SUBSIDIARY LEGISLATION 423.47

BIOFUELS (SUSTAINABILITY CRITERIA) REGULATIONS

24th December, 2010

LEGAL NOTICE 553 of 2010, as amended by Legal Notice 50 of 2012.

Citation and scope.

1. (1) The title of these regulations is the Biofuels (Sustainability Criteria) Regulations.

(2) These regulations give effect to Articles 17, 18, 19 and 21 of Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources, and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC. These regulations also give effect to paragraphs (b), (c), (d) and (e) of article 7 of Directive 98/70/EC of the European Parliament and of the Council of 13 October 1998 relating to the quality of petrol and diesel fuels as amended by Directive 2009/30/EC.

(3) These regulations have been notified in terms of Directive 98/34/EC, as amended by Directive 98/48/EC, as transposed by the Notification Procedure Regulations. S.L. 419.06

Interpretation.

2. (1) For the purposes of these regulations, and unless the context otherwise requires:

"actual value" means the greenhouse gas emission saving for some or all of the steps of a specific biofuel production process calculated in accordance with the methodology laid down in Part C of the Schedule;

"aerothermal energy" means energy stored in the form of heat in the ambient air;

"the Authority" means the Malta Resources Authority;

"biofuels" means liquid or gaseous fuel for transport produced from biomass;

"bioliquids" means liquid fuel for energy purposes other than for transport, including electricity, heating and cooling produced from biomass;

"biomass" means the biodegradable fraction of products, waste and residues from biological origin from agriculture, including vegetal and animal substances, forestry and related industries including fisheries and aquaculture, as well as the biodegradable fraction of industrial and municipal waste;

"the Community" means the European Community established by the Treaty establishing the European Economic Community signed on March 25th, 1957;

"default value" means a value derived from a typical value by the application of pre-determined factors and that may in

circumstances specified in these regulations, be used in place of an actual value;

"energy" means all forms of available energy, including electricity, heating, cooling, liquefied petroleum gas, any fuel for heating and cooling, coal and transport fuels;

"energy content" means the lower calorific value of fuel;

"energy consumer" means a natural or legal person, who consumes or purchases energy for own use and not for wholesale or retail purposes;

"energy from renewable sources" means energy from renewable non-fossil sources, namely wind, solar, aerothermal, geothermal, hydrothermal and ocean energy, hydropower, biomass, landfill gas, sewage treatment plant gas and biogases;

"energy producer" means a generator which produces energy;

"energy supplier" means an authorised supplier wholesaling or retailing energy or products thereof;

"geothermal energy" means energy stored in the form of heat beneath the surface of solid earth;

"green certificate" means a tradeable comodity representing the environmental attributes of a specific quantity of energy produced from renewable energy sources issued upon compliance with environmental quality and sustainability criteria;

"gross final consumption of energy" means the energy commodities delivered for energy purposes to industry, transport, households, services including public services, agriculture, forestry and fisheries, including the consumption of electricity and heat by the energy branch for electricity and heat production and including losses of electricity and heat in distribution and transmission;

"hydrothermal energy" means energy stored in the form of heat in surface water;

"the Minister" means the minister responsible for resources;

"renewable energy obligation" means a national support scheme requiring energy producers to include a given proportion of energy from renewable sources in their production, requiring energy suppliers to include a given proportion of energy from renewable sources in their supply, or requiring energy consumers to include a given proportion of energy from renewable sources in their consumption. This includes schemes under which such requirements may be fulfilled by using green certificates;

"support scheme" means any instrument, scheme or mechanism applied by the State or a group of EU Member States, that promotes the use of energy from renewable sources by reducing the cost of that energy, increasing the price at which it can be sold, or increasing by means of a renewable energy obligation or otherwise, the volume of such energy purchased. This includes, but is not restricted to, investment aid, tax exemptions or reductions, tax refunds, renewable energy obligation support schemes including those using green certificates, and direct price support schemes

including feed-in tariffs and premium payments;

"typical value" means an estimate of the representative greenhouse gas emission saving for a particular biofuel production pathway.

Sustainability criteria for biofuels and bioliquids.

