CLEAN DEVELOPMENT MECHANISM

AMS-III.AK.

Small-scale Methodology

Biofuel production and use for transport applications

Version 03.0

Sectoral scope(s): 05, 07 and 15

United Nations
Framework Convention on
Climate Change

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1. Introduction

1. The following table describes the key elements of the methodology:

Table 1. Methodology key elements

Typical project(s)	Biofuel production that is used for transportation applications, where the biofuel is produced from biomass residues, waste oil/fat, seeds or crops that are cultivated in dedicated plantations
Type of GHG emissions mitigation action	Renewable energy: Displacement of more-carbon-intensive fossil fuel for combustion in vehicles/transportation applications by use of renewable biomass

2. Scope, applicability, and entry into force

2.1. Scope

2. This methodology comprises project activities for cultivation or sourcing of biomass residues, seeds, crops, or waste oil/fat for the production of biofuel for use in transportation applications.[1]

2.2. Applicability

3. The methodology is applicable to project activities that reduce emissions through the production of (blended) biofuels to be used in vehicles/transportation applications within the host country.

4. Only biofuels consumed in excess of mandatory regulations are eligible for the purpose of the project activity.[2]

5. This methodology is applicable under the following conditions:

   (a) In the baseline scenario, the vehicles/transportation applications use either pure fossil fuels or lower blends of biofuels with fossil fuels;

   (b) The target consumer group (e.g. captive fleet of vehicles, gas stations, bulk consumers) and distribution system of the biofuel shall be identified and described in the CDM-PDD; The fossil fuels, the biofuels and the blended biofuels comply with national regulations (if existent) or with suitable international standards;

   (c) The fossil fuels, the biofuels and the blended biofuels comply with national regulations (if existent) or with suitable international standards;

   (d) If the (blended) biofuels are sold to an identified consumer group within the host party, the buyer and the producer of the (blended) biofuel are bound by a

[1] Domestic water borne transport as defined by IPCC 2006, vol.2, chapter 3 is eligible.

[2] Regulations that have been implemented since the adoption by the COP of the Modalities and Procedures of CDM (Decision 17/CP.7, 11 November 2001) need not to be taken into account.

contract that allows the producer to monitor the sale of (blended) biofuel and that states that the consumer shall not claim CERs resulting from its consumption;

(e) If the biofuel is blended but not sold to an identified consumer group, the blender and the producer of the biofuel are bound by a contract that allows the producer to monitor the blending of biofuel to ensure that blending proportions and amounts are monitored and meet all regulatory requirements, and that states that no CERs resulting from its consumption will be claimed;

(f) The blending proportion of the biofuel must be appropriate to ensure that the technical performance characteristics of the blended biofuels do not differ significantly from those of fossil fuels;

(g) For biodiesel, the condition in 5(f) above is assumed to be met if the blending proportion is up to 20% by volume (B20). If the project participants use a blending proportion of more than 20%, it shall be demonstrated in the CDM-PDD that the technical performance characteristics of the blended biodiesel do not differ significantly from those of petrodiesel and comply with all local regulations;

(h) In case of esterification, any alcohol used is either methanol from fossil fuel origin or bioalcohols produced with biomass from dedicated plantations. Volumes of biodiesel produced with other alcohols are not included in the quantity of biodiesel for which emission reductions are claimed;

(i) The export of biofuel produced under this methodology is not eligible for crediting. In any case where the host party exports (blended) biofuels of the same type(s) as the biofuel(s) produced in the project plant beyond the national boundary, the consumption of the produced (blended) biofuel shall be monitored in order to ensure that no double counting occurs. The consumer and the producer of the (blended) biofuel shall be bound by a contract that allows the producer to monitor the consumption of (blended) biofuel and that states that the consumer shall not claim CERs resulting from its consumption.

6. Measures are limited to those that result in emission reductions of less than or equal to 60 kt CO_2 equivalent annually.

7. If the project activity utilizes biomass sourced from dedicated plantations, the applicability conditions prescribed in the methodological tool “Project and leakage emissions from biomass” shall apply.

2.3. Entry into force

8. The date of entry into force is the date of the publication of the EB 98 meeting report on 1 March 2018.

2.4. Applicability of sectoral scopes

9. For validation and verification of CDM projects and programme of activities by a designated operational entity (DOE) using this methodology, application of the following sectoral scopes is mandatory:

(a) If biofuel is produced from waste oil/fat or biomass residues as a feedstock, then sectoral scopes 5 and 7 apply;

(b) If biofuel is produced from anything other than waste oil/fat or biomass residues as a feedstock, then sectoral scopes 5, 7 and 15 apply.

3. Normative references

10. Project participants shall apply the "General guidelines for SSC CDM methodologies" and "Guidelines on the demonstration of additionality of small-scale project activities" provided at: <http://cdm.unfccc.int/methodologies/SSCmethodologies/approved.html>.

