



Towards a comprehensive and innovative EU policy for biofuels

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Introduction

The EU has agreed that in 2020 the percentage of renewable transport fuels including biofuels should be at 10%. Conditions were attached that second generation biofuels would become available commercially and biofuels would be produced in an environmentally sustainable way. This overview paper accompanies an EU policy seminar that explores recent developments in the EU's policy on biofuels, and will focus in particular on innovation and trade aspects concerning EU policy on biofuels. It aims to identify what we can learn from this policy in order to make the transition to a biobased economy. Bringing together senior officials of EU member states, international organisations, the private sector, NGOs and academic experts, the seminar aims to identify what (new) policies could be envisaged to stimulate the production and use of biomass, whilst contributing to the EU's economic recovery and energy security, and whilst contributing to reducing greenhouse gas emissions, doing no harm to the environment and food availability in the EU and abroad.

Mirroring the structure of the seminar, this paper provides a brief introduction to the issues that are on the agenda in the various sessions. It discusses recent developments in EU biofuels policy (session 1), the innovation and business opportunities arising from a transfer to a biobased economy (session 2), the regulatory framework for trade in biofuels (session 3) and new directions that could be chosen to stimulate the transition towards a biobased economy, including with regard to biofuels (session 4). Every section lists questions that could be discussed during the seminar.

1 Recent developments in EU biofuels policy

Against the backdrop of the commitment to mitigate climate change through cutting greenhouse gas emissions as agreed in the Kyoto Protocol, as well as the EU's predominant

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dependence on imported fossil fuels, the contribution of biofuels to the EU's energy mix is of growing importance. Accordingly, the EU Directive on Renewable Energy Sources 2009/28 (RED) sets a mandatory target of 10% of transport energy to be met by energy from renewable resources by the year 2020. In practice this percentage will to a very large extent be made up out of biofuels. Yet, the EU's promotion of the production and use of biofuels has not been free of controversy, as their real contribution towards lowering greenhouse gas emissions are contested and concerns have been raised over potentially negative consequences for the environment and global food security. To address these concerns, sustainability criteria were adopted that are possibly further extended in the near future.

In its 2001 White Paper² on the future of European Transport policy the Commission identifies biofuels for the first time as one of the key future energy sources for transport and two years later indicative targets of 2% renewable fuels in transport by 2005 and 5.75% by 2010 were set through the first Biofuels Directive (2003/30/EC). The indicative targets (i.e. not mandatory) were not very successful as a large share of the Member States failed to reach them. Another initiative of the mid-2000s is the EU Biomass Action Plan of December 2005³ which identified 32 key activities to boost the bioenergy market and pinpointed the opportunities for the EU's agricultural sector arising out of biofuels and other biomass-based energy sources.

In 2007, the European Council announced an Energy Policy for Europe⁴ in which it set out the so-called 'Triple 20 Targets', as well as the 10% biofuels target to be reached in 2020. A caveat was made that this 10% target was conditional on biofuels being produced in a sustainable way and second generation biofuels becoming commercially available. The 20/20/20 targets entail cutting back a minimum of 20% in greenhouse gas emissions compared to the 1990 levels, increasing the use of energy from renewable sources (wind, solar, biomass, etc.) to 20% of total energy production, whilst improving energy efficiency and cutting its consumption by 20% of the projected 2020 levels. The Climate and Energy Package⁵ - of which the RED forms a part - translated these targets into concrete policy measures and binding EU legislation. Most of its legislative measures were formally adopted in April 2009.

The RED translates the 20% RE target into mandatory national targets and replaces Directives on renewable electricity (2001/77/EC) and on biofuels (2003/30/EC). It sets a mandatory target of 10% of transport energy to be predominantly met by biofuels by the year 2020, a flat rate for all EU Member States. The Directive, moreover contains interim targets to measure progress at intervals and sets out the requirement for Member States to submit National Renewable Energy Action Plans (NREAPs) on how they aim to reach their target. The first NREAPs were to be submitted in June 2010⁶ and the Directive should be transposed to

² European Commission (2001), European transport policy for 2010: time to decide, White Paper, Brussels 12 September 2001, COM (2001) 370 final.

³ European Commission (2005), Biomass action plan, Communication, Brussels 7 December 2005.

⁴ Cf. Presidency Conclusions – Brussels, 8/9 March 2007.