3. (1) Irrespective of whether the raw materials were cultivated inside or outside the territory of the Community, for the purposes referred to in paragraphs (*a*), (*b*) and (*c*), energy from biofuels and bioliquids shall be taken into account only if they fulfill the sustainability criteria set out in sub-regulations (2) to (5):

(*a*) measuring compliance concerning national targets for the share of energy from renewable sources in gross final consumption of energy in 2020, and for the share of energy from renewable sources in all forms of transport in 2020;

(*b*) measuring compliance with renewable energy obligations;

(*c*) eligibility for financial support for the consumption of biofuels and bioliquids:

Provided that biofuels and bioliquids produced from waste and residues, other than agricultural, aquaculture, fisheries and forestry residues, shall only fulfil the sustainability criteria set out in sub-regulation (2) in order to be taken into account for the purposes referred to in paragraphs (*a*), (*b*) and (*c*).

(2) The calculations regarding the greenhouse gas emission saving from the use of biofuels and bioliquids shall be calculated in accordance with regulation 5(1). The greenhouse gas emission saving from the use of biofuels and bioliquids taken into account for the purposes referred to in sub-regulation (1)(*a*), (*b*) and (*c*) shall be at least 35 % and 50% with effect from the 1st of January 2017:

Provided that the lower limit for installations which were in operation on the 23rd January 2008 shall come into effect from the 1st of April 2013:

Provided further, that for installations which started production on or after the 1st January 2017, the greenhouse gas emission saving from the use of biofuels and bioliquids taken into account for the purposes referred to in sub-regulation (1)(*a*), (*b*) and (*c*) shall be at least 60% with effect from the 1st of January 2018.

(3) Biofuels and bioliquids taken into account for the purposes referred to in sub-regulation (1)(*a*), (*b*) and (*c*) shall not be made from raw material obtained from land with high biodiversity value, namely land that had one of the following statuses in or after January 2008, whether or not the land continues to have that status:

(*a*) primary forest and other wooded land, namely forest and other wooded land of native species, where there is no clearly visible indication of human activity and the ecological processes are not significantly disturbed;

(*b*) areas designated:

(i) by law or by the relevant competent authority for nature protection purposes; or

(ii) for the protection of rare, threatened or endangered ecosystems or species recognised by international agreements or included in lists drawn up by intergovernmental organisations or the International Union for the Conservation of Nature, subject to their recognition by the Community when it has concluded bilateral or multilateral agreements with third countries containing provisions relating to matters covered by the sustainability criteria,

unless evidence is provided that the production of that raw material did not interfere with those nature protection purposes;

(*c*) highly biodiverse grassland that is:

(i) natural, namely grassland that would remain grassland in the absence of human intervention and which maintains the natural species composition and ecological characteristics and processes; or

(ii) non-natural, namely grassland that would cease to be grassland in the absence of human intervention and which is rich in species and not degraded, unless evidence is provided that the harvesting of the raw material is necessary to preserve its grassland status.

(4) Biofuels and bioliquids taken into account for the purposes referred to in sub-regulation (1)(*a*), (*b*) and (*c*) shall not be made from raw material obtained from land with high carbon stock, namely land that had any one status as follows in January 2008 and which now no longer has that status:

(*a*) wetlands, namely land that is covered with or saturated by water permanently or for a significant part of the year;

(*b*) continuously forested areas, namely land spanning more than one hectare with trees higher than five metres and a canopy cover of more than 30%, or trees able to reach those thresholds *in situ*;

(*c*) land spanning more than one hectare with trees higher than five metres and a canopy cover of between 10% and 30%, or trees able to reach those thresholds *in situ*, unless evidence is provided that the carbon stock of the area before and after conversion is such that, when the methodology laid down in part C of the Schedule is applied, the conditions laid down in sub-regulation (2) would be fulfilled:

Provided that the provisions of this sub-regulation shall not apply if, at the time the raw material was obtained, the land had the

same status as it had in January 2008.

(5) Biofuels and bioliquids taken into account for the purposes referred to in sub-regulation (1)(*a*), (*b*) and (*c*) shall not be made from raw material obtained from land that was peatland in January 2008, unless evidence is provided that the cultivation and harvesting of that raw material does not involve drainage of previously undrained soil.

(6) Agricultural raw materials cultivated in the Community and used for the production of biofuels and bioliquids taken into account for the purposes referred to in sub-regulation (1)(*a*), (*b*) and (*c*) shall be obtained in accordance with the requirements and standards under the provisions referred to under the heading 'Environment' in part A and in paragraph 9 of Annex II to Council Regulation (EC) No 73/2009 establishing common rules for direct support schemes for farmers under the common agricultural policy and establishing certain support schemes for farmers and in accordance with the minimum requirements for good agricultural and environmental condition defined pursuant to Article 6(1) of that Regulation.

