



for a living planet[®]

DRAFT FOR INTERNAL CONSULTATION

WWF Contribution to the European Commission – Energy & Transport Directorate Public Consultation on the Review of the EU Biofuels Directive

10th July, 2006

Premises & assumptions

- WWF believes that the primary justification for biofuels is to maximise lowering the levels of GHG emissions emitted in the European Union.
- WWF asserts that biofuels alone are neither the answer or primary means to combat climate change. In the transport sector, an overall reduction in fuel and energy consumption coupled with alternative transport infrastructure for both individuals, communities and freight, and increased efficiency of vehicle engines are measures at least as important as alternative fuels.

Q.1. Is the objective of promoting biofuels still valid?

WWF believes that the objective of promoting biofuels through EU legislation and financial / fiscal instruments is still valid for the following reasons:

1. Greenhouse gas (GHG) emissions from the transport sector continue to increase. Biofuels are the only ready-to-use alternative fuel technology available to address this issue now¹;
2. Biofuels are not new technologies, but their rise and fall throughout the twentieth century demonstrates intimate connections to enabling policies and fiscal / financial incentives;
3. Biofuels offer the prospect of great fossil fuel substitution potential. However, un-managed expansion of biofuels also yields great potential for environmental destruction and displacement of food and water resources;
4. Biofuels offer significant opportunities for rural development in developed and developing countries.

1 - The Transport Sector & GHG Emissions

WWF has stated that the mean temperature growth of the planet must stay below 2° Celsius compared to pre-industrial temperatures in order to avoid dangerous climate change. To reach this objective, greenhouse gas (GHG) emissions globally must be cut by approximately 50 per cent in the coming decades.

WWF believes this can only be achieved through significant improvements in energy efficiency and reduced energy use in all sectors of society, combined with growth in the production and use of a wide range of renewable energies (e.g. solar, wind, biomass combustion etc.).

Bioenergy (including solid biomass, liquid biofuels and biogas) has a major role to play in the transformation of the energy sector. Drawing from a report published in September 2005

¹ Low-polluting natural gas may be another option. However, whilst it still does contribute carbon emissions, there also is no sufficient infrastructure yet in place to use it

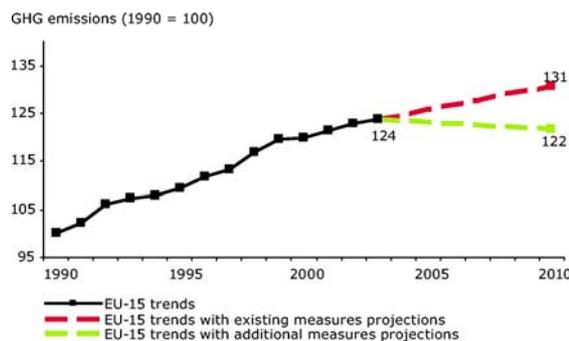


for a living planet[®]

entitled “*Target 2020 – Policies & Measures to Reduce Greenhouse Gas Emissions in the EU*” WWF has stated that a 33 per cent reduction in emissions can be achieved by 2020 (compared to the 1990 baseline year) if a mix of measures are taken including a 0.4 per cent final reduction in energy demand per annum and a 25 per cent share of energy provision being serviced by renewable energies, of which approximately half by bioenergy².

According to the European Environment Agency³ there are marked differences in the progress required between sectors to reduce their greenhouse gas emissions, in order for Europe to effectively progress towards achieving its Kyoto protocol targets: “*Total GHG emissions from the combustion of fossil fuels in power plants and other sectors (e.g. households and services; industry) excluding the transport sector (60 % of total EU-15 GHG emissions) are projected to stabilise at 2003 level (or 3 % below 1990 level) by 2010 with existing measures and to decrease to 9% below 1990 levels with additional measures. Total GHG emissions from transport (21 % of total EU-15 GHG emissions) are projected to increase to 31 % above 1990 levels by 2010 with existing measures and to be 22 % above 1990 levels with additional measures*”⁴.

Figure Q.1-1 – EU-15 past emissions and projected emissions in the transport sector⁵



Road transport is expected to increase in all EU Member States, and this will lead to an increase in the emissions of CO₂. Between 1990 and 2003, CO₂ emissions increased by 23 per cent and N₂O emissions by 100 per cent in the EU-15 due to increases in the road transport sector⁶.

² <http://www.panda.org/downloads/europe/eu2020report.pdf>

³ EEA web-site viewed July 2006

⁴ EEA Projections of greenhouse gas emissions and removals (CSI 011) - May 2005 Assessment

⁵ Ibid.

⁶ EEA Greenhouse gas emissions and removals (CSI 010) - Jun 2005 Assessment. The reference to N₂O emissions is explained as the effect of the wide-spread adoption of catalytic converters in cars, which whilst reducing the emissions of certain exhaust air pollutants, produce N₂O as a by-product.



for a living planet[®]

Figure Q.1-2 – EU-10 emissions of GHG by sector and by gas 1990-2003⁷

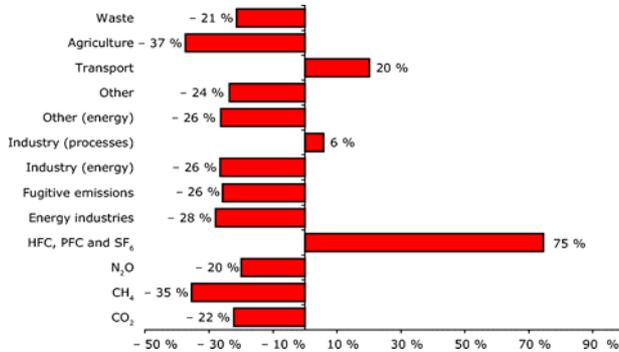
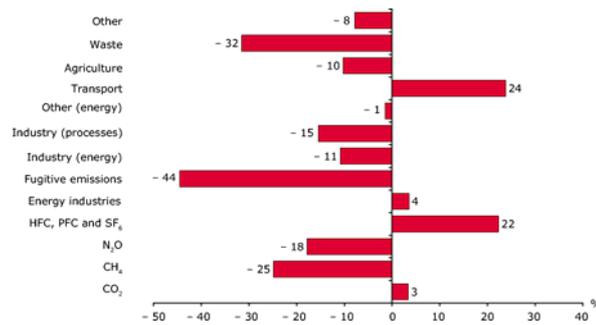


