



Sustainability Criteria for Bio-Fuels

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SUSTAINABILITY CRITERIA FOR BIO-FUELS
AUSTRALIA

Executive Summary

The Australian government has recently reviewed and amended its taxation and grant programs in relation to alternative fuels. The purpose of these amendments was to simplify and rationalize the taxation system. In effect the changes will gradually increase the amount of taxation paid on alternative fuels (although such taxation will still be less than traditional fuels).

There is no legislative requirement that alternative fuels preferenced through government taxation or grant programs be ‘environmentally sustainable,’ although several schemes that impact on alternative fuels have the stated intention of assisting in the reduction of greenhouse gas emissions. The Australian government has commissioned a report on the emissions (including upstream and tailpipe emissions).

I. Background

The Australia federal government levies ‘excise’ (tax) on certain goods including, fuel products;¹ many of these products were also entitled to tax credits and capitals grants that effectively neutralized the effect of the excise.²

Significant amendments to the excise and subsidy program have occurred since 2002. Most recently, in 2006, the Australian government amended the excise and subsidies system specifically to rationalize and simplify the system.³ It is intended that fuel tax will only be paid for fuels used in “private vehicles and for certain other private purposes” and “light vehicles for business purposes.”⁴

II. Current System

Under the current regime, biodiesel, compressed natural gas (CNG), dimethyl ether, ethanol, liquefied natural gas (LNG), liquefied petroleum gas (LPG), and methanol (called ‘alternative fuels’) receive some form of production or consumption assistance from the Australian federal government.⁵

This assistance includes: exemptions from or discounts regarding the amount of excise imposed; production subsidies; and capital grants to assist biofuel producers, encourage petrol stations to sell fuel ethanol, and assist and encourage drivers to convert vehicles to alternative fuels.⁶

Currently LPG, LNG and CNG are exempt from excise; from July 2011-2015, however, excise

¹ In accordance with the Australian Constitution the Commonwealth has the exclusive power to levy excise.

² Richard Webb, RESEARCH BRIEF NO.15 2005–06: EXCISE TAXATION: DEVELOPMENTS SINCE THE MID-1990S, Australian Parliamentary Library, Economics, Commerce and Industrial Relations Section, April 13 2006. Available at: <http://www.aph.gov.au/library/pubs/rb/2005-06/06rb15.htm#two> (last visited January 24, 2008).

³ 2004-2005-2006 The Parliament of the Commonwealth of Australia (Senate), Fuel Tax Bill 2006; Fuel Tax (Consequential And Transitional Provisions) Bill 2006; Revised Explanatory Memorandum.

⁴ Fuel Tax Act 2006 (Cth) § 40-5.

⁵ Richard Webb, *supra* note 2.

⁶ *Id.*

will be imposed and will be gradually increased to a final rate of 12.5 cents per liter for LPG and nineteen cents per cubic meter for CNG.⁷

Excise on the ethanol in fuel and biodiesel⁸ is imposed at the rate of 38.143 cents per liter (same as petrol); since 2002, however, this excise has been neutralized by a production grant (subsidy). It is proposed to remove some of this assistance by gradually increasing the excise imposed on ethanol from 2.5 cents per liter in 2011 to 12.5 cents per liter in 2015 and by increasing the excise imposed on biodiesel from 3.8 cents per liter in 2011 to 19.1 cents per liter in 2015.⁹

Current capital grants programs include: the Ethanol Distribution Program that assists in converting retail petrol stations to provide petrol with 10% ethanol;¹⁰ the Alternative Fuels Conversion Programme that provides grants to assist in the cost of converting heavy commercial vehicles and buses to using LPG or natural gas (instead of diesel);¹¹ and the LPG vehicle scheme that provides grants of \$1000 AUD (approx. 878.40 USD)¹² for the purchase of new factory-fitted LPG vehicles and \$2000 AUD (approx. 1,757.96 USD)¹³ grants for the conversion of private vehicles to LPG.¹⁴

Businesses that use fuel to carry on their business¹⁵ and households that use fuel to generate electricity may claim tax credits for any fuel tax (excise) included in the price of fuel.¹⁶

Registered businesses using alternative fuels within specified size vehicles¹⁷ are eligible to claim a fuel grant under the Energy Grants Credit Scheme.¹⁸ From July 1, 2006 to June 30, 2010 the amount of the grant will be gradually reduced to zero and from July 1, 2011 (implementation of excise on alternative fuels) it will be possible for business's to claim fuel tax credits for alternative fuels.¹⁹

⁷ Fuel Tax Act 2006 (Cth); Fuel Tax (Consequential and Transitional Provisions) Act 2006 (Cth).