(7) For the purposes referred to paragraphs of sub-regulation (1)(*a*), (*b*) and (*c*), the Authority shall not refuse to take into account biofuels and bioliquids obtained in compliance with this regulation, on other sustainability grounds.

Verification of compliance with the sustainability criteria for biofuels and bioliquids. *Amended by: L.N. 50 of 2012.*

4. (1) Where biofuels and bioliquids are to be taken into account for the purposes referred to in paragraphs (*a*), (*b*) and (*c*), economic operators shall show that the sustainability criteria set out in regulation 3(2) to (5) have been fulfilled. For this purpose economic operators shall use a mass balance system which:

(*a*) allows consignments of raw material or biofuel with differing sustainability characteristics to be mixed;

(*b*) requires information about the sustainability characteristics and size of the consignments referred to in paragraph (*a*) to remain assigned to the mixture; and

(*c*) provides for the sum of all consignments withdrawn from the mixture to be described as having the same sustainability characteristics, in the same quantities, as the sum of all consignments added to the mixture.

(2) (*a*) Economic operators shall submit to the Authority reliable information and shall also make available, on request, the data that was used to develop the information. Economic operators shall also arrange for an adequate standard of independent auditing of the information submitted, and to provide evidence to the Authority that this has been done. The auditing shall verify that the system used by the economic operators is accurate, reliable and protected against fraud. The auditing shall evaluate the frequency and methodology of sampling and the robustness of the data.

Economic operators who are producers of biofuels or bioliquids shall ensure that such auditing and

verification is to be compiled:

(i) by holders of a practising certificate to practise in the field of auditing in terms of the Cap. 281. Accountancy Profession Act according to limited assurance engagements prescribed in ISAE 3000 or an equivalent standard as proved to the satisfaction of the Authority by an economic operator; or

(ii) under voluntary schemes approved by the European Commission.

Economic operators importing biofuels or bioliquids shall ensure that such auditing and verification is to be compiled:

(i) by holders of a practising certificate to practise in the field of auditing in terms of the Cap. 281. Accountancy Profession Act according to limited assurance engagements provided for in ISAE 3000 or an equivalent standard to the satisfaction of the Authority; or

(ii) under voluntary schemes approved by the European Commission; or

(iii) under national schemes approved by Member States of the European Union which comply with the sustainability criteria contained in Directive 2009/28/EC; or

(iv) under agreements with third countries made by the European Commission containing requirements on sustainability criteria equivalent to those contained in Directive 2009/28/EC.

(*b*) The information referred to in paragraph (*a*) shall include in particular information on compliance with the sustainability criteria set out in regulation 3(2) to (5), appropriate and relevant information on measures taken for soil, water and air protection, the restoration of degraded land, and the avoidance of excessive water consumption, in areas where water is scarce.

(3) The Authority shall submit to the Minister, in aggregated form, the information referred to in sub-regulation (2), and such information shall be published in summary form preserving the confidentiality of commercially sensitive information.

(4) When an economic operator provides proof or data obtained in accordance with an agreement or scheme that has been the subject of a decision by the Commission, and to the extent covered by that decision, the Authority shall not require the supplier to provide further evidence of compliance with the sustainability criteria set out in regulation 3(2) to (5), nor information on measures referred to in sub-regulation (2)(*b*).

Calculation of the greenhouse gas impact of biofuels and bioliquids.

5. (1) For the purposes of regulation 3(2), the greenhouse gas emission saving from the use of biofuel and bioliquids shall be calculated as follows:

(*a*) where a default value for greenhouse gas emission saving for the production pathway is laid down in Part A or B of the Schedule and where the e^1 value for those biofuels or bioliquids calculated in accordance with item 7 of Part C of the Schedule is equal to or less than zero, by using that default value;

(*b*) by using an actual value calculated in accordance with the methodology laid down in Part C of the Schedule; or

(*c*) by using a value calculated as the sum of the factors of the formula referred to in item 1 of Part C of the Schedule, where disaggregated default values in Part D or E of the Schedule may be used for some factors, and actual values, calculated in accordance with the methodology laid down in Part C of the Schedule, for all other factors.