⁵ http://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/misc/107136.pdf

⁶ See for an overview of the NREAPs that have been submitted at the time of writing this paper: http://ec.europa.eu/energy/renewables/transparency_platform/action_plan_en.htm Beurskens and Hekkenberg (2010) have made a preliminary analysis of the 21 NREAPs that have been submitted to date. It shows that most EU Member States are planning to reach the 10% target, but that the current share is still far from it. It also shows that renewable transport is the fastest growing renewable energy in the period 2005-2010 with a growth rate of 32.0% per year.

national law no later than 5 December 2010. Member States will not face direct financial penalties for failing to reach interim targets towards the 2020 target. But, the Commission may start infringement proceedings if states do not take ‘appropriate measures’ or fail to reach their 2020 target. A first evaluation of the directive is to be presented by the European Commission in 2012 (cf. Article 23 of the RED).

Although producing energy from renewable crops at first sight seems less damaging to the environment than the use of oil and gas, the promotion of biofuels has not been free of criticism (cf. Doornbosch and Steenblik, 2007). Production of first generation biofuels indirectly causes greenhouse gas emissions, through for instance the use of fertilisers or transport. Moreover, one of the main concerns regards Direct Land-Use Change, which holds that the biofuel promotion stimulates deforestation, as rainforests are destroyed to make room for acres of biofuel crops (cf. Eickhout et al., 2007; Gibbs, et al., 2010). In order to cope with these concerns the RED prescribes sustainability criteria, i.e. to be eligible for the national target, the biofuel must meet the sustainability criteria as provided by Article 17 of the RED. The greenhouse gas emission saving must be at least 35 % when compared to fossil fuels. From 1 January 2017 this threshold rises to 50% and a year later to 60% (for new production). Moreover, biofuels shall not be made from raw materials obtained from land with high biodiversity or high carbon stock and peat land. These criteria were also included in the fuel quality directive (2009/30/EC), that obliges suppliers of fuels to reduce their CO₂ emissions by 6% in 2010.

However, according to critics these criteria do not tackle the problem of Indirect Land Use Change (ILUC), namely when biofuel crops displace other agricultural production, leading to additional greenhouse gas -emissions, loss of biodiversity and potentially affecting global food prices and supply. These indirect effects of biofuel production are difficult to measure, but most studies indicate that effects do exist (e.g. De Santi et.al. 2008; Gallagher et.al., 2008; Meilillo et al., 2009; Bindraban et al., 2009; Edwards et al., 2010, Al-Riffai et. al, 2010; Ros et.al., 2010). By December 2010 the Commission is required, following article 19 of the RED, to provide a report to the European Parliament and to the Council reviewing the impact of indirect land-use change on greenhouse gas emissions and addressing ways to minimise that impact. The report shall, if appropriate, be accompanied, by a proposal containing a concrete methodology for emissions from carbon stock changes caused by indirect land-use changes. A Commission consultation on this complex issue has just been closed.

A related debate is the Commission’s efforts to recognise voluntary (private) certification schemes that producers could use to testify that their biofuels production does not harm forests. These schemes cover the production chain entirely or partly. The first recognitions are expected in early 2011. The possibilities for the Commission and Member States to recognise voluntary or national certification schemes is outlined in a Commission Communication of June 2010. This Communication gives, together with another Communication on the practical implementation of the sustainability criteria⁷, guidance to the EU Member States with regard to the implementation of the RED. They are also valuable guidance to biofuels producers on how to interpret the sustainability criteria of the RED. In this respect there is a fear that EU Member States may implement the sustainability criteria in different ways or will not meet the 5 December 2010 deadline. This would make it difficult

⁷ European Commission, Communication on voluntary schemes and default values in the EU biofuels and bioliquids sustainability scheme, 2010/C160/01, June 2010; European Commission, Communication on the practical implementation of the EU biofuels and bioliquids sustainability scheme and on counting rules for biofuels, 2010/C160/2, June 2010.

for producers to be in compliance with the standards. In parallel to the discussion on the implementation of the EU's sustainability criteria, efforts are undertaken to set global bio-energy sustainability criteria, for example within the context of the GBEP (Global Bio-energy Partnership, created by the G8) and the ISO.

When sustainability standards would be set through agreements established by companies or would be set at the global level, the risk of them being inconsistent with WTO rules is strongly reduced (see below). Key aspects in the discussion on standards are: i) how to define which products are in line with the sustainability criteria of the RED; ii) how to take into consideration the product chain of biofuels (life cycle analysis or not); and iii) whether it is desirable to have separate standards for biofuels, or to immediately set standards for other bio-based products, notably other biomass products and the raw materials from which they are made, as well.