⁸ Energy Grants (Cleaner Fuels) Scheme Act 2003 (Cth); Energy Grants (Cleaner Fuels) Scheme (Consequential Amendments) Act 2003 (Cth).

⁹ Fuel Tax Act 2006 (Cth); Fuel Tax (Consequential and Transitional Provisions) Act 2006 (Cth).

¹⁰ See AusIndustry website, <http://www.ausindustry.gov.au/content/level3index.cfm?ObjectID=98EC4473-7714-4B62-BE0B4E4577CDA083> (last visited Jan. 25, 2008).

¹¹ See Australian Government: Department of Climate Change website, <http://www.greenhouse.gov.au/transport/afcp/index.html> (last visited Jan. 25, 2008).

¹² On the presumption of 1 AUD equaling 0.878397 USD.

¹³ On the presumption of 1 AUD equaling 0.878397 USD.

¹⁴ See AusIndustry website, *supra* note 10.

¹⁵ Businesses are eligible if they: use petrol or diesel in vehicles above a specified gross vehicle mass on public roads; use petrol or diesel to generate electricity; use diesel for activities other than road transport including rail or marine transport, primary production such as agriculture or forestry, or mining; use fuels such as diesel, petrol, kerosene, heating oil or toluene for heating, or non-fuel uses (such as solvents or as a manufacturing ingredient); use specified fuels (including kerosene, mineral turpentine and white spirit) sold for non-internal combustion use (in container of twenty liters or less); or use kerosene or heating oil sold for domestic home heating.

¹⁶ Fuel Tax Act 2006 (Cth) §§ 41-5, 42-5.

¹⁷ The vehicle must be traveling on public roads and weigh either over twenty tons gross vehicle mass (GVM) (operating in all areas, or between 4.5 and twenty tons GVM (when operating outside of or across defined metropolitan boundaries).

¹⁸ Energy Grants (Cleaner Fuels) Scheme Act 2004 (Cth); Product Grants and Benefits Administration Act 2000 (Cth); Energy Grants (Credits) Scheme Act 2003 (Cth).

¹⁹ 2004-2005-2006 The Parliament of the Commonwealth of Australia (Senate), Fuel Tax Bill 2006; Fuel Tax (Consequential And Transitional Provisions) Bill 2006; Revised Explanatory Memorandum.

III. Sustainability of Alternative Fuels

There is no legislative requirement that alternative fuels preferred via any of the above schemes meet ‘environmentally sustainable’ criteria. The stated aim of the Australian Government's alternative fuels program (including the Alternative Fuels Conversion Programme and Energy Grants Credits Scheme), however, is the “reduction of greenhouse gas and other vehicular emissions from the transport sector, especially in the medium to heavy commercial vehicle and bus categories.” To this end the Australian government has commissioned a report on different fuels’ greenhouse gas emissions (including upstream and tailpipe emissions).²⁰

Further, any Australian business seeking to claim more than \$3 million AUD (approx. 2.64 million USD)²¹ in fuel tax credits in any financial year must be a member of the Greenhouse Challenge Plus program. The Greenhouse Challenge Plus Program requires business to enter into an agreement with the Australian government to manage and reduce the business’ greenhouse gas emissions via emissions inventory reporting and the development and implementation of abatement plans.²²

Finally, fuel tax credits will only be granted to operators of vehicles using diesel fuel where the vehicle complies with emissions performance criteria.²³ Tax credits are not granted for any use that contravenes specified environmental legislation.²⁴

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²⁰ CSIRO, University of Melbourne, Centre for Design at RMIT, Parsons Australia and the Southern Cross Institute of Health Research, COMPARISON OF TRANSPORT FUELS FINAL REPORT (EV45A/2/F3C) TO THE AUSTRALIAN GREENHOUSE OFFICE ON THE STAGE 2 STUDY OF LIFE-CYCLE EMISSIONS ANALYSIS OF ALTERNATIVE FUELS FOR HEAVY VEHICLES, 2001; and CSIRO, University of Melbourne, Centre for Design at RMIT, Parsons Australia and the Southern Cross Institute of Health Research LIFE-CYCLE EMISSIONS ANALYSIS OF FUELS FOR LIGHT VEHICLES REPORT (HA93A-C837/1/F5.2E) 2004, available at <http://www.greenhouse.gov.au/transport/comparison/index.html>.

²¹ On the presumption of 1 AUD equaling 0.880767 USD.

²² See Australian Government, Department of Climate Change, FUEL TAX CREDITS AND GREENHOUSE CHALLENGE PLUS MEMBERSHIP website, <http://www.greenhouse.gov.au/challenge/members/fueltaxcredits.html> (last visited Jan. 25, 2008).