(2) The default values in Part A of the Schedule for biofuels, and the disaggregated default values for cultivation in Part D of the Schedule for biofuels and bioliquids, may be used only when their raw materials are:

(*a*) cultivated outside the Community;

(*b*) cultivated in the Community in areas included in the list of those areas classified as level 2 in the nomenclature of territorial units for statistics (NUTS) or as a more disaggregated NUTS level in accordance with Regulation (EC) No 1059/2003 of the European Parliament and of the Council of the 26th May 2003 on the establishment of a common classification of territorial units for statistics (NUTS), where the typical greenhouse gas emissions from cultivation of agricultural raw materials can be expected to be lower than or equal to the emissions reported under the heading 'Disaggregated default values for cultivation' in Part D of the Schedule;

(*c*) waste or residues other than agricultural, aquaculture and fisheries residues.

(3) For biofuels and bioliquids not falling under sub-regulation (2)(*a*), (*b*) or (*c*), actual values for cultivation shall be used.

Amended by:
L.N. 50 of 2012.

SCHEDULE

Rules for calculating the greenhouse gas impact of biofuels, other bioliquids and their fossil fuel comparators

Part A. Typical and default values for biofuels if produced with no net carbon emissions from land use change

Biofuel production pathway	Typical greenhouse gas emission saving	Default greenhouse gas emission saving
sugar beet ethanol	61%	52%
wheat ethanol (process fuel not specified)	32%	16%
wheat ethanol (lignite as process fuel in CHP plant)	32%	16%
wheat ethanol (natural gas as process fuel in conventional boiler)	45%	34%
wheat ethanol (natural gas as process fuel in CHP plant)	53%	47%
wheat ethanol (straw as process fuel in CHP plant)	69%	69%
corn (maize) ethanol, Community produced (natural gas as process fuel in CHP plant)	56%	49%
sugar cane ethanol	71%	71%
the part from renewable sources of ethyl-tertio-butylether (ETBE)	Equal to that of the ethanol production pathway used	
the part from renewable sources of tertiary-amylethyl-ether (TAEE)	Equal to that of the ethanol production pathway used	
rape seed biodiesel	45%	38%
sunflower biodiesel	58%	51%
soybean biodiesel	40%	31%
palm oil biodiesel (process not specified)	36%	19%
palm oil biodiesel (process with methane capture at oil mill)	62%	56%
waste vegetable or animal* oil biodiesel	88%	83%
hydrotreated vegetable oil from rape seed	51%	47%
hydrotreated vegetable oil from sunflower	65%	62%
hydrotreated vegetable oil from palm oil (process not specified)	40%	26%
hydrotreated vegetable oil from palm oil (process with methane capture at oil mill)	68%	65%
pure vegetable oil from rape seed	58%	57%
biogas from municipal organic waste as compressed natural gas	80%	73%
biogas from wet manure as compressed natural gas	84%	81%

Biofuel production pathway	Typical greenhouse gas emission saving	Default greenhouse gas emission saving
biogas from dry manure as compressed natural gas	86%	82%

* Not including animal oil produced from animal by products classified as category 3 material in accordance with Regulation (EC) No 1774/2002 of the European Parliament and of the Council of 3 October 2002 laying down health rules on animal by-products not intended for human consumption*.

Part B. Estimated typical and default values for future biofuels that were not on the market or were on the market only in negligible quantities in January 2008, if produced with no net carbon emissions from land use change

Biofuel production pathway	Typical greenhouse gas emission saving	Default greenhouse gas emission saving
wheat straw ethanol	87%	85%
waste wood ethanol	80%	74%
farmed wood ethanol	76%	70%
waste wood Fischer-Tropsch diesel	95%	95%
farmed wood Fischer-Tropsch diesel	93%	93%
waste wood dimethylether (DME)	95%	95%
farmed wood DME	92%	92%
waste wood methanol	94%	94%
farmed wood methanol	91%	91%
the part from renewable sources of methyl-tertiobutyl-ether (MTBE)	Equal to that of the methanol production pathway used	

Part C. Methodology

1. Greenhouse gas emissions from the production and use of transport fuels, biofuels and other bioliquids shall be calculated as:

$E = e_{ec} + e_l + e_p + e_{td} + e_u - e_{sca} - e_{ccs} - e_{ccr} - e_{ee}$,

where

E = total emissions from the use of the fuel;

e_{ec} = emissions from the extraction or cultivation of raw materials;

e_l = annualised emissions from carbon stock changes caused by land use change;

e_p = emissions from processing;

e_{td} = emissions from transport and distribution;

e_u = emissions from the fuel in use;

e_{sca} = emission savings from soil carbon accumulation via improved agricultural management;

e_{ccs} = emission savings from carbon capture and geological storage;

e_{ccr} = emission savings from carbon capture and replacement; and

*OJ L 273, 10.10.2002, p. 1.

e_{ee} = emission savings from excess electricity from cogeneration.