Questions for discussion:

- *Will it be possible to reach the 10% target with current policies?*
- *To what extent could the outcome of the ILUC report influence the EU's biofuel policy?*
- *Is it preferable to have a voluntary certification scheme with additional sustainability criteria for biofuels production or to establish additional mandatory standards?*
- *How should the standards be set?*

2 Innovation and business opportunities arising out of a biobased economy

The European Commission's willingness to promote bio-based products was mentioned for the first time in its Lead Market Initiative for Europe (LMI) of December 2007.⁸ The aim of this initiative is to support new non-food bio-based products, such as bio-plastics, bio-lubricants, enzymes and pharmaceuticals. Stimulating the use of these products would give the EU a competitive advantage in a new segment of the global products market and reduce the EU's dependency on imported oils. It would also lead to greenhouse gas emission reduction. Instruments that were identified included financing of pilot and demonstration projects, standardisation, labelling, certification and promoting green public procurement for bio-based products. Also the RED would make a contribution.

In order to support the efforts large research programmes were initiated. The most important ones are the €80 million programme for biorefineries⁹ and the European Industrial Bioenergy Initiative¹⁰ that forms part of the EU's Strategic Energy Technology Plan (SET-Plan). For the latter initiative it is not yet known exactly how much EU funding will be available, but expectations are that they will be considerable. The programme will address industrial research and innovation regarding bioenergy technology in order to facilitate the GHG emission savings as provided by the RED. The SET-Plan's overall aims are to stimulate industrial participation in energy research, boost innovation and accelerate the deployment of low-carbon technologies. In addition, European research funds are available through the 7th

⁸ See for more information on the Lead Market Initiative for Europe:

<http://ec.europa.eu/enterprise/policies/innovation/policy/lead-market-initiative/>

⁹ Cf: <http://ec.europa.eu/research/index.cfm?pg=newsalert&lg=en&year=2010&na=na-010310>

¹⁰ Cf: <http://www.biofuelstp.eu/overview.html>

Framework Programme for Research, in particular by means of the KBBE-NET, a network that is steered by representatives of the EU Member States and that funds 18 projects dealing with biomass and industrial biotechnology.

In September 2010, EU Innovation Commissioner Máire Geoghegan-Quinn announced that the European Commission will present a new strategy on the bio-economy in the autumn of 2011.¹¹ The Commission's Work Programme for 2011 refers to a "European Strategy and Action plan towards a sustainable bio-based economy by 2020".¹² The focus of this initiative will presumably be on biorefineries that use renewable raw materials to produce biofuels and other bio-based products. These in turn are used for other products such as chemicals, plastics, pharmaceuticals, cosmetics and paints. Through the initiative European industry would need to use less conventional fossil resources, contribute to recycling (agricultural) waste products and reduce greenhouse gas emissions. Making a transition to a bio-based economy could reduce costs of industrial production and make the EU a more competitive economy in line with its Europe 2020 objectives. Several EU Member States, including Germany, France and the Netherlands have indicated their support for an integrated European Commission initiative on the bio-economy.¹³

Questions for discussion:

- *How to define and develop the value chain of bio-based products?*
- *How to stimulate their development, production and consumption?*
- *What is the relevant level playing field? Should we focus on biofuels or at the bio-performance of materials in order to make the transition towards a bio-based economy ?*
- *What initiatives are needed at national and EU level to stimulate the transition towards a biobased economy?*

3 The regulatory framework for trade in biofuels

In the EU biodiesel is the most produced biofuel, whereas in Brazil and the US ethanol production dominates (cf. UNEP, 2009; Beurskens and Hekkenberg, 2010). In the EU most biofuels are today still produced from vegetable oils (1st generation), but an increase is foreseen of biofuels production derived from used cooking oils and other waste products, algae and biochemical processes (2nd, 3rd and 4th generation). This could provide a new competitive advantage to the EU's economy, and these future generations of biofuels would also contribute to achieving climate, energy and environmental objectives, without jeopardising food production.

The regulatory framework that applies for the production and use of biofuels in the EU contains tariff and non-tariff standards, as well as indirect and direct subsidies to producers that influence trade flows, investment and production decisions (cf. Josling et al., 2010;

¹¹ Cf. Bioeconomy for a better life, Speech/10/423 by Máire Geoghegan-Quinn, Commissioner for Research, Innovation and Science, Conference The Knowledge-Based Bio-Economy Towards 2020, Brussels 14th September 2010.