²³ Vehicles with a gross vehicle mass of 4.5 tons or more (other than those used in a primary production business on a agricultural property) must be either: manufactured after January 1, 2006; be part of an accredited or government endorsed maintenance program; or meet other specified emissions standards. 2004-2005-2006 The Parliament of the Commonwealth of Australia (Senate), FUEL TAX BILL 2006; FUEL TAX (CONSEQUENTIAL AND TRANSITIONAL PROVISIONS) BILL 2006; REVISED EXPLANATORY MEMORANDUM ¶¶1.46 -1.50. Fuel Tax Act 2006 (Cth) § 41-25.

²⁴ Energy Grants (Credits) Scheme Act 2003 (Cth) §§ 49A, 55A. The environmental legislation referred to is Division 1 of Part 3 (§§ 12-25F) of the Environment Protection and Biodiversity Conservation Act 1999 (Cth). This division includes requirements for activities concluded in world heritage areas, national heritage areas, wetlands of international importance or activities that impact on threatened or listed migratory species.

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SUSTAINABILITY CRITERIA FOR BIO-FUELS

FRANCE

Executive Summary

Growing concerns about the final environmental impact of bio-fuels has led the French government to require that the French environmental agency prepare a comprehensive and adversarial study on the ecological and energy effects of the first generation of agro/bio-fuels. This study will help decide the place of bio-fuels in France's energy portfolio for the future and whether the French government must revise its present policy that strongly stimulates bio-fuel production and use for transportation. At the moment, there is no legislative action at the national level addressing sustainability criteria for bio-fuels.

The European Commission recently published a proposal for a Renewable Energy Directive that sets forth stringent environmental sustainability criteria for bio-fuels, a system to verify that Member States comply with such criteria and a method for calculating the greenhouse gas impact of bio-fuels.

In October 2007, a highly publicized environmental forum, referred to as the “*Grenelle de l’environnement*,” took place in Paris. The aim of the forum was to help define the French government policy on ecological and sustainable development issues for the next five years. The forum was organized by the Ministry of Ecology and Sustainable Planning and Development. It included representatives from the State, unions, employers, non-governmental organizations (NGOs), and local authorities. Bio-fuels were the subject of one of the round tables. The forum resulted in many recommendations to combat global warming and protect the environment.¹

The French government currently has in place a legislative framework and several fiscal incentives for the production and use of bio-fuels. There is, for example, a general tax on pollutant activities (TGAP) sometimes called an “ecotax” whose rate is diminished by the percentage of energy content of bio-fuel present in the fuel sold. The government is dedicated to go further than the objective set forth by EU Directive 2003/30/EC that prescribes the use of bio-fuels at a rate of 5.75 percent in transportation by 2010. The national objective instead is to reach this percentage in 2008 and to increase it to seven percent.²

Growing concerns, however, have been raised about the final environmental impact of bio-fuels, taking into account the energy spent to grow the plants, the chemicals used to boost yields, and the water they consume. A 2007 report entitled *French Energy Prospects 2020-2050*, prepared by the French environmental agency, the *Agence de l’environnement et de la maîtrise de l’énergie*, calls for stopping any

¹ Ministère de l’Ecologie, du Développement et de l’Aménagement durables, *Le Grenelle Environnement*, <http://www.legrenelle-environnement.fr/grenelle-environnement/> (last visited Jan. 29, 2008).

² Ministère de l’Economie, des Finances et de l’Industrie, *La politique gouvernementale en faveur des biocarburants*, <http://www.industrie.gouv.fr/energie/renou/biomasse/aides-e85.htm> (last visited Jan. 29, 2008).

new investment in the production of first generation bio-fuels. It recommends waiting for the results of the research and development on second generation bio-fuels.³

This issue was addressed during the round table. It was decided that before any action be taken a comprehensive and adversarial study on the ecological and energy effects of the first generation of agro/bio-fuels would be undertaken by the French environmental agency. This study would help in deciding the place of bio-fuels in France's energy portfolio for the future. It was also stated that France would support a certification mechanism at the European and world levels for bio-fuels production activities and that research and development of second generation bio-fuels would be accelerated.⁴

At the end of the forum, President Nicolas Sarkozy stated in his conclusion speech that:⁵

We must also revisit our policy of supporting bio-fuels in the future, without calling into question the commitments made. I want priority to be given to the development of second-generation bio-fuels, which better address both the environmental challenge and the food challenge.

At this time the French environmental agency has been charged with performing the study recommended during the forum, and it does not appear from a review of the pending legislation before the National Assembly or the Senate that any legislative action addressing sustainability criteria for bio-fuels has been yet taken. This is confirmed by a recent answer of the French Minister of Ecology to a question from a Member of the National Assembly on the real benefits of bio-fuels.⁶ He stated that:

The Committee on Bio-masse and Bio-fuels has started a study regarding sustainability criteria associated with farming practices, in examining the criteria proposed by the countries that are currently putting into place at the national level a certification system or a mandatory evaluation system (The Netherlands, Great Britain and Germany).