Figure Q.1-3 – EU-15 emissions of GHG by sector and by gas 1990-2003⁸



From the above, it is clear that the transport sector must be tackled if global emissions are to be effectively reduced. It is also clear that business as usual, under current policy measures and objectives, will not be sufficient to curtail the emissions of the transport sector (cf. EEA quote above).

Hydrogen (H₂) is often discussed as a potentially important fuel for the future of transport. Whilst this may be the case in the coming decades, at present it does not offer a ready-to-use or investment free technology, and thus a ready substitute for fossil oil.

One of the most significant advantages of biofuels over hydrogen is that, as at starting point, biofuels can use existing infrastructure (e.g. fuelling stations) and existing vehicle engines at little or no additional adaptation costs. Ethanol-gasoline blends with less than 10 percent ethanol can be used in all gasoline-fuelled engines. Biodiesel can be used blended with petroleum diesel or pure in any diesel engine⁹.

For hydrogen to develop into a viable alternative fuel, new engine technologies and fuelling systems will need to be established across the EU. "...it could take decades to develop the infrastructure and vehicles required for a hydrogen-powered transport system. And the investments required to make the transition will be massive."¹⁰

⁷ EEA Projections of greenhouse gas emissions and removals (CSI 011) - May 2005 Assessment

⁸ EEA Projections of greenhouse gas emissions and removals (CSI 011) - May 2005 Assessment

⁹ Worldwatch Institute (2006) pages 63 & 65

¹⁰ Ibid. page 76



for a living planet[®]

2 - The Role of Public Intervention in Supporting Biofuels

In the early part of the twentieth century ethanol was commonly blended with gasoline across Europe and Brazil, where biofuels represented approximately 5 per cent of total fuel consumption. In the United States production of ethanol reached a peak of 2.3 billion litres in 1944 and then collapsed when cheap oil flooded the market after the war¹¹. Biofuels are not a new, revolutionary technology currently emerging on the market. Biofuels for transport have been around for as long as automotive engines have: *“Some of the earliest motor vehicles developed by Ford and others ran on biofuels –on mixtures of ethanol and gasoline for the early spark ignition engines and on peanut and hemp oils in Rudolph Diesel’s earliest compression engines”*¹².

The use of biofuels, and their expansion or contraction throughout the twentieth century is closely connected to the decisions of governments and the policies they have enacted.

The Brazilian *Proalcool* programme is probably the best known example of government intervention in the biofuel sector. The Proalcool programme was born in 1975 out of the Brazilian government’s priority to reduce the country’s dependence on imported oil, and thus countervail the fragility experienced during the oil crises of the early 70s. Despite Brazil’s notorious free-market approach to agriculture and trade, the Proalcool and subsequent ethanol (and diesel) policies have been heavily managed by the Brazilian government. A variety of measures were adopted to ensure steady supply of sugarcane and ethanol by farmers and mill/distillers (e.g. price control, subsidies, tax breaks and fuel blending mandates), as well as the manufacture and sale of, at first all-ethanol, and then flex-fuel cars (e.g. the 2003 government mandate). The steady commitment to biofuels by the Brazilian government over the past thirty years has resulted in:

- Savings of almost US\$50 billion in imported oil costs – nearly ten times the national investment through subsidies;
- The creation of more than one million rural jobs;
- Brazil today accounting for approximately half of globally traded ethanol, and gearing-up for more: *“We don’t want to sell litres of ethanol, we want to sell rivers”* Agriculture Minister Roberto Rodrigues told Japanese Prime Minister Junichiro Koizumi in June 2005¹³.

The benefits of the Brazilian ethanol strategy must be severely qualified in terms of their environmental and social impacts. However, there is no doubt that the scale and solidity of this sector has been ensured through sustained governmental intervention over the long-term.

The European Union has direct experience of the important role legislation and systems of support play in establishing biofuels. According to the European Biodiesel Board: *“Biodiesel has been produced on an industrial scale in the European Union since 1992, largely in response to positive signals from the EU institutions. Today, there are approximately 40 plants in the EU producing up to 1,350,000 tonnes of biodiesel annually. These plants are mainly located in Germany, Italy, Austria, France and Sweden”*¹⁴. Today, the European Union is global leader in biodiesel, producing close to 95 per cent of total biodiesel.

3 - The Role of Public Intervention in Regulating Biofuels¹⁵

Bioenergies are not automatically environmentally sustainable just because they are a renewable resource. Depending on how, where and which bioenergy crops are produced,

¹¹ Ibid. page 63

¹² Ibid. page 61

¹³ Ibid. pages 64 & 73

¹⁴ EBB web-site [“About Biodiesel”](#) page

¹⁵ Clay chapter 2 as cited in WWF Background and Discussion paper distributed at the WWF – European Commission DG TREN Workshop “The Way Forward to Sustainable Bioenergies” June 2006



for a living planet[®]

they can also cause significant environmental and social impacts, like deforestation, biodiversity loss, conversion of areas with high conservation value, soil erosion, water over-abstraction and land-use conflicts. Social aspects can range from widespread use of coerced labour to unavailability of food or fuel at prices that the poor can afford.