¹² Cf. Commission Work Programme 2011, Brussels 27 October 2010.

¹³ For instance, a Memorandum on this issue was sent to the Commission by the Dutch, German and French delegations on 11 May 2010.

Mitchell and Tran, 2010). In this respect, there is a difference between ethanol, biodiesel and the raw materials from which biofuels can be produced.

For ethanol a tariff of 10.2 euro per hectolitre applies (about 45% at current prices) and for biodiesel a considerably lower tariff applies (of about 6.5% at current prices). Countries with preferential access into the EU following from bilateral trade agreements, such as Association Agreements, the Everything But Arms Agreement (for Least Developed Countries) and Economic Partnership Agreements, face a zero duty (cf. Swinbank, 2009). Most raw materials are currently not subject to a tariff.

With regard to non-tariff aspects of the regulatory framework for biofuels, the emission and land-use sustainability criteria of the RED are most significant (see above). Biofuels not fulfilling these criteria can still be sold in the EU market, but they do not count for the targets EU Member States are required to meet, and are therefore unlikely to be allowed and promoted by government policies promoting their production and use.

As a result of the current rules, in the Port of Rotterdam, the largest trading hub and production site for biofuels in Europe, most of the raw materials used to produce biofuels originate from the European continent or from countries to which the EU has given preferential market access. Trade flows from outside the EU are relatively modest, but expected to increase (cf. Port of Rotterdam, 2010).

The EU's sustainability criteria for biofuels are understandable from an environmental and internal EU perspective, but for a number of important producers from outside the EU they mean additional investments in order to ensure that their production meets the EU's requirements. In particular countries, such as Malaysia and Indonesia, are less happy with them, whereas the largest exporting country of biofuels, Brazil, is more confident that its production can meet the EU's standards of environmental sustainability.

Some legal experts question whether the EU's sustainability criteria for biofuels are consistent with WTO rules. According to Mitchell and Tran (2010), the emission criteria of the RED is likely to hold, but the land-use criteria could very well prove to be WTO incompatible. They would violate the non-discrimination rules, as biofuels that differ only on the basis of the land on which they were grown have similar physical characteristics and can therefore be considered "like products". This is a problem since biofuels not meeting the land-related criteria are likely to come from countries outside the EU's territory, including those who produce biofuels and are not in a privileged trade relationship with the EU. The question is then if the discrimination could be justified under article XX of the GATT, which allows WTO Members to adopt measures to protect human, animal and plant life or to conserve exhaustible natural resources as long as they are no disguised restriction(s) to international trade or constitute arbitrary or unjustifiable discrimination between countries where the same conditions prevail. When a WTO panel would arise on this matter it is likely to investigate whether the EU can provide sufficient scientific evidence on the environmental effectiveness of the land-use criteria, and whether the EU can impose its norms on land-use on third countries, to name but a few potential non-tariff stumbling blocks.

Another issue is whether the subsidies paid for biofuels are in line with WTO rules (cf. Josling et al., 2010). In 2009, the EU imposed anti-dumping and countervailing duty measures

against the export of subsidised soy-biodiesel from the US that flooded the EU market.¹⁴ But also within the EU, Member States provide subsidies, and some of the EU's agricultural, renewable energy and research spending may also qualify as indirect subsidies for biofuels. According to Jung et al (2010) total support for biofuels amounted to about €3 billion in the EU in 2008, which is lower than in 2006 and 2007, and represents €0.24 and €0.22 for ethanol and biodiesel respectively. A specific EU-wide energy crops scheme was abolished in 2010. The 10% biofuels requirement of the RED provides a strong incentive for EU Member States to adopt a blending mandate, to give tax reliefs to producers, and to subsidise research, production and use of biofuels. At this moment there is no good overview of these national policies and measures, but this is likely to become available when implementation of the RED is further advanced.

Politically it is still an open question whether a complaint will be filed against the EU on biofuels. If a WTO dispute settlement panel would be started and the EU would lose it, those who suffered economic losses from the EU's policies could eventually impose countervailing measures (retaliatory action) worth the value of these losses. It is thus important for the EU to be able to prove with scientific evidence that its standards are justifiable according to article XX of the GATT. Although WTO rules are likely to allow for measures focusing on reducing global greenhouse gas emissions, the standards for land use change are at higher risk and the same would presumably be the case when additional standards for indirect land-use would be decided upon. The same applies to possible criteria to be formulated for other biobased products in the context of the new biobased economy initiative.