He further added that a proposal for a Directive on the Promotion of the Use of Energy from Renewable Sources would address criteria and monitoring methods to be used to set forth a bio-fuels sustainability regime. Finally, he said that France will support a certification mechanism of bio-fuels chains at the European and world levels that take into account their environmental and economic impacts.

On January 23, 2008, the European Commission published its proposal for a Renewable Energy Directive.⁷ The proposal set forth "stringent environmental sustainability criteria to ensure that bio-fuels that are to count towards the European targets are sustainable and are not in conflict with the overall environmental goals... they must achieve at least a minimum level of greenhouse gas savings and respect a number of requirement related to biodiversity."⁸ Article 15 of the proposal provides for these criteria in paragraphs two to five. They are as follows:

³ Centre d'Analyse Stratégique, *Les perspectives énergétiques de la France à l'horizon 2020-2050*, available at http://www.strategie.gouv.fr/article.php?id_article=675.

⁴ Ministère de l'Ecologie, du Développement et de l'Aménagement durables, *Le Grenelle Environnement, Relevé de la quatrième partie de la table ronde*, http://www.legrenelle-environnement.gouv.fr/grenelle-environnement/IMG/pdf/Fiche_10.pdf (last visited Jan. 29, 2008).

⁵ Premier Ministre, presentation of the grenelle Environment Forum conclusions speech by M. Nicolas Sarkozy, President of the Republic, http://www.premier-ministre.gouv.fr/en/information/press_871/presentation_of_the_grenelle_57902.html (last visited Jan. 29, 2008).

⁶ Réponse du Ministère de l'Ecologie, du Développement et de l'Aménagement durables ministre à la question de M. Havard Michel, Journal officiel [France's official Gazette], Jan. 08, 2008, 166.

⁷ Portal of the European Union Commission, Proposal for a Directive on the Promotion of the Use of Energy from Renewable Sources http://ec.europa.eu/energy/climate_actions/doc/2008_res_directive_en.pdf (last visited Jan. 29, 2008).

⁸ Portal of the European Union Commission, *Climate Action, Background Memorandum*, http://ec.europa.eu/energy/climate_actions/index_en.htm (last visited Jan. 29, 2008).

- the green house gas emission saving from the use of bio-fuels and other bio-liquids must be at least 35 percent;
- bio-fuels and bio-liquids must not have been made from raw material obtained from land “with recognized high biodiversity value.” This include: forests undisturbed by significant human activity; areas designed for nature protection purposes; and highly bio-diverse grassland;
- bio-fuels and bio-liquids must not have been made from raw material obtained from land with high carbon stock that is to say wetlands and continuously forested areas; and
- agricultural raw material cultivated in the Community and used for the production of bio-fuels and other bio-liquids must be obtained in conformity with the requirements set forth in point A of Annex III to Council Regulation (EC) No 1782/2003 and Article 5(1) of that Regulation.⁹

In addition to setting forth the sustainability criteria, the proposed Directive establishes a system to verify that Member States comply with such criteria and a method to calculate the greenhouse gas impact of bio-fuels and other bio-liquids.¹⁰

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⁹ Council Regulation (EC) No 1782/2003 of 29 September 2003 establishing common rules for direct support schemes under the common agricultural policy and establishing certain support schemes for farmers, Official Journal of the European Union, available at http://eur.lex.europa.eu/lexUriserv/site/en.oj/2003/l_270/l_27020031021en00010069.pdf (last visited Jan. 29, 2008).

¹⁰ Portal of the European Union Commission, *Proposal for a Directive on the Promotion of the Use of Energy from Renewable Sources*, arts 16 and 17, http://ec.europa.eu/energy/climate_actions/doc/2008_res_directive_en.pdf (last visited Jan. 29, 2008).

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SUSTAINABILITY CRITERIA FOR BIO-FUELS

GERMANY

Executive Summary

In 2006, Germany began a drastic reduction of the preferential tax treatment of bio-fuels and instead imposed mandatory quotas of bio-fuels that have to be added to gasoline and diesel. In 2007, Germany drafted a Biomass Sustainability Regulation that limits the inclusion of bio-fuels in the mandatory quota to those that save first thirty and, later, forty percent of greenhouse gas emissions as compared to the corresponding fossil fuel. The Draft Regulation requires these savings to be calculated according to prescribed methods or rigorous default values and also establishes stringent sustainability criteria. The Regulation is expected to be enacted in the spring or summer of 2008. In the long run, however, Germany may have to lower its standards to be in compliance with the a recently proposed European Union Directive that in its current draft form sets the emissions savings criterion at thirty-five percent but insists on lesser sustainability criteria.