Emissions from the manufacture of machinery and equipment shall not be taken into account.

2. Greenhouse gas emissions from fuels, E, shall be expressed in terms of grams of CO_2 equivalent per MJ of fuel, gCO_{2eq}/MJ.

3. By derogation from item 2, for transport fuels, values calculated in terms of gCO_{2eq}/MJ may be adjusted to take into account differences between fuels in useful work done, expressed in terms of km/MJ. Such adjustments shall be made only where evidence of the differences in useful work done is provided.

4. Greenhouse gas emission savings from biofuels and other bioliquids shall be calculated as:

SAVING = $(E_F – E_B)/EF$,

where

E_B = total emissions from the biofuel or other bioliquid; and

E_F = total emissions from the fossil fuel comparator.

5. The greenhouse gases taken into account for the purposes of item 1 shall be CO_2, N_2O and CH_4. For the purpose of calculating CO_2 equivalence, these gases shall be valued as follows:

CO_2: 1

N_2O: 296

CH_4: 23

6. Emissions from the extraction or cultivation of raw materials, e_{ec}, shall include emissions from the extraction or cultivation process itself; from the collection of raw materials; from waste and leakages; and from the production of chemicals or products used in extraction or cultivation. Capture of CO_2 in the cultivation of raw materials shall be excluded. Certified reductions of greenhouse gas emissions from flaring at oil production sites anywhere in the world shall be deducted. Estimates of emissions from cultivation may be derived from the use of averages calculated for smaller geographical areas than those used in the calculation of the default values, as an alternative to using actual values.

7. Annualised emissions from carbon stock changes caused by land use change, e_l, shall be calculated by dividing total emissions equally over 20 years. For the calculation of these emissions the following rule shall be applied:

$e_l = (CS_R – CS_A) \times 3{,}664 \times {}^{1}/_{20} \times {}^{1}/_{P} - e_B$,

* The quotient obtained by dividing the molecular weight of CO_2 (44,010 g/mol) by the molecular weight of carbon (12,011 g/mol) is equal to 3,664.

where

e_l = annualised greenhouse gas emissions from carbon stock change due to land use change (measured as mass of CO_2-equivalent per unit biofuel energy);

CS_R = the carbon stock per unit area associated with the reference land use (measured as mass of carbon per unit area, including both soil and vegetation). The reference land use shall be the land use in January 2008 or 20 years before the raw material was obtained, whichever was the later;

CS_A = the carbon stock per unit area associated with the actual land use (measured as mass of carbon per unit area, including both soil and vegetation). In cases where

the carbon stock accumulates over more than one year, the value attributed to CSA shall be the estimated stock per unit area after twenty years or when the crop reaches maturity, whichever the earlier;

P = the productivity of the crop (measured as biofuel or other bioliquid energy per unit area per year); and

e_B = bonus of 29 gCO_{2eq}/MJ biofuel or other bioliquid if biomass is obtained from restored degraded land under the conditions provided for in item 8.

8. The bonus of 29 gCO_{2eq}/MJ shall be attributed if evidence is provided that the land:

(*a*) was not in use for agriculture or any other activity in January 2008; and

(*b*) falls into one of the following categories:

(i) severely degraded land, including such land that was formerly in agricultural use;

(ii) heavily contaminated land.

The bonus of 29 gCO_{2eq}/MJ shall apply for a period of up to 10 years from the date of conversion of the land to agricultural use, provided that a steady increase in carbon stocks as well as a sizable reduction in erosion phenomena for land falling under sub-item (i) are ensured and that soil contamination for land falling under sub-item (ii) is reduced.

9. The categories mentioned in item 8(*b*) are defined as follows:

(*a*) "severely degraded land" means land that, for a significant period of time, has either been significantly salinated or presented significantly low organic matter content and has been severely eroded;

(*b*) "heavily contaminated land" means land that is unfit for the cultivation of food and feed due to soil contamination.

Such land shall include land that has been the subject of a Commission decision in accordance with the fourth subparagraph of Article 18(4) of Directive 2009/28/EC.

10. Emissions from processing, e_p, shall include emissions from the processing itself; from waste and leakages; and from the production of chemicals or products used in processing.