The EU could take into consideration to be more careful or aim at setting global standards for biofuels, which the WTO would normally respect. It could possibly also propose a negotiated trade-off to other countries, e.g. by allowing biofuels to qualify as environmental goods under the Doha Round, which would mean an elimination of the ethanol tariff. Another solution to the WTO consistency risk would be the development of private sector sustainability standards that would be more strict than the EU requirements and would apply to de facto all biofuels consumed inside the EU.

Questions for discussion:

- *What are the implications of the current regulatory framework for trade flows and business opportunities?*
- *What are the prospects for a biofuels conflict in WTO, and on which points exactly could the RED be inconsistent with WTO rules?*
- *What are the main points of scientific evidence justifying the EU's current criteria and would it be possible as well to defend criteria for indirect land-use changes if these would be adopted?*
- *What could the EU do now to avoid a dispute in WTO and to avoid other biobased products to become vulnerable to trade disputes in the future?*

¹⁴ Cf. Council Regulation (EC) No 599/2009 of 7 July 2009 imposing a definitive anti-dumping duty and collecting definitively the provisional duty imposed on imports of biodiesel originating in the United States of America.

4 New directions for the bio-based economy, including biofuels

Evidently, biofuels touch upon a large variety of policy areas, including agriculture, industry, research and innovation, transport, environment, waste, emissions, development cooperation and international trade and product standards. Accordingly, the EU's biofuels policy provides fertile ground for various seemingly competing interests, which makes it a contentious issue. It is moreover clear that an integrated approach to biobased products is desirable, both from an environmental and from a competitiveness angle, and that in this debate much can be learned from the experiences with the biofuels policy. Given negative experiences with this policy, ownership over who should be responsible for taking up this issue seems to be lacking for the moment, but is badly needed.

Given that there is a lot of debate surrounding the potential direct and indirect effects of the mass deployment of first generation biofuels, research funds and support policies of the EU and its Member States should perhaps no longer go to this type of biofuels, but to next generations biofuels. Another debate is whether we can still accept 1st generation biofuels in the market when these would become available without support, and how they are related to subsidies not targeted at increased biofuels production, but at other objectives (e.g. stimulating agricultural production).

Furthermore it seems inconsistent that sustainability standards apply for biofuels, whereas they do not apply for the raw materials from which they are made, for other energy sources, biobased products or food products for that matter. It is also still not fully clear at what moment in the value chain sustainability could best be measured. A life-cycle approach may be preferred, but difficult to pursue and not compatible with WTO rules on like products (see above). Arguments for an expansion of the remit of the sustainability criteria seem valid, but it could be questioned where to draw the line. The new EU strategy on the biobased economy will need to address this issue.

With regard to the implementation of the current sustainability criteria as outlined in the RED, a considerable amount of regulatory uncertainty could emerge when EU Member States take different approaches or not meet the implementation deadline. Another risk is that biofuels producers will be confronted with considerable administrative burdens in order to comply with the sustainability criteria.

It is clear that there is a further need for the EU to stimulate the global debate on biofuels standards, as markets are increasingly global and as having such rules would considerably reduce the risk of these standards being WTO incompatible. A question in this regard is what the prospect is for the development of such standards globally and to what extent private standards will come about. Particularly standards for indirect land use change may be sensitive as land allocation is a core aspect of state sovereignty and not in all countries it may be possible to ensure compliance with land use rules.

All in all, the debate on biofuels and its contribution to making a transition to a biobased economy is far from finished. It will be interesting to see whether the EU can use the opportunities that arise from it to strengthen its competitiveness position in the world, to improve the environment, and to demonstrate its ability to regulate well.

Questions for discussion:

- *Should be the EU's Biofuels Policy be guided primarily by its climate, energy, industry, competitiveness, agricultural or development cooperation interests and objectives?*
- *What should be the focus of the EU's research and innovation policies regarding biobased products?*
- *What standards should apply for biobased products and for which ones?*
- *To what extent can regulatory uncertainties and administrative burdens be reduced when implementing the RED in the various EU Member States?*
- *What efforts could the EU undertake at the international level to further the setting of global standards for biobased products?*

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