I. The Legal Framework

Germany has encouraged the use of bio-fuels at least since 2002, when it introduced an exemption from the mineral oil tax for bio-fuels that decreases the tax on gasoline and diesel fuels to the extent that these contain bio-fuel.¹ The German laws, however, have been changed frequently in response to a growing awareness of their effects and also to comply with European mandates.

The tax exemption for bio-fuels that was enacted in 2002 became first available on January 1, 2004 and was scheduled to be effective until the end of 2009.² In a study of the effects of the tax exemption in 2004,³ however, it had become apparent that the tax exemption was over-compensating the producers of bio-fuel, and Germany changed its legislation to modify the encouragements for bio-fuel.

First, since August 2006,⁴ the total exemption of bio-fuel from the mineral tax has been gradually lowered to a remaining partial exemption from taxation that will remain effective after 2012.⁵ Second, effective January 1, 2007, quotas of bio-fuel were imposed that have to be added to diesel fuel

¹ Gesetz zur Änderung des Mineralölsteuergesetzes, Jul. 23, 2002, BUNDESGESETZBLATT [BGBl, official law gazette of the Federal Republic of Germany] I at 2778, enacting Mineralölsteuergesetz, Dec. 21, 1992, BGBl I at 2185, as amended, § 2 a.

² Steueränderungsgesetz, Dec. 15, 2003, BGBl I at 2645, 2676.

³ Erster Bericht zur Steuerbegünstigung der Biokraft- und Bioheizstoffe, June, 21, 2005 DEUTSCHER BUNDESTAG DRUCKSACHE 15/5816.

⁴ Gesetz zur Neuregelung der Besteuerung von Energierzeugnissen, Jul. 15, 2006, BGBl I at 1534, enacting Energiesteuergesetz, § 50.

⁵ The producers and sellers of bio-fuel and its production equipment brought a constitutional complaint against this change in the law, alleging that their property rights were violated by the unexpected change in the legislation, but the Second Chamber of the First Senate of the Federal Constitutional court rejected the complaint in a reasoned opinion [Bundesverfassungsgericht, decision of July 25, 2007, docket number 1 BvR 1031/07, available at http://www.bundesverfassungsgericht.de/entscheidungen/rk20070725_1bvr103107.html?Suchbegriff=Biokraftstoff .

and gasoline, without the benefit of a tax exemption.⁶ Through these quotas for diesel and gasoline, and the still remaining partial tax exemption for bio-fuels, Germany is living up to the European Union (EU) requirements for the encouragement of bio-fuels that are expressed in a directive of 2003 on the promotion of bio-fuels⁷ and another directive of the same year on the taxation of energy products.⁸

In December 2007, the German government introduced a package of measures to improve climate protection. These are intended to become enacted in 2008 and they include a plan to increase the quotas for mandatory bio-fuel additions to diesel and gasoline to a total of fifteen percent by 2015.⁹ A novelty, however, are planned measures to ensure that bio-fuels will be counted toward these quotas and any existing incentives only if they live up to acceptable criteria of sustainability and greenhouse gas emissions-savings. For this purpose, a Biomass Sustainability Regulation¹⁰ was drafted under the auspices of the Federal Finance Ministry and it is expected to be promulgated in the spring of 2008.

Germany's drafted sustainability regulation may be irreconcilable with the sustainability criteria in the EU Commission's proposed directive on the promotion of the use of energy from renewable sources that was made public on January 23, 2008.¹¹ The German sustainability criteria appear to be significantly more stringent than those proposed by the EU Commission.

II. Proposed German Biomass-Sustainability Regulation

The draft of the German Biomass Sustainability Regulation¹² allows for the inclusion of bio-fuels in quotas and tax incentives only if they live up to the criteria of

- sustainable cultivation of agricultural areas;
- protection of natural habitats; and
- significant reduction of greenhouse gas emissions.

The **sustainability criteria** for domestic products are specified by good agricultural practices as required by German law and by European cross-compliance standards that monitor adherence to rules relating to environmental laws, biodiversity requirements, nature conservancy, food safety, animal welfare and health standards.¹³ For products from abroad, these criteria are met if the producing country has equivalent standards to German and/or EU rules.

⁶ Gesetz zur Einführung einer Biokraftstoffquote durch Änderung des Bundes-Immissionsgesetzes, und zur Änderung energie- und stromrechtlicher Vorschriften (Biokraftstoffquotengesetz), Dec. 18, 2006, BGBl I at 3180.

⁷ Directive 2003/30/EC of the European Parliament and of the Council on the Promotion of the Use of Biofuels or other Renewable Fuels for Transport, May 8, 2003, OFFICIAL JOURNAL OF THE EUROPEAN UNION [OJ] (L 123) 42.

