Energy Taxation Directive, which is currently under revision. However tax incentives have fiscal consequences for Member States and their implementation might not be easy in the existing budgetary context.
- **Production support/Feed in Tariff.** Initial fixed sales prices or fixed premiums help improve the case for the investors that are needed to build the first wave of commercial-scale plants. The costs of such a scheme could be capped by limiting it to a fixed accumulated volume for specific plants (like for wind farms). If governments are to guarantee the fixed sales prices/premiums, budgetary constraints may question implementation, similar to tax incentives.

2- On the supply side:

- **Feedstock collection and supply-chain incentives.** In most EU countries there is no or limited experience with large-scale collection and storage of biomass. Therefore incentives are needed to help establish agriculture and forestry biomass supply-chains and thus reduce feedstock uncertainty and the overall risk of advanced biofuel scale-up investments. It would also promote EU production and self sufficiency. These incentives could be implemented in the Common Agricultural Policy (CAP) revision as part of redirecting the CAP towards sustainable and renewable energy but it should also cover the mobilization of woody biomass from forest, underpinning recent initiatives in the forest sector.

3- On the investment side

- **A realistic investment support for demonstration and first-of-its-kind commercial-scale plants (financing of EIBI).** The up-front investments required for building these plants is significant (€50-1000 million) and risky – not least because they will have to compete with existing, non-renewable and un-sustainable energy technologies. Compounding this, the ongoing global financial and economic crisis has made investors and lenders more risk averse. Getting equity and especially debt finance for demonstration of first-of-its-kind commercial scale plants is therefore proving close to impossible. Financing the European Industrial Bioenergy Initiative (EIBI⁵) is one of the last opportunities not to miss the train of the advanced bioeconomy.

⁵ For more information, see: <http://www.biofuelstp.eu/eibi.html>

These incentives would be enough to kick-start investment on the scale needed to deliver tangible benefits such as increased energy self sufficiency, lower greenhouse gas emissions from transport, and increased economic activity in EU agriculture and industry.

ANNEX – Double Counting

Context and description of the support

In the renewable energy directive (2009/28/EC: “RED”) the European Union opted to encourage the diversification of feedstocks used to produce biofuels. Biofuels derived from wastes, residues and lignocellulosic count for double their real energy value in terms of their contribution to the national EU mandates. This administrative support was meant to initiate a greater interest in using this type of biofuels and could create indirectly a greater value for those products. **In this respect the double counting can be a great support for advanced biofuels but return on experience suggests it should be optimized and complemented.**

Difficulties risen by the actual drafting of the double counting mechanism

- **Lack of definition of residues and diverging implementation.** The concept of lignocellulose leaves little space for interpretation as it is widely understood that this term covers woody biomass, straw and similar substances. There is also a legislative framework on wastes, which gives clear guidelines to identify what is a waste. On the contrary the concept of residues, in particular processing residues, has not been sufficiently defined neither in the RED nor in the EC’s communications.
This has already led the European Commission to give positive opinion on the application of the double counting mechanisms in dubious alignment with the rationale of the feedstocks diversification and additional benefits. For example, the Commission gave a positive opinion for the double counting of wine alcohol (raw alcohol from lees and marcs) in Italy if intended for fuel purposes, while this is being considered in other Member States.
In addition, compliance with the RED through voluntary certification schemes or in future bilateral agreements between the EU and third countries, coupled with a Member State implementation of the double counting, render certification even more complex.
These legislative gaps create a lot of uncertainty and undoubtedly lead to several interpretations in different states: one substance might be eligible for the double counting in State A, whereas it is not in State B, creating internal market distortions. Here, CEN may play a role as they have already started developing such definition in joint effort of industry and national legislators.
- **Controls of its application are required.** Used cooking oils and animal fat from refining of animal slaughtering wastes seems to be eligible for the double counting. As a result, used cooking oil methyl esters (UCOME) and tallow methyl esters (TME) have arrived on the market in growing quantities and with prices exceeding those of rapeseed methyl esters. Since this double counting measure has been applied in only a few European states so far, UCOME and TME have flown to those countries creating important perturbation to the biofuels market. The volume of the UCOME deliveries and the comparatively small quantity of these feedstocks suggests that there may be some abuse of the system. Measures are to be put in place to check that the feedstock used is really a used cooking oil and/or to check that the biofuels corresponds to the declaration when consignments of blended biofuels are sold.
- **Unfair competition and conflicts of use.** To a certain extent, the additional value given to the double counting biofuels may also give more flexibility to pay a premium for the collection of the feedstock when necessary. In extreme cases, this can divert some biomass from existing chains of value using the same feedstock, which could trigger conflicts of use. This can be the case for animal fat that may be diverted from oleochemistry.
Additionally, **giving the benefit of double counting for biofuels that are not really advanced biofuels creates unfair competition with really advanced biofuels pathways and thus delays their industrialization.**

Thus it is of high importance to keep the double counting support for cutting edge technologies with high potential of industrialization and good market fit.

Recommendations

- In order to avoid these negative impacts, the double counting measure should be applied exclusively for advanced biofuels that provide additional benefits, including the diversification of feedstocks, higher yields, and need time to be competitive. These are solely based on cutting edge technologies, new routes and/or new molecules with similar or improved quality.
- Residues for biofuel applications will have to be defined uniformly across Europe. A unique, European grid of analysis and associated selection criteria and a positive list of qualifying material, maintained by an independent body may well support this definition.
- In order to avoid risks due to fast changing regulations, it would be advisable to study the opportunity and the feasibility of awarding the double counting support to facilities (during for a fixed period of time) and not to the final product. This could be done through a European tender after a revision of the RED and under the condition that there would be an obligatory mutual recognition of the double counting status of biofuels consignment produced by the awarded plants.