11. This methodology also refers to the latest approved versions of the following approved methodologies and tools:

(a) "AMS-I.D.: "Grid connected renewable electricity generation";

(b) "AMS-III.F.: "Avoidance of methane emissions through composting";

(c) "AMS-III.G.: "Landfill methane recovery";

(d) "AMS-III.H.: Methane recovery in wastewater treatment";

(e) "Project and leakage emissions from biomass";

(f) "Project and leakage emissions from transportation of freight";

(g) "Upstream leakage emissions associated with fossil fuel use";

(h) "Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion";

(i) "Tool to calculate baseline, project and/or leakage emissions from electricity consumption";

(j) "Apportioning emissions from production processes between main product and co- and by-product".

4. Definitions

12. The definitions contained in the Glossary of CDM terms shall apply.

13. Furthermore, the following definitions apply:

(a) **Biodiesel** - is a diesel fuel consisting of long-chain alkyl (methyl, propyl or ethyl) esters which is produced by esterification of vegetable oils and/or waste oil/fat with alcohols from biogenic and/or fossil origin;

(b) **Bioethanol** - is an alcohol produced through the fermentation of sugars or starches, followed by a distillation process and, if required, a dehydration process;

(c) **Biofuel production plant** - is the plant where the feedstock (e.g. oil, waste oil/fat sugar, starch) is processed to biofuel;

(d) **Biogenic** - means that the oils and/or fats originate from either vegetable or animal biomass, but not from mineral (fossil) sources;

(e) **Biomass** - non-fossilized and biodegradable organic material originating from plants, animals and micro-organisms including:

(i) Biomass residue;

(ii) The non-fossilized and biodegradable organic fractions of industrial and municipal wastes; and

(iii) The gases and liquids recovered from the decomposition of non-fossilized and biodegradable organic material;

(f) **Biomass residues** - non-fossilized and biodegradable organic material originating from plants, animals and micro-organisms which is a by-product, residue or waste stream from agriculture, forestry and related industries;

(g) **Blended biofuel** - blend of fossil fuel and biofuels;

(h) **Dedicated plantations -** are plantations that are newly established as part of the project activity for the purpose of supplying feedstock to the project plant. If the dedicated plantation is an A/R CDM project, then the procedures of the approved A/R methodology apply;

(i) **Esterification** - denotes the formation of an ester compound from carbonic acid and alcohol. Transesterification denotes the exchange of one alcohol in an ester against another (for example glycerol against methanol). In this methodology, “esterification” is used to denote both esterification and transesterification for simplicity;

(j) **Mill** - is a plant where seeds or crops are processed into starch/sugar;

(k) **Oil production plant** - is a plant where oil seeds are processed to vegetable oil;

(l) **Oil seeds** - are seeds of plants from which oil can be derived;

(m) **Petrodiesel** - is 100% fossil fuel diesel;

(n) **Vegetable oil** - is oil of biogenic origin that is produced from oil seeds from plants;

(o) **Waste oil/fat** - is defined as a residue or waste stream of biogenic origin from restaurants, agro and food industry, slaughterhouses or related commercial sectors.

5. Baseline methodology

5.1. Project boundary

14. The spatial extent of the project boundary encompasses:

(a) Where applicable, transportation of feedstock to the project plant(s) and the biofuels to the site where it is blended with fossil fuels;

(b) The biofuel production plant at the project site, comprising the processing unit(s) (e.g. esterification, fermentation, hydrolysis) plus other installations on the site (e.g. storage, refining, blending, etc.);

(c) The feedstock processing plant(s) (e.g. oil production plant, mill) on-site or off-site;

(d) The sites where the waste water and solid waste are treated;

(e) If blended biofuel is produced: the facility where the biofuel is blended with fossil fuel (regardless of the ownership of the blending facility);

(f) Where applicable, transport applications, vehicles or gas stations where the (blended) biofuel is consumed;

(g) If the feedstock is sourced from plants produced in dedicated plantations: the geographic boundaries of the dedicated plantations.