⁸ Council Directive 2003/96/EC Restructuring the Community Framework for the Taxation of Energy Products and Electricity, Oct. 27, 2003, OJ (L283) 51.

⁹ Bundesministerium der Finanzen, *Was ändert sich 2008?*, http://www.bundesfinanzministerium.de/lang_de/DE/Aktuelles/074.html (last visited Jan. 29, 2008).

¹⁰ Entwurf einer Verordnung über Anforderungen an eine nachhaltige Erzeugung von Biomasse zur Verwendung als Biokraftstoff [Biomasse-Nachhaltigkeitsverordnung, http://www.bundesfinanzministerium.de/lang_de/DE/Aktuelles/074.html (last visited Jan. 29, 2008).

¹¹ Commission of the European Communities, Proposal for a Directive of the European Parliament and of the Council on the Promotion of the Use of Energy, Jan. 23, 2008, *available at* http://ec.europa.eu/commission_barroso/president/focus/energy-package-2008/index_en.htm#key.

¹² Entwurf, *supra* note 10.

¹³ These rules are based on European regulations including Council Regulation (EC) No 1782/2003 Establishing Common Rules for Direct Support Schemes under the Common Agricultural Policy, Sept. 29, 2003, OJ (L270) 1.

For foreign products from countries that do not have equivalent standards, the German sustainability criteria are met if global nature conservancy goals are observed by producing the bio-fuels without

1. increasing the emission of acidifying, eutrophy-causing, ozone-depleting, or toxic substances;
2. impairing soil conditions or soil fertility (counter-acted, for instance, by preserving organic substances, protecting against erosion);
3. significantly impairing water quality and water systems;
4. significantly impairing biodiversity; and
5. causing harm to the environment through improper use of fertilizers and pesticides.

The **criteria for protecting natural habitats** are met if the biomass has not been produced in designated nature protection areas or in areas of a high nature conservation value. Such areas have rare ecosystems or habitats for rare animal and plant species. These areas show one or several of the following characteristics:

1. areas that have a globally or regionally significant number of protection-worthy features for biological diversity (for instance, endemic or rare species, or areas of refuge);
2. areas that are located in globally or regionally rare or endangered ecosystems or contain such ecosystems; and
3. areas that serve protective purposes.

Exceptions from these criteria are made if the cultivation of the biomass does not interfere with the protection-worthy species or ecosystems. The conversion of forests to agricultural areas or plantations, however, will always be considered as damaging to the environment. The starting date for disqualifying land use changes is January 1, 2005. Any land use changes made after that time disqualify the biomass.

By including areas of “high nature conservation value” as protection-worthy, the German Regulation refers to a definition established by the Forest Stewardship Council, an international organization dedicated to nature conservation.¹⁴ The German Regulation intends to include not only forests but also “high nature value farmland,” as defined by the Council, within the scope of the protective regime. By relying on these internationally established concepts, Germany expects its restrictions to be in conformity with World Trade Organization requirements.¹⁵

The **lowering of greenhouse gas emissions** is pursued by requiring that bio-fuels that count toward quotas or qualify for incentives must have a greenhouse gas emissions savings potential that is thirty percent lower than that of the otherwise used fossil fuel; and from 2011 on, a forty percent saving will be required. The calculation of the greenhouse gas emissions savings can either be carried out by calculating the **actual emissions** savings in accordance with the methods described in **Appendix I** of the Regulation or by relying on a **default values** given in **Appendix II** of the Regulation.

As provided in **Appendix I**, the principles for the **actual computation of emissions** savings deal exclusively with carbon dioxide; for consideration of greenhouse gases, including sulfur dioxide and methane, they refer to the rules contained in Appendix A of the Kyoto Protocol.¹⁶ For carbon dioxide, the German method includes the calculation emissions generated in the production of the biomass, including

¹⁴ Forest Stewardship Council, A.C., <http://www.fsc.org/en/> (last visited Jan. 28, 2008).

¹⁵ This is explained in the explanations to section 3 of the Draft Regulation. See Entwurf supra note 10.

¹⁶ 1997 Kyoto Protocol to the United Nations Framework Convention on Climate Change, Dec. 11, 1997, 37 INTERNATIONAL LEGAL MATERIALS 32 (1998).

those generated by the use of equipment, and also by processing, transportation, and the use of the biomass.

Emissions from producing the biomass include a proportional inclusion of emissions generated during an earlier step in the chain of production. Emissions from production equipment are allocated in proportion to their use, but the environmental cost of producing the equipment is not included. Thus, the system includes the emissions generated in the production of seeds and plantings, animal feed, fertilizer, pesticides, and fuel for agricultural vehicles, while it does not include emissions generated from producing machinery or storage facilities. Similar principles apply for emissions generated in the course of processing, including the processing of waste.