In accounting for the consumption of electricity not produced within the fuel production plant, the greenhouse gas emission intensity of the production and distribution of that electricity shall be assumed to be equal to the average emission intensity of the production and distribution of electricity in a defined region. By derogation from this rule, producers may use an average value for an individual electricity production plant for electricity produced by that plant, if that plant is not connected to the electricity grid.

11. Emissions from transport and distribution, e_{td}, shall include emissions from the transport and storage of raw and semi-finished materials and from the storage and distribution of finished materials. Emissions from transport and distribution to be taken into account under item 6 shall not be covered by this item.

12. Emissions from the fuel in use, e_u, shall be taken to be zero for biofuels and other bioliquids.

13. Emission savings from carbon capture and geological storage e_{ccs}, that have not already been accounted for in e_p, shall be limited to emissions avoided through the capture and sequestration of emitted CO_2 directly related to the extraction, transport, processing and distribution of fuel.

14. Emission savings from carbon capture and replacement, e_{ccr}, shall be limited to emissions avoided through the capture of CO_2 of which the carbon originates from biomass and which is used to replace fossil-derived CO_2 used in commercial products and services.

15. Emission savings from excess electricity from cogeneration, e_{ee}, shall be taken into account in relation to the excess electricity produced by fuel production systems that use cogeneration except where the fuel used for the cogeneration is a co-product other than an agricultural crop residue. In accounting for this excess electricity, the size of the cogeneration unit shall be assumed to be the minimum necessary for the cogeneration unit to supply the heat that is needed to produce the fuel. The greenhouse gas emission savings associated with this excess electricity shall be taken to be equal to the amount of greenhouse gas that would be emitted when an equal amount of electricity was generated in a power plant using the same fuel as the cogeneration unit.

16. Where a fuel production process produces, in combination, the fuel for which emissions are being calculated and one or more other products ("co-products"), greenhouse gas emissions shall be divided between the fuel or its intermediate product and the co-products in proportion to their energy content (determined by lower heating value in the case of co-products other than electricity).

17. For the purposes of the calculation referred to in paragraph 17, the emissions to be divided shall be $e_{ec} + e_l$, + those fractions of e_p, e_{td} and e_{ee} that take place up to and including the process step at which a co-product is produced. If any allocation to co-products has taken place at an earlier process step in the life-cycle, the fraction of those emissions assigned in the last such process step to the intermediate fuel product shall be used for this purpose instead of the total of those emissions.

In the case of biofuels and other bioliquids, all co-products, including electricity that does not fall under the scope of item 16, shall be taken into account for the purposes of this calculation, except for agricultural crop residues, including straw, bagasse, husks, cobs and nut shells. Co-products that have a negative energy content shall be considered to have an energy content of zero for the purpose of the calculation.

Wastes, agricultural crop residues, including straw, bagasse, husks, cobs and nut shells, and residues from processing, including crude glycerine (glycerine that is not refined), shall be considered to have zero life-cycle greenhouse gas emissions up to the process of collection of these materials.

In the case of fuels produced in refineries, the unit of analysis for the purposes of the calculation referred to in item 16 shall be the refinery.

18. For biofuels, for the purposes of the calculation referred to in item 4, the fossil fuel comparator E_F shall be the latest available actual average emissions from the fossil part of petrol and diesel consumed in the Community as reported under Directive 98/70/EC. If no such data are available, the value used shall be 83.8 gCO_{2eq}/MJ.

For bioliquids used for electricity production, for the purposes of the calculation referred to in item 4, the fossil fuel comparator E_F shall be 91 gCO_{2eq}/MJ.

For bioliquids used for heat production, for the purposes of the calculation referred to in item 4, the fossil fuel comparator E_F shall be 77 gCO_{2eq}/MJ.

For bioliquids used for cogeneration, for the purposes of the calculation referred to in item 4, the fossil fuel comparator E_F shall be 85 gCO_{2eq}/MJ.