Demand for agricultural and other commodity feedstocks for first-generation bioenergy production is already dramatically changing production and trade patterns, resulting in increased production in many areas of the world. Production of sugar crops is increasing, influenced by demand for fuel ethanol linked to rising prices in energy markets. The same sweeping market trends are underway in the oilseed sector, where an underlying surge of growth is accelerated by the use of rapeseed, soy and palm oils for biodiesel production.

The oilseed and sugar sectors will continue to be important drivers for environmental changes taking place in palm oil, sugar and soy producing countries, particularly those where good management practices and environmental law enforcement ability are challenged by the rapid pace of development spurred by high prices. The same trends are affecting forests and forest products, as energy from wood becomes an increasingly important industrial energy option. Forest enterprises are expanding both conventional timber production and plantation production activities to include these new energy market opportunities. The variety of commodities that can be used as bioenergy feedstocks is almost unlimited.

The environmental footprint of agriculture on the planet is already considerable. Habitat loss attributed to agriculture is estimated at 55%. Of water take, 70% is estimated to be used for irrigated agriculture. Of that, over 60% is estimated to be wasted. Half of the world's topsoil is estimated to have been lost globally. It is estimated that 70-90% of farmers lose more carbon per year than put it back. Agriculture accounts for more use of agro-chemicals and pollution than any other industry, and production of 25-40% of the greenhouse gases that contribute to climate change.

The impact of increased production for bioenergy could also have a considerable impact on food production and consumption. It is estimated that global food demand could double in 50 years, but that per capita arable land availability globally is decreasing. Renewables and bioenergy will compete with food production for land, but the poorest people have no land, can spend 75% of their income on food, and still go hungry.

The increasing demand of wood for the production of bioenergy will have consequences for the world's forests as well. Over the last five years, the world suffered a net loss of some 37 million hectares (91 million acres) of forest, according to data from the United Nations Food and Agriculture Organisation. Each year the world loses some 7.3 million hectares of forest, an area the size of Panama. Due to extensive reforestation, this net forest shrinkage has slowed slightly from the 8.9 million hectares lost annually in the 1990s. While this is encouraging, it obscures the sobering fact that gross deforestation has not declined significantly since 2000. Forests are already sources for biomass production and the demand for it will further increase over the next five to ten years. Forest-based bioenergy will compete with pulp and other wood products and therefore intensify the threats of deforestation and forest conversion.

Many adverse environmental consequences can be avoided if governments and producers alike have in hand a system that provides them with information about the energy and environmental costs and benefits of crops used as bioenergy feedstocks, and if the circumstances surrounding their production and their energy potential are clearly understood by government and other consumers to be sustainable. This is the kind of information and assurance that can be provided by environmental assurance.

Q.3.1. Looking towards 2010, is the present European system of indicative targets and support for biofuels appropriate or does it need to be changed?



for a living planet[®]

The current mix of targets and support schemes does not appear to be sufficient or appropriate in ensuring a sustainable development and take-up of biofuels. Some of the most critical issues include:

- *Lack of environmental sustainability criteria built into the system.* At present, the biofuels directive does not provide guidance or constraints upon what is a sustainable biofuel. Yet there is ample evidence that, for example, biofuels derived from agricultural feedstocks produced with nitrogen fertilizer, harvested and delivered in vehicles using conventional fuels and distilled with energy from coal or gas provide very few, if any, GHG savings over conventional fuels.
- *Lack of discrimination between feedstocks based on their relative energy potential or GHG benefits.* In a start-up phase it may be legitimate to provide support for all biofuel feedstocks, to make the best use of available opportunities or to offer temporary relief to a farming community affected by subsidy reform. However, supplying the transport sector with an alternative fuel on a sufficient scale to effectively achieve GHG emissions reductions will require more than an opportunistic approach to feedstock supply.
- *Lack of integration of the EU's role internationally, in particular as regards trade and aid for Developing Countries.* Climate change is a global environmental concern where some of the first (e.g. Tuvalu) and worst (e.g. Caribbean) affected countries are also those in the weakest positions to take unilateral measures which will substantially impact global emissions. At the same time, many of these countries lie in the tropical region where climatic and soil conditions coupled with low labour and land costs, provide optimal growing conditions for many oil seed and sugar / starch rich crops as required for biofuels. Unless there is proper integration of global concerns in the policy mix adopted *inter alia* by the EU, many of these countries could supply major markets with biofuels produced unsustainably, with adverse consequences for food prices and rural poverty.
- *Energy crop payment is insufficient and may not be most appropriate form for public expenditure.* Three years from its establishment, the €45/hectare energy crop payment under the Common Agricultural Policy has not provided a sufficient pull for producers. The maximum guaranteed area of 1.5 million hectares has only been one-third filled¹⁶. Whilst a steady and sufficient supply of feedstocks is a pre-condition for industry's investment and consumer choice in favour of biofuels, a subsidy for traditional European agricultural feedstocks may represent unfair competition vis-à-vis third, in particular developing, countries; may lock feedstock production into traditional patterns rather than supporting investments into new maybe more GHG and energy efficient feedstocks. Finally, it may not be the best use of limited financial resources, as it does not appear to provide a sufficient pull for the whole *filière*.
- *No support for pilot projects, innovation in technologies or investments into longer-term supply patterns.* Achieving a scale of biofuel use across the EU which will positively impact the scale of GHG emissions in the transport sector will require more than maximising current agricultural and forestry production patterns. The current directive provides scarce incentives for Member States (and none for private operators or industries) to test innovative biofuel chains on a pilot basis, investments into new feedstock or biofuel production technologies, or to do so if in partnership with third countries.
- *No pro-active engagement required from fuel suppliers.* Fuel suppliers have an important potential to bring their market experience to produce and sell biofuels in the most efficient way. More about this later in this paper.

¹⁶ Figures provided by DG Agriculture to the Energy Crops Advisory Committee in February 2006 relating to EU25 areas paid in 2004 and areas claimed in 2005



for a living planet[®]

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

Q.3.3. How should the option(s) you favour be put into practice?