The emissions of transportation are counted beginning when the biomass leaves the production facility until the bio-fuel reaches the German commercial enterprise that is responsible for reporting quotas for bio-fuel additions. Transportation emissions that occur later are not considered.

Also included must be the emissions generated by land use changes from a highly carbon-storing land use to the less carbon-storing cultivation of bio-fuels. Land use changes are taken into consideration if they occurred after January 1, 2005.

As a basis for the comparison with fossil fuels, the median value of the emissions generated by gasoline and diesel in Germany in 2005 are used and these result in reference values of eighty-five kilogram CO₂ equivalents per gigajoule (GJ, one billion joule) for gasoline and 86.2 kilogram CO₂ equivalents per GJ for diesel.

The **default values of Appendix 2** are given in a table¹⁷ that differentiates between products depending on their raw material and areas of origin. Values are given in kilogram CO₂ equivalents per GJ for the following categories: change in land use, production of biomass, transport of the biomass processing during conversion level 1, transportation between conversion levels, processing during conversion level 2, and transportation to the refinery plus storage plus admixture to the conventional fuel. The emissions cost of the fuel is established by adding all the applicable individual values.

The savings as compared to fossil fuel is established by comparing the total emissions cost for the bio-fuel with the established values for fossil fuels of eighty-five kg CO₂ equivalents per GJ for gasoline and 86.2 kg CO₂ equivalents per GJ for diesel. These tables can be used either in their entirety to calculate the total emissions cost of a product, or they can be used as a supplement for the calculation of actual values, if some steps in a calculation are computed according to their actual value while the default tables are used for other steps.

The application of the German default table shows that land use changes destroy the emissions savings potential of bio-fuels, and, in the case biomass of tropical origin, lead to massive negative emissions balances. The table also shows that, in the absence of land use changes, the greatest emissions savings can be achieved through the use of Asian palm oil (seventy percent), Latin American sugar cane (sixty-seven percent), and Latin American soy beans; whereas rapeseed from Europe saves forty-seven percent, corn from the United States forty-four percent, and wheat from Europe a mere thirty-three percent.¹⁸

¹⁷ A translation of the table is attached as *Appendix 1*.

¹⁸ A. Moench, *Agrarzeitung Ernährungsdienst* 4 (Jan. 18, 2008), at LEXIS/library News/fileZeitng.

The EU Directive

As proposed by the European Commission on January 23, 2008, the Directive on the Promotion of Energy from Renewable Sources¹⁹ requires the member states to increase to ten percent by 2020 their quota for adding bio-fuel to transportation fuels. The Directive also establishes bio-fuel criteria for **greenhouse gas savings** and **sustainable production**. According to this regime, qualifying bio-fuels are those that save at least thirty-five percent of emissions as compared to the corresponding fossil fuel.

The **greenhouse gas emission savings** of bio-fuel must be calculated according to article 17 and Appendix VII of the Directive, either by calculating their actual value in accordance with the methods described in the Directive, or through the full or partial use of default values. The table of default values appears to set stringent standards.

The **sustainability criteria** are described in article 15 of the Directive and these are not as stringent as those contained in the German Draft Regulation. The Directive specifically disallows higher sustainability standards in the member states. The European Directive merely protects against deforestation and against land use changes of declared nature protection areas and specified high biodiversity grassland. It does not protect other areas of high nature conservation value. Moreover, bio-fuels will be disqualified only if the land use change occurred after January 1, 2008. Germany, on the other hand, felt that producers had sufficient warning of impending rules on land use change to allow for a cut-off date of January 1, 2005.²⁰

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¹⁹ Commission of the European Communities, Proposal for a Directive of the European Parliament and of the Council on the Promotion of the Use of Energy, Jan. 23, 2008, *available at* http://ec.europa.eu/commission_barroso/president/focus/energy-package-2008/index_en.htm#key.

²⁰ As explained in the Draft Regulation's explanatory notes. *See* Entwurf, *supra* note 10.

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GERMANY

Appendix 1

German Default Values in kilogram CO₂ equivalents per Gigajoule

Biofuel Biomass Origin	Ethanol Wheat Europe	Ethanol Corn North America	Ethanol Sugar Cane Latin America	Ethanol Sugar Beet Europe	FAME¹ Rapeseed Europe	FAME Soy Latin America	FAME Soy North America	FAME Palm oil South-East Asia
Direct Change in Land Use	26.2	19.8	158.8	15.6	32.8	289.6	54.5	112.8
Production of Biomass	22.3	17.8	19.5	11.3	29.1	12.9	15.2	6.6
Transport of Biomass	0.7	0.7	1.5	1.7	0.4	0.5	0.5	0.1
Processing Conversion Level 1	--	--	0.8	6.6	7.6	7.3	9.2	6.9
Transport Between Conversion Levels	--	--	--	--	0.2	3.8	3.4	4.3
Processing Conversion Level 2	34.3	25.0	1.0	48.9	7.6	7.7	7.7	7.7
Transportation to Refinery, Storage, or Admixture	0.4	4.8	5.5	0.4	0.3	0.3	0.3	0.3
Total	83.9	68.0	187.1	84.4	78.1	322.0	90.7	138.7

¹ Fatty Acid Methyl Ester.