Part D. Disaggregated default values for biofuels and bioliquids

Disaggregated default values for cultivation: 'e_{ec}' as defined in Part C of this Schedule

Biofuel and other bioliquids production pathway	Typical greenhouse gas emissions (gCO_{2eq}/MJ)	Default greenhouse gas emissions (gCO_{2eq}/MJ)
sugar beet ethanol	12	12
wheat ethanol	23	23
corn (maize) ethanol, Community produced	20	20
sugar cane ethanol	14	14
the part from renewable sources of ETBE	Equal to that of the ethanol production pathway used	
the part from renewable sources of TAEE	Equal to that of the ethanol production pathway used	
rape seed biodiesel	29	29
sunflower biodiesel	18	18
soybean biodiesel	19	19
palm oil biodiesel	14	14
waste vegetable or animal* oil	0	0
biodiesel hydrotreated vegetable oil from rape seed	30	30
hydrotreated vegetable oil from sunflower	18	18
hydrotreated vegetable oil from palm oil	15	15
pure vegetable oil from rape seed	30	30
biogas from municipal organic waste as compressed natural gas	0	0
biogas from wet manure as compressed natural gas	0	0
biogas from dry manure as compressed natural gas	0	0

* Not including animal oil produced from animal by products classified as category 3 material in accordance with Regulation (EC) No 1774/2002.

Disaggregated default values for processing (including excess electricity):

'$e_p - e_{ee}$' as defined in Part C of this Schedule

Biofuel and other bioliquids production pathway	Typical greenhouse gas emissions (gCO_{2eq}/MJ)	Default greenhouse gas emissions (gCO_{2eq}/MJ)
sugar beet ethanol	19	26
wheat ethanol (process fuel not specified)	32	45
wheat ethanol (lignite as process fuel in CHP plant)	32	45

Biofuel and other bioliquids production pathway	Typical greenhouse gas emissions (gCO_{2eq}/MJ)	Default greenhouse gas emissions (gCO_{2eq}/MJ)
wheat ethanol (natural gas as process fuel in conventional boiler)	21	30
wheat ethanol (natural gas as process fuel in CHP plant)	14	19
wheat ethanol (straw as process fuel in CHP plant)	1	1
corn (maize) ethanol, Community produced (natural gas as process fuel in CHP plant)	15	21
sugar cane ethanol	1	1
the part from renewable sources of ETBE	Equal to that of the ethanol production pathway used	
the part from renewable sources of TAEE	Equal to that of the ethanol production pathway used	
rape seed biodiesel	16	22
sunflower biodiesel	16	22
soybean biodiesel	18	26
palm oil biodiesel (process not specified)	35	49
palm oil biodiesel (process with methane capture at oil mill)	13	18
waste vegetable or animal oil biodiesel	9	13
hydrotreated vegetable oil from rape seed	10	13
hydrotreated vegetable oil from sunflower	10	13
hydrotreated vegetable oil from palm oil (process not specified)	30	42
hydrotreated vegetable oil from palm oil (process with methane capture at oil mill)	7	9
pure vegetable oil from rape seed	4	5
biogas from municipal organic waste as compressed natural gas	14	20
biogas from wet manure as compressed natural gas	8	11
biogas from dry manure as compressed natural gas	8	11

Disaggregated default values for transport and distribution: 'e_{td} ' as defined in Part C of this Schedule

Biofuel and other bioliquid production pathway	Typical greenhouse gas emissions (gCO_{2eq}/MJ)	Default greenhouse gas emissions (gCO_{2eq}/MJ)
sugar beet ethanol	2	2
wheat ethanol	2	2

Biofuel and other bioliquid production pathway	Typical greenhouse gas emissions (gCO_{2eq}/MJ)	Default greenhouse gas emissions (gCO_{2eq}/MJ)
corn (maize) ethanol, Community produced	2	2
sugar cane ethanol	9	9
the part from renewable sources of ETBE	Equal to that of the ethanol production pathway used	
the part from renewable sources of TAEE	Equal to that of the ethanol production pathway used	
rape seed biodiesel	1	1
sunflower biodiesel	1	1
soybean biodiesel	13	13
palm oil biodiesel	5	5
waste vegetable or animal oil biodiesel	1	1
hydrotreated vegetable oil from rape seed	1	1
hydrotreated vegetable oil from sunflower	1	1
hydrotreated vegetable oil from palm oil	5	5
pure vegetable oil from rape seed	1	1
biogas from municipal organic waste as compressed natural gas	3	3
biogas from wet manure as compressed natural gas	5	5
biogas from dry manure as compressed natural gas	4	4

Total for cultivation, processing, transport and distribution

Biofuel and other bioliquid production pathway	Typical greenhouse gas emissions (gCO_{2eq}/MJ)	Default greenhouse gas emissions (gCO_{2eq}/MJ)
sugar beet ethanol	33	40
wheat ethanol (process fuel not specified)	57	70
wheat ethanol (lignite as process fuel in CHP plant)	57	70
wheat ethanol (natural gas as process fuel in conventional boiler)	46	55
wheat ethanol (natural gas as process fuel in CHP plant)	39	44
wheat ethanol (straw as process fuel in CHP plant)	26	26
corn (maize) ethanol, Community produced (natural gas as process fuel in CHP plant)	37	43
sugar cane ethanol	24	24