The variety of options presented in section 3.2. of the consultation document may each be more or less appropriate according to the objectives underlying the Biofuels directive.

As a reminder, for WWF the primary purpose of a Biofuels directive is to help the EU and its Member States to meet their (current, and post 2012 strengthened) Kyoto Protocol commitments. Biofuels is developed as one solution (amongst others) for the transport sector. Why solutions are needed in the transport sector is detailed in Q.1..

WWF believes that fuel suppliers offer the most efficient means to cost-effectively source and supply biofuels in line with legal requirements. Targets and obligations, as explained below, should be aimed by the EU to fuel suppliers¹⁷.

Fuel suppliers can play three important roles in establishing and promoting biofuels:

- Being the main driver for sustainability of biofuels and finding the most cost-effective mechanism to meet assurance obligations in sourcing and distributing environmentally-assured biofuels;
- Stimulating the supply of biofuels –and by consequence their feedstocks, as well as identifying the most cost effective suppliers;
- Identifying and/or creating end-user demand so as to ensure biofuels are actually used in transport.

Options D, E, F and G could all support mobilising the fuel supply sector. In WWF's view a combination of options E¹⁸ and G¹⁹ is preferable insofar as many fuel suppliers are companies operating across several Member States. In terms of Kyoto emissions reductions targets for the EU, it should not matter in which country fuel suppliers deliver their obligation as long as they are actually delivered. Allowing fuel suppliers this freedom of operation is likely to increase their support for the legal requirement and give them the best opportunity to identify the most efficient means of achieving it. It is then up to the Member States to attract biofuels by creating the right incentives.

Member States must make use of bioenergy within their strategy mix to deliver their GHG emissions reductions. However, which bioenergy they opt to use (e.g. solid biomass, liquid fuel or gas fuel) and for which energy use (e.g. heat generation or transport fuel) should be their own choice, based on what can be most effectively delivered on their territory.

Ultimately, what is important is effectively achieving emissions reductions. Member States have a variety of options available to them. In the light of the above, WWF might not favour options A, B and C.

The above would preclude the need for option H. Voluntary agreements have often proved to be less effective than legislation. For example, car manufacturers are still far from the 140 gram of CO₂/vehicle km promised by 2008 under the voluntary ACEA agreement.

In a second stage, options I and J may be useful instruments to support the sector and mainstreaming of biofuel usage. However, for end users to benefit from biofuel labels, and to be enticed to use them for their benefits, biofuels need to be available in consistent and

¹⁷ For the purposes of this paper, fuel suppliers are understood to mean all suppliers of fuel for transport, electricity or heat generation as well as for chemical processes.

¹⁸ A biofuel **obligation** is defined in the consultation document as: incorporating a given percentage of biofuel in the total amount of fuel sold

¹⁹ A biofuel **mandate** is defined in the consultation document as: laying down a minimum proportion of biofuel to be contained in each litre of fuel sold



for a living planet[®]

widespread supply. As an example: “ ... only 600 of the nation’s [US] 180 000 service stations sell E85, and those are primarily in the Midwest. The scarcity of E85 fuel is an important reason why Detroit’s automakers should not expect a significant lift in sales by emphasizing flexible-fuel vehicles, said Ron Pinelli, President of Autodata, an industry statistics firm in Woodcliff Lake, N.J.²⁰”.

Q.3.4. Should other options than those in section 3.2. be considered?

Notwithstanding WWF’s preference for options E and G, Member States should be allowed to attract fuel suppliers to help them deliver emissions reductions through biofuels on their territory, should they so wish. Tax incentives on the actual biofuels should be considered. But many other measures could also provide pull, such as investments into distribution infrastructure, incentives for flex-fuel vehicle supply, research into alternative fuel and feedstock production processes, public procurement for transport fleets to name just a few. These types of investment are in line with expenditure options available under the EU’s rural, cohesion and structural funds. The Commission should strongly recommend Member States consider using these measures.

At present, a variety of incentives, direct and indirect subsidies are available to the fossil oil sector²¹: “With most major oil companies being state-owned and with non-transparency the norm, the full magnitude of worldwide oil subsidies will likely never be known²²”. So long as the price of oil remains at the current high levels, biofuels appear as economically attractive. However, as the answer to Q.1. indicates, lack of consistent government support has jeopardised the establishment of biofuels as standard fuels alongside fossil fuels.

It is unlikely that either the EU or its Member States will ever have sufficient funds to support the development, take-up and establishment of biofuels on a par with fossil fuels. It seems thus reasonable to tackle the problem from the other end, and begin to regulate the dismantling of support to the oil sector. Tackling this alongside a review of the Biofuels directive would be opportune. The current high prices for oil would cushion the impact of such changes.

Q.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?

Not necessarily, as the preferred options outlined do not depend on taxation decisions.

Q.3.6. Should Member States be able to provide tax reductions / exemptions and lay down biofuel obligations at the same time – or should it be “one or the other”?

Answers Q.3.2. – Q.3.4. have already addressed this question.

Q.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?**

²⁰ M. Maynard Ford Plans Shift in Focus Away From Hybrids published on CURES-Bioenergy June 30th 2006

²¹ EEA (2004) page 14 - Estimated at Euro 24 billion per annum in the EU 15 for all conventional fuels

²² Worldwatch Institute (2006) page 76



for a living planet[®]

- 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 count towards the target?

Q.4.2. Should a wider system of certificates be introduced, indicating the greenhouse gas and/or security of supply impact of each type of biofuel? If so,

- How should this certification system work?
- How should the greenhouse gas and/or security of supply benefits of different biofuels be measured (i.e. which data and how to collect)?
- Should biofuels with good greenhouse gas and/or security of supply performance be rewarded within biofuel support systems for biofuels? If yes, how?