Biofuel Biomass Origin	NatVO² Rapeseed Europe	NatVOO Soy Latin America	NatVO Soy North America	NatVO Palm Oil South East Asia	Hyd.Plto³ Rapeseed Europe	Hyd.VO Soy Latin America	Hyd.VO Soy North America	Hyd.VOI Palm Oil South East Asia
Direct land Use Change	34.2	298.8	56.2	117.4	33.2	293.4	55.2	114.3
Production of Biomass	30.4	13.1	15.5	6.9	29.5	13.0	15.4	6.7
Transportation of Biomass	0.5	0.6	0.6	0.1	0.4	0.8	0.5	0.1
0.1	7.6	7.1	9.0	7.4	7.3	6.8	8.6	7.2
Transportation Between Conversion Levels	--	--	--	--	0.2	3.8	3.5	4.3
Processing Conversion Level	--	--	--	--	9.7	9.7	9.7	9.7
Transportation to Refinery, Storage, and Admixture	0.2	3.9		4.4	0.7	0.7	0.7	0.7
Total	72.8	323.5	84.7	136.2	81.1	328.2	93.5	143.1

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² Native Vegetable Oil.

³ Hydrogenated Vegetable Oil.

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SWITZERLAND

Executive Summary

Switzerland is expected to publish a regulation on sustainability criteria and emissions savings requirements for bio-fuels early during the year 2008. Until now, it has not been published.

Switzerland is in the process of enacting a change to the Mineral Oil tax Act¹ for which the Federal Cabinet had submitted a draft in May 2006 that provided the following:

Article 12 b. Tax Exemption of Fuels from Renewable Raw Materials

- (1) Fuels from renewable raw materials are exempted from taxation.
- (2) The Federal Cabinet [Bundesrat] will designate the fuels from renewable raw materials; in doing so, it shall take into consideration to what extent these fuels help to protect the environment.
- (3) The Federal Cabinet may impose minimum requirements for proving that an overall positive ecological balance exists.²

The Swiss Parliament approved this amendment to the Mineral Oil Act but inserted a clause that would have preferred Swiss producers in the granting of exemptions, which in turn led to explanations by the Federal Cabinet that this would violate the principles of the World Trade Organization.³ The ensuing dispute delayed the promulgation of a regulation that would designate or describe environmentally suitable bio-fuels. The regulation is expected to be promulgated and made public sometime early in the year 2008 but until now it has neither been published nor has its content been made publicly available.⁴

The Swiss Office for Energy commissioned a study on the ecological evaluation of bio-fuels that was published in April 2007.⁵ This extensive study examined the environmental costs of the production, processing and transportation of bio-ethanol, bio-methanol, biodiesel, and biogas, and came to the following conclusion:

Most of the environmental impacts can be attributed to the agricultural cultivation of the respective raw materials (feedstocks). The environmental impact from fuel processing is usually much lower. The

¹ Mineralölsteuergesetz, Änderung, BUNDESBLETT 2006 at 4289, available at http://www.admin.ch/ch/d/ff/2006/index0_20.html.

² Translated by Edith Palmer.

³ P. Mäder, *Bundesrat will Gesetz umgehen*, TAGESANZEIGER (Jul. 11, 2007), LEXIS/LIBRARY NEWS/fileZeitng.

⁴ Information obtained by telephone Jan. 29, 2008, from the Press and Information Officer of the Swiss Federal Finance Department.

⁵ R. Zah *et al.*, *Ökobilanz von Energieprodukten: Ökologische Bewertung von Biotreibstoffen. Schlussbericht* (Apr. 2007), available at http://www.bfe.admin.ch/themen/00490/00496/index.html?lang=de&dossier_id=01273. This study is written in German and has a very short English summary.

environmental impact from the transport from the production site to Swiss filling stations is even less, even when the biofuels are produced overseas. The present study shows that with most biofuels there is a trade-off between minimizing greenhouse gases (GHG emissions) and a positive ecological life-cycle analysis. It is true that GHG emissions can be reduced by more than 30 % with a number of biofuels. However most of these supply paths show greater impacts than petrol for various other environmental indicators.

It is reasonable to expect that the Swiss regulation will reflect these principles and make a determination according to environmental suitability.

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