Biofuel and other bioliquid production pathway	Typical greenhouse gas emissions (gCO_{2eq}/MJ)	Default greenhouse gas emissions (gCO_{2eq}/MJ)
the part from renewable sources of ETBE	Equal to that of the ethanol production pathway used	
the part from renewable sources of TAEE	Equal to that of the ethanol production pathway used	
rape seed biodiesel	46	52
sunflower biodiesel	35	41
soybean biodiesel	50	58
palm oil biodiesel (process not specified)	54	68
palm oil biodiesel (process with methane capture at oil mill)	32	37
waste vegetable or animal oil biodiesel	10	14
hydrotreated vegetable oil from rape seed	41	44
hydrotreated vegetable oil from sunflower	29	32
hydrotreated vegetable oil from palm oil (process not specified)	50	62
hydrotreated vegetable oil from palm oil (process with methane capture at oil mill)	27	29
pure vegetable oil from rape seed	35	36
biogas from municipal organic waste as compressed natural gas	17	23
biogas from wet manure as compressed natural gas	13	16
biogas from dry manure as compressed natural gas	12	15

Part E. Estimated disaggregated default values for future biofuels and bioliquids that were not on the market or were only on the market in negligible quantities in January 2008

Disaggregated default values for cultivation: 'e_{ec}' as defined in Part C of this Schedule

Biofuel and other bioliquids production pathway	Typical greenhouse gas emissions (gCO_{2eq}/MJ)	Default greenhouse gas emissions (gCO_{2eq}/MJ)
wheat straw ethanol	3	3
waste wood ethanol	1	1
farmed wood ethanol	6	6
waste wood Fischer-Tropsch diesel	1	1
farmed wood Fischer-Tropsch diesel	4	4
waste wood DME	1	1
farmed wood DME	5	5
waste wood methanol	1	1

Biofuel and other bioliquids production pathway	Typical greenhouse gas emissions (gCO_{2eq}/MJ)	Default greenhouse gas emissions (gCO_{2eq}/MJ)
farmed wood methanol	5	5
the part from renewable sources of MTBE	Equal to that of the methanol production pathway used	

Disaggregated default values for processing (including excess electricity): '$e_p - e_{ee}$' as defined in Part C of this Schedule

Biofuel and other bioliquids production pathway	Typical greenhouse gas emissions (gCO_{2eq}/MJ)	Default greenhouse gas emissions (gCO_{2eq}/MJ)
wheat straw ethanol	5	7
wood ethanol	12	17
wood Fischer-Tropsch diesel	0	0
wood DME	0	0
wood methanol	0	0
the part from renewable sources of MTBE	Equal to that of the methanol production pathway used	

Disaggregated default values for transport and distribution: 'e_{td} ' as defined in Part C of this Schedule

Biofuel and other bioliquids production pathway	Typical greenhouse gas emissions (gCO_{2eq}/MJ)	Default greenhouse gas emissions (gCO_{2eq}/MJ)
wheat straw ethanol	2	2
waste wood ethanol	4	4
farmed wood ethanol	2	2
waste wood Fischer-Tropsch diesel	3	3
farmed wood Fischer-Tropsch diesel	2	2
waste wood DME	4	4
farmed wood DME	2	2
waste wood methanol	4	4
farmed wood methanol	2	2
the part from renewable sources of MTBE	Equal to that of the methanol production pathway used	

Total for cultivation, processing, transport and distribution

Biofuel and other bioliquids production pathway	Typical greenhouse gas emissions (gCO_{2eq}/MJ)	Default greenhouse gas emissions (gCO_{2eq}/MJ)
wheat straw ethanol	11	13
waste wood ethanol	17	22
farmed wood ethanol	20	25

Biofuel and other bioliquids production pathway	Typical greenhouse gas emissions (gCO_{2eq}/MJ)	Default greenhouse gas emissions (gCO_{2eq}/MJ)
waste wood Fischer-Tropsch diesel	4	4
farmed wood Fischer-Tropsch diesel	6	6
waste wood DME	5	5
farmed wood DME	7	7
waste wood methanol	5	5
farmed wood methanol	7	7
the part from renewable sources of MTBE	Equal to that of the methanol production pathway used	