From an environmental perspective, there can be no justification for biofuels that do not provide positive gains in GHG and carbon life-cycle emissions over conventional fuels AND that are not produced sustainably.

Questions Q.4.1. and Q.4.2. are therefore answered together.

Sustainably produced is a concept open to various interpretations. With regards to biofuels, WWF has particular concerns regarding:

- *Where biofuel feedstocks are produced:* ensuring the integrity of high conservation value forests, floodplains, natural and semi-natural grasslands as habitats and the needs of the biodiversity they harbour;
- *How biofuel feedstocks are produced:* using agricultural and forestry management techniques that can guarantee the integrity and/or improvement of soil and water resources;
- *The GHG emissions and carbon losses in how biofuels are produced, processed and distributed:* ensuring that the technologies and management systems applied comply with good practice and can demonstrate they deliver savings over conventional fuels;
- *GHG accounting "leakage":* ensuring that biofuels imported and used in Europe (and thus contributing towards GHG emissions reductions in the EU) fully account for the GHG and carbon life-cycles also for the processes which occurred outside of the EU²³;
- *Food, land and water displacements:* an issue of particular concern in the third countries with which the EU will trade in biofuels. All of the currently used biofuel commodities are also food and feed crops. The interest in biofuels has already led to price increases for many of these crops, which can challenge the capacity of the communities that depend on them to continue sourcing them for their own needs. But of concern also in EU Member States affected by water shortages like, for example, Spain where biodiesel crops (sunflowers) are already widely produced and their expansion would provide a further unsustainable stress if simply added to current agricultural land use;

²³ Per definition, and irrespective of their relative efficiency, all bioenergies are accounted as 'carbon-free'. Countries "capped" under the Kyoto Protocol can accrue emissions reductions from bioenergy use within their national inventory & compliance regime. The emissions, however, resulting from the production of biofuels remain accountable to the producing and exporting country. If these countries do not have emission caps under the Kyoto Protocol the emissions accrued during the production and delivery processes are unlikely to be accounted for or off-set.



for a living planet[®]

WWF would wish to see all of the above-listed issues addressed in the development and use of biofuels. Indeed, for WWF, such issues are of concern whether in biofuels for transport or biomass / biogas for heat and power generation. Thus, a single approach to environmental assurance for all forms of bioenergy should be developed, applicable whether to biofuels or biomass / biogas, and to both domestically produced and imported material.

WWF would be seeking the revised Biofuels directive to state that environmental assurance, addressing the above issues, is a pre-requisite for all biofuels used in the European Union.

As regards GHG emissions, the revised Biofuels directive could implement this pre-requisite by:

- Mandating Member States to provide, within a brief (1-2 years) term following adoption of the new directive, a specific section on biofuels in their annual reports on GHG emissions (Please refer to answer Q.3.3.);
- Mandating fuel suppliers to provide, within a brief (1-2 years) term following adoption of the new directive, annual reports on the current well-to-wheel GHG emissions for the biofuels they put on the market under their obligation, and the measures they intend to adopt / strengthen in order to comply with the obligations set on them at EU level (Please refer to answer Q.3.3.);
- Allocating authority to the Commission to assess and challenge Member States and fuel suppliers on the solidity of their proposed strategies, and to penalise them in the eventuality of non-delivery or compliance.

The implications of this approach are:

- Actual delivery of GHG emissions savings are the only environmental obligation associated to biofuels (hopefully this would be extended in a single system applicable to all bioenergy);
- The reduction of GHG emissions globally has been politically mandated through the Kyoto Protocol. This provides a legal spur for transposing such a requirement into implementing legislation. Discriminating biofuels based on GHG emissions savings can lead to no automatic exclusion of particular feedstocks, countries of production or methods of production, issues of particular importance under international trade rules;
- The EU imposes the obligation, and is responsible for ensuring it is delivered. But Member States and fuel suppliers are free to find the most efficient approach to delivering the result;
- GHG emissions savings fully legitimise biofuels (hopefully all bioenergy) as an environment solution;

Different systems of accounting for GHG emissions and savings have been developed, including more recently the framework of the U.K.'s Low Carbon Vehicle Partnership (LowCVP)²⁴ and the Dutch "Import Duurzame Bioenergie".

WWF would recommend that the European Commission adopts a single biofuels GHG accounting system applicable to all operators in the EU, drawing from the European Trading Scheme (ETS) accounting system. This would greatly facilitate comparative accounting and thus collation of real information on trends. Other examples of accounting systems include WRI/WBCSD GHG Protocol, ISO 14064, methodologies developed by the CDM Executive Board.

Thus, for GHG WWF would recommend the use of both mandatory reporting and mandatory delivery, subject to penalties in case of non-compliance or delivery. Awards and incentives

²⁴ <http://www.lowcvp.org.uk/>



for a living planet[®]

should not be provided for this. As the whole fuel sector and all Member States will be broaching this at the same time, distortions of competition will not occur. However, measures to support operators in the delivery of sustainable biofuels should be made available, as described in Q.3.3. and Q.3.4..

For the wider range of sustainability concerns outlined in the first part of this answer, the European Commission need not attempt to either regulate or impose their delivery. Different approaches could be envisaged to ensure these issues are addressed:

1. The European Commission defines in the revised Biofuels directive the key social and environmental categories (e.g. freshwater usage, deforestation) and process criteria (e.g. stakeholder consultation) it deems necessary to determine the sustainability of biofuels (hopefully all bioenergy) OR it refers to those developed by independent international protocols (e.g. ISEAL Alliance Code of Good Practice for Setting Social and Environmental Standards²⁵).
2. The European Commission makes available a qualitative comparative and independent assessment of a broad selection of voluntary environmental and social internationally-applicable assurance schemes (e.g. RSPO, IFOAM, FSC, EUGENE, WWF-World Bank Alliance²⁶), and their performance against point 1 above;
3. The European Commission mandates Member States and fuel suppliers to report every 1 to 2 years on their performance against the categories and processes described in point 1 above.
4. The Member States and fuel suppliers are free to use any or none of the schemes reviewed in point 2 above, as these are all voluntary stakeholder (e.g. industry and NGOs) led approaches. The assessment will provide a broader knowledge of how such systems can be developed and operate, and their relative benefits and drawbacks. This will help:
 - Member States and fuel suppliers, by providing them with a starting point (though some may already have systems in place);
 - The European Commission, by providing a better understanding of where better practice lies in the industry, and what can legitimately be expected in terms of performance;
 - NGOs and interested stakeholders, to bring pressure to the industry to improve their performance
5. Based on the information collated (and published) under points 1 and 2 above, the European Commission has the authority to:
 - Penalise Member States and fuel suppliers who fail to report or report inadequately;
 - Ask Member States and fuel suppliers to improve their performance, with a view to complying, with the key categories outlined in point 1 above. Penalise them should they fail to explain or justify non compliance with any of the key categories or processes;

²⁵ ISEAL Alliance = www.isealliance.org/programmes

²⁶ RSPO = Roundtable on Sustainable Palm Oil <http://www.sustainable-palmoil.org/criteria.htm>

IFOAM = International Federation of Organic Agriculture Movements

http://www.ifoam.org/about_ifoam/standards/norms.html

FSC = Forest Stewardship Council http://www.fsc.org/en/about/policy_standards

EUGENE = European Green Electricity Network <http://www.eugenestandard.org/>

WWF - World Bank Alliance criteria for certification schemes:

<http://lnweb18.worldbank.org/ESSD/envext.nsf/80ByDocName/11AllianceCriteriaforCertification>



for a living planet[®]

- Request from Member States and fuel suppliers independent audits, monitoring or evaluations.

It is clear that the Commission faces an enormous challenge in identifying the most effective role for legislation and/or public finances in ensuring environmental assurance. WWF hopes that some of the suggestions above, as well as the discussions at the workshop organised with DG TREN on June 29th 2006, usefully contribute to the Commission's thinking.

WWF is concerned that the Commission will understandably not be in a position to propose a system of environmental assurance by the time it intends to table the review of the Biofuels directive's performance to date in September 2006. Nonetheless, WWF believes that the Commission can:

- Make an un-equivocal commitment in the review on the need for environmental and social assurance for biofuels, addressing the category of issues and processes as outlined in point 1 above;
- State that this system will include mandatory assurance for GHG emissions;
- State that this will apply to Member States and to all fuel operators;
- Commit to developing the mechanisms for the mandatory assurance of GHG emissions, and the reporting obligations for the other range of categories and processes within one year from the adoption of the new Biofuels directive;
- Commit to developing these through best practice in stakeholder consultation.

Q.4.3. Should there be a scheme to reward second-generation biofuels (made with processes that can accept a wider range of biomass) within biofuel support systems?

The current range of feedstocks used for biofuels cannot form the basis of a sustainable, sustained and significant biofuels sector in either the medium or long-term. A commitment to biofuels for the long-term requires an investment today in the technologies and raw materials that are to fuel our tomorrow.

WWF understands second generation to comprise:

- 2nd generation lingo-cellulosic feedstocks, including primarily grasses and dedicated woody plantations;
- 2nd generation processing technologies, (for example IOGEN Corp's cellulose ethanol technology allowing the combined production of fuel and electricity²⁷ or CHOREN Industries' SunDiesel produced through the three-stage Carbo-V[®] gasification Process²⁸).

Second generation feedstocks and processing technologies are not yet available on any significant scale, and often remain to be tested on any commercial basis. Within this context, the European Commission should carefully consider whether "rewarding" 2nd generation EU feedstocks is the most effective measure.

WWF would rather favour supporting the technological development and testing of the full chain -from raw material to biofuel product; of 2nd generation biofuels. WWF would also promote systems of support to the variety of operators engaged in the sector to facilitate their own investments into these technologies, as outlined in Q.3.4.. It is worth noting that biofuels is opening the agriculture, forestry and energy sectors to a number of new stakeholders (e.g.

²⁷ IOGEN Corp web-site as viewed in July 2006 www.iogen.ca/cellulose_ethanol/benefits/index.html

²⁸ CHOREN Industries web-site as viewed in July 2006 www.choren.com/en/biomass_to_energy/carbo-v_technology/



for a living planet®

chemical, pharmaceutical, automotive industries) interested in gaining a share in this potentially emerging market.

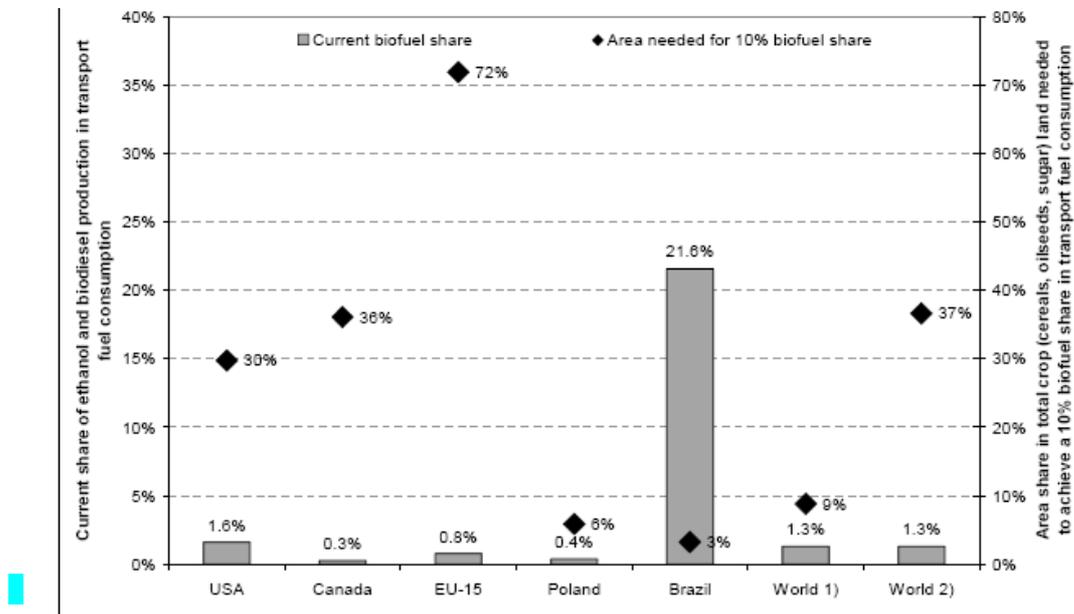
According to our suggested accountancy system based on GHG, better performing biofuels with a more positive GHG balance may be more attractive than current biofuels for Member States to achieve Kyoto targets. They should be free to provide 2nd generation biofuels higher support (e.g. higher tax breaks) as outlined in Q.3.4..

Some further evidence why 2nd generation biofuels are a priority.

1. Unsustainable land requirements associated to conventional biofuels²⁹;

According to the OECD land allocations implicitly required to meet an increase in biofuel production from current technologies is substantial. They estimate that for the EU-15 more than two-thirds of the area currently used for cereals, sugar crops and oilseeds would be needed to domestically produce sufficient feedstocks for biofuels to gain a 10 per cent share in transport fuels. Furthermore: *“These significant land requirements are related to the much lower biofuel yield per hectare of land compared to sugar cane based ethanol production in Brazil [...]. In the EU-15, [...] the large share of biodiesel in EU biofuel production adds to the relative land requirement. In general it takes much more land to produce biodiesel than to produce the equivalent amount of ethanol, particularly if the latter is produced from maize or sugar crops.”*

Figure Q.4.3–1 Biofuel shares in transport fuel consumption and land requirements for 10% biofuel shares in major biofuel producing regions



Notes: Current biofuel shares include ethanol and biodiesel only – shares are on an energy basis. World area shares are calculated relative to land used for cereals, oilseeds and sugar globally and within the five major biofuel producing regions only. All area requirements are calculated on the basis of average crop area and yield data for 2000-2004 and transport fuel consumption in 2004. For these calculations, the 2004 shares in the feedstock mix are assumed to remain unchanged. Calculations for the EU exclude ethanol transformed from wine which represented about 18% of EU ethanol production in 2004.

²⁹ OECD (2006) pages 14-15



for a living planet[®]

2. Greater GHG and potential cost benefits associated to 2nd generation fuels³⁰:

“The greatest potential for reducing GHG emissions and associated costs lies in the development of next-generation feedstock and biofuels. In the future, next-generation technologies –advanced cellulosic technologies, in particular- offer the potential to reduce transport-related GHG emissions significantly³¹”

Figure Q.4.3.- 2 GHG emission reductions per unit of petrol / diesel (CE Transform)

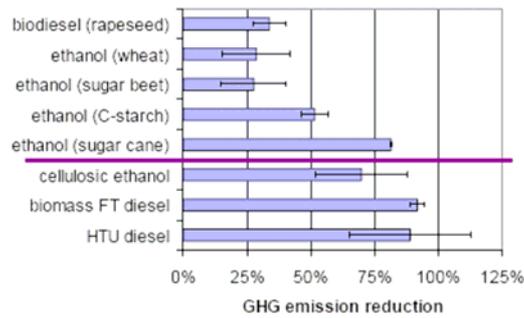
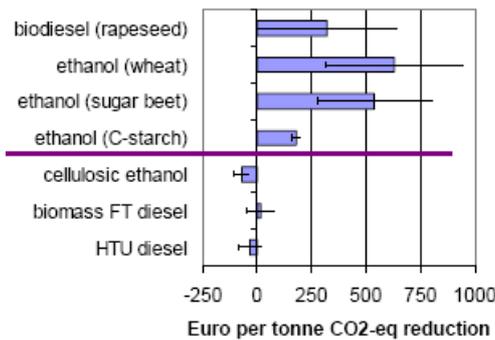


Figure Q.4.3.- 3 Cost per tonne of CO2 reduction – at approx. US\$60/barrel (CE Transform)



Q.5.1. Should the EU continue acting in favour of biofuels after 2010?

An argument commonly levied by industries at times of change is that they require clear government signals, and a medium- (e.g. ten years) to long-term (e.g. twenty years +) perspective to feel confident in carrying out investments of substance.

Investments in the oil industry typically carry a twenty-year return, or pay-back, delay. Oil companies are comfortable in managing this given their assurance of returns. Indeed, certain oil companies are so confident in the returns they will gain, that they make it stated common industry practice to only invest in ventures that will deliver a rather high minimum level of return³²: a very disciplined approach to investment.

Similarly, the success of the biofuel sector in Brazil, as outlined in answer Q.1.1., is inextricably linked to the scale of confidence imparted by successive (and politically opposing) governments, alongside its consistency over the past thirty years. Worth of note is also that the way in which they have supported the sector has been adapted over the period.

In reviewing and proposing a new Biofuels directive, the European Commission must send strong signals as to Europe’s commitment to this sector, and its development into the

³⁰ Figures drawn from a presentation given by B. Kampmann of CE Transform (Delft – The Netherlands) at the EEB, BirdLife & Transport and the Environment workshop on June 7th 2006

³¹ Worldwatch Institute (2006a) page 154

³² Personal conversation with an ex-Exxon-Mobile employee in June 2006.



for a living planet[®]

technologies of the future. It should further lead by example in providing direct EU support to these technologies. Such signals would not only create confidence for operators in the sector –from farmers through to fuel suppliers. It would also send clear assurances to other public and private financial institutions to grant loans, guarantees or indeed invest into the shares of operators willing to develop the biofuel sector of the future³³.

From the vantage point of the above perspectives, and considering that 2010 is only four years away; it seems most logical that yes, the EU should continue acting in favour of biofuels after 2010.

Q.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?

WWF believes that the European Commission should indeed propose a quantified mandatory target for fuel suppliers for biofuels after 2010.

However, WWF does not believe that the ambitions of the European Commission should end there. The Commission should propose a fifty years energy vision and accompanying strategy for the European Union. These should include:

- the energy mix which should be achieved in the EU, and targets for each of the energy sectors (of which biofuels would be one);
- a strategy for reducing the use of fuel in the EU (e.g. through an alternative transport strategy), including targets;
- strengthening the energy efficiency of all appliances, vehicles and sectors of the economy, including targets.

The targets that are set should be ambitious. Whilst it is understandable that political pragmatism is required in European Commission proposals; for the reasons outlined in Q.1.1. and Q.5.1. strong EU leadership is required to harness the take-off and establishment of sustainable alternative energy sectors.

With specific regards to biofuels, it is clear that any future target must go further than the currently discussed 5,75 – 8 – 10 per cent. Such targets do not signal a meaningful ambition to address either of the two objectives stated in the biofuels strategy, namely: reduction in GHG emissions and security of supply.

According to data taken from both the European Commission's Biomass Action Plan Impact Assessment and Biofuels Strategy, a 5,75% biofuels target would replace 18,6 Mtoe, and thus save 40,8 MtCO₂ equivalent³⁴. This would only amount to, as a rough comparison, half of Portugal's GHG emissions³⁵.

Q.5.3. Should EU action include the following measures (which could be pursued without defining a quantified target):

- **Support for research, development and dissemination of good practice?**

Please refer to answers Q.3.4. and Q.4.3..

- **Continued Community financial support for the supply of biofuels and their feedstocks?**

³³ See, for example, case study on finding private financing for Co-generation in Belize as an alternative income stream to sugar production; presented at WWF – DG TREN workshop 29th June 2006.

³⁴ European Commission (2005) (2006) According to the European Commission, replacing 1 toe of conventional fuel by a blend of 56% biodiesel – 44% bioethanol would save 2195 kg of CO₂eq.

³⁵ Comparison drawn from figures in EEA (2005) Emissions of 2003 in CO₂eq, excluding LUCF



for a living planet[®]

Please refer to answer Q.4.3..

- **Continued scope for Member States to support biofuels through tax reductions / exemptions?**

Please refer to answers Q.3.2., Q.3.4. and Q.3.6..

- **The labelling of all fuel to show the proportion of biofuel it contains?**
- **A campaign to inform consumers of the benefits of biofuels?**

Please refer to answer Q.3.3..

- **Any other options?**

Q.5.4. If the EU is to define a quantified target for biofuels after 2010, what should it be? What year(s) should it relate to – 2015? 2020? Both?

Please refer to answer Q.5.2..

Q.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)?**

In reference to our answer Q.3.3. WWF does not believe that targets should be linked to the market share of Member States, as at present. As GHG emissions reduction is the ultimate objective, Member States should be free to select the most relevant, efficient and effective measure for delivering emissions reductions through bioenergy use (please refer to Q.3.3.).

WWF favours EU-wide targets for biofuels, as described in Q.5.2.. Mandates or obligations should then be placed on fuel suppliers, as outlined in Q.3.3..

- **Greenhouse gas savings from biofuel use?**

WWF would support and indeed promotes a target linked to GHG savings. This would provide the means for accounting progress in delivering GHG emissions reductions. In our view, this would legitimise public regulation and investment into the sector, and would encourage Member States to favour biofuels with the most positive GHG balance. Accounting would also provide indications if progress is not happening, and legitimise taking further action.

A target linked to GHG savings would leave Member States and the EU free to move between biofuels for transport, biomass for energy and heat generation.

- **Reduced oil consumption from biofuel use?**
- **Reduced fossil fuel consumption from biofuel use?**

WWF is concerned that targets linked to either oil or fossil fuel consumption may divert attention from the over-arching objective of reducing total consumption. There is a risk that this type of target may provide indications of the reduction of consumption of oil and/or fossil fuels relative to biofuels, whilst allowing total consumption to potentially spiral.

Q.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:

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

Please refer to answers Q.3.3., Q.5.2. and Q.5.5..



for a living planet[®]

References

- CE Transform / B. Kampman** (June 2006) Powerpoint presentation The Greenhouse Gas Balance of Biofuels available at <http://www.eeb.org/activities/agriculture/conferenceresultsAsustainablepathforbiofuelsintheEU.htm>
- European Biodiesel Board - EBB** (July 2006) web-site www.ebb-eu.org
- European Commission** (December 2005) Biomass Action Plan COM(2005)628
- European Commission** (February 2006) An EU Strategy for Biofuels COM(2006)34 Final
- European Environment Agency – EEA** (2004) Energy Subsidies in the European Union - A Brief Overview EEA technical reports 2004
- European Environment Agency – EEA** (2005) Annual European Community GHG Inventory Report 2005 submission to the UNFCCC Secretariat
- European Environment Agency – EEA** (July 2006) web-site www.eea.europa.eu
- Organisation for Economic Co-operation and Development – OECD** (February 2006) Agricultural market Impacts of Future Growth in the Production of Biofuels
- Worldwatch Institute** (2006) State of the World 2006 Chapter 4 – Cultivating Renewable Alternatives to Oil
- Worldwatch Institute** (2006a) Biofuels for Transportation – Global Potential and Implications for Sustainable Agriculture and Energy in the 21st Century