5.2. Baseline

15. Baseline emissions are calculated based on the amount of displaced fossil fuel determined as follows:

$$BE_y = BF_y \times NCV_{BF,y} \times EF_{CO2,FF,y} \quad \text{Equation (1)}$$

With:

$$BF_y = min\left[\left(P_{BF,y} - P_{BF,on-site,y} - P_{BF,other,y}\right), \left(f_{PJ,y} \times f_{FF,y} \times C_{BF,y} - P_{BF,other,y}\right)\right] \quad \text{Equation (2)}$$

Where:

BE_y	=	Baseline emissions during the year *y* (t CO_2)
BF_y	=	Quantity of biofuel eligible for crediting in year *y* (tonnes)
$NCV_{BF,y}$	=	Net calorific value of biofuel produced for the year *y* (GJ/t)
$P_{BF,y}$	=	Production of biofuel in the project plant in year *y* (tonnes)
$P_{BF,on-site,y}$	=	Quantity of biofuel consumed at the project plant in year *y* (tonnes)[3]
$P_{BF,other,y}$	=	Quantity of biofuel that is either produced with other alcohols than methanol from fossil origin or that is produced using other oil seeds or waste oil(s)/fat(s) than those eligible under this methodology according to the applicability conditions
$C_{BF,y}$	=	Consumption of (blended) biofuel from the project plant by the consumer(s) in year *y* (tonnes)
$f_{PJ,y}$	=	Fraction of blending in year *y* (volume ratio)

[3] If in a particular year some amount of biofuel produced has not been consumed and the excess stock is carried over to the next year, then it can be added to the amount produced in the next year.

$EF_{CO2,FF,y}$ = Carbon dioxide emissions factor for the displaced fossil fuel (t CO_2/GJ)

$f_{FF,y}$ = Blending fraction of fuel used for blending. Use 1.0 if pure fossil fuel is used for blending otherwise use the fraction of fossil fuel in the fuel used for blending (blending rate shall be established volume by volume)

16. Project participants shall determine $C_{BF,y}$ as follows:

(a) For (blended) biofuels that are sold to an identified consumer group, $C_{BF,y}$, shall be based on the monitored amount of (blended) biofuel consumed or sold;

(b) For biofuels that are blended but not sold to an identified consumer group, $C_{BF,y}$ shall be based on the monitored amount of biofuel blended at the blending facility(ies).

5.3. Project emissions

17. Project emissions (PE_y) are the emissions related to the cultivation of biomass feedstock and production and distribution of biofuel ("field-to-tank" emissions). The emissions from the combustion of the renewable carbon content in biofuel ("tank to wheel") are carbon neutral and may be disregarded. The following sources of project emissions shall be considered:

5.3.1. Project emissions at the biofuel production plant and feedstock processing plant ($PE_{BP,y}$)

18. These emissions include fuel and electricity consumption that occur at the site of the biofuel production plant and, if applicable, emissions associated with the anaerobic treatment of wastewater in the feedstock processing plant(s) (e.g. oil production plant(s)/mill(s)).

19. These emissions are estimated as follows:

$$PE_{BP,y} = \sum_{j} PE_{FC,j,y} + PE_{EC,y} + PE_{WW,y} \quad \text{Equation (3)}$$

Where:

$PE_{BP,y}$ = Project emissions at the biofuel production facility and, if applicable, the feedstock processing plant(s) in year *y* (tCO_2)

$PE_{FC,j,y}$ = Project emissions from combustion of fuel type *j* in the biofuel production plant and the feedstock processing plant(s) in year *y* (tCO_2)

$PE_{EC,y}$ = Project emissions from electricity consumption in the biofuel production plant and the feedstock processing plant(s) in year *y* (tCO_2)

$PE_{WW,y}$ = Project emissions from anaerobic treatment of waste/waste water in year *y* (tCO_2)

20. Emissions from fossil fuel consumption ($PE_{FC,y}$) should include CO_2 emissions from all fossil fuel consumption that occurs at the site of the biofuel production plant and, if applicable, the feedstock processing plant(s) (e.g. oil production plant(s) and/or mill(s)) that is attributable to the project activity. The project emissions from fossil fuel combustion ($PE_{FC,y}$) shall be calculated following the latest version of "Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion". For this purpose, the processes *j* in the tool correspond to all fossil fuel combustion sources at these plants.

21. Emissions from electricity consumption ($PE_{EC,y}$) includes electricity delivered from the grid to the biofuel production plant and, if applicable, the feedstock processing plant (s) (e.g. oil production plant(s)/mill(s)). Electricity generated on-site should not be included here.[4] The project emissions from electricity consumption ($PE_{EC,y}$) shall be calculated following the latest version of the methodological tool: "Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation".

22. Emissions from solid waste disposal and wastewater treatment ($PE_{WW,y}$) are calculated as per provisions in AMS-III.G. (landfill); AMS-III.F. (composting) and AMS-III.H. (waste water treatment) in the cases where the wastes are disposed/treated under anaerobic conditions;

5.3.2. Project emissions from fossil carbon in the biofuel due to the use of methanol from fossil origin in the esterification process ($PE_{MeOH,y}$)

23. Project emissions from fossil fuel carbon in the biofuel due to the use of methanol from fossil origin in the esterification process are estimated as follows:

$$PE_{MeOH,y} = MC_{MeOH,y} \times EF_{C,MeOH} \times \frac{44}{12} \quad \text{Equation (4)}$$

Where:

$PE_{MeOH,y}$	=	Project emissions from fossil carbon in the biofuel due to esterification with methanol of fossil origin in year *y* (t CO_2e)
$MC_{MeOH,y}$	=	Quantity of methanol consumed in the biofuel plant, including spills and evaporations in year *y* (tonnes)
$EF_{C,MeOH}$	=	Carbon emission factor of methanol, based on molecular weight (tC/t MeOH) (Use the value of 0.375 calculated as 12/32)
$\frac{44}{12}$	=	Molecular weight ratio to convert tonnes of carbon into tonnes of CO_2 (t CO_2/tC)

5.3.3. Project emissions from transportation ($PE_{TR,y}$)

24. Project emissions resulting from transportation of biomass feedstock to the biofuel production plant/feedstock processing plant and biofuel to the site where it is blended with fossil fuel are estimated using the latest version of the methodological tool "Project

[4] On-site electricity generation with fossil fuels should be included in $PE_{FC,y}$. On-site electricity generation with biomass residues or biofuel is accounted as zero emissions, as the use of biomass residues is not assumed to result in any emissions and emissions associated with the production of biofuels are included in the emission sources accounted under this methodology.

and leakage emissions from transportation of freight", if the transportation distance is more than 200 km, otherwise they can be neglected;

5.3.4. Project emissions associated with the cultivation of land to produce biomass feedstock in dedicated plantations ($PE_{BC,y}$)

25. Project emissions associated with the cultivation of lands in a dedicated plantation are estimated by following the provisions in the methodological tool: "Project and leakage emissions from biomass". Project participants should clearly document and justify in the CDM-PDD which emission sources are applicable to the project activity.

26. Alternatively, project participants may choose a simplified approach to calculate this emission source using conservative default values for the emissions associated with the cultivation of lands. This approach can only be used for palm, cassava, jatropha, soy, corn, sugarcane or pongamia.

5.3.4.1. Use of a default emission factor

$$PE_{BC,y} = PE_{SOC,y} + \sum_{s} A_{s,y} \times EF_{s,y} \quad \text{Equation (5)}$$

Where:

$PE_{BC,y}$ = Project emissions associated with the cultivation of land to produce biomass feedstock in year *y* (tCO_2)

$PE_{SOC,y}$ = Emissions resulting from loss of soil organic carbon, in year *y* ($t\ CO_2e$) to be estimated as per the methodological tool: "Project and leakage emissions from biomass"

$A_{s,y}$ = Area in which feedstock type *s* is cultivated for use in the project plant in year *y* (ha)

$EF_{s,y}$ = Default emission factor for the GHG emissions associated with the cultivation of land to produce biomass feedstock type *s* (tCO_2e/ha). See Table 2 below for available values

Table 2. Conservative default emission factors for the GHG emissions associated with the cultivation of land to produce biomass feedstock

Feedstock type *s*	Fresh palm fruit bunches	Cassava roots	Jatropha nuts	Soybeans	Corn Seed	Sugarcane	Pongamia
$EF_{s,y}$ ($t\ CO_2e$/ha)	2.5	1.9	2.6	0.8	2.1	2.3	1.5

27. An excel sheet that can be used to calculate the emission factors for the GHG emissions associated with the cultivation of land to produce crops is provided at the following weblink at UNFCCC CDM website: <http://cdm.unfccc.int/methodologies/DB/ESNMRTV3JOELVCEJZZ713XCJ6X2ID4>.

28. These emission sources are only partly allocated to the production of biofuel, through the allocation factor $AF_{1,y}$ in equation (6). Where applicable, project emissions

associated with the cultivation of land are allocated between the different products produced from the plants expressed through the allocation factor $AF_{2,s,y}$ in equation (6):

$$PE_y = \sum_s \left[FP_{BF,s,y} \times AF_{1,y} \times \left(PE_{TR,s,y} + PE_{BP,s,y} + PE_{MeOH,y} + AF_{2,s,y} \times PE_{BC,s,y} \right) \right] \quad \text{Equation (6)}$$

Where:

PE_y	=	Project emissions in year *y* (t CO_2e)
$FP_{BF,s,y}$	=	Amount of biofuel produced with feedstock type *s* by the project activity in year *y* (tonnes)
$AF_{1,y}$	=	Allocation factor for the production of biofuel in year *y* (fraction)
$AF_{2,s,y}$	=	Allocation factor for the land cultivation of feedstock type *s* in year *y* (fraction)
$PE_{TR,s,y}$	=	Emissions from transportation of feedstock type *s* and/or biofuel in year *y* (t CO_2e)
$PE_{BP,s,y}$	=	Emissions from biofuel production using feedstock type *s* in year *y* (t CO_2e)
$PE_{MeOH,y}$	=	Emissions from fossil fuel carbon in methanol used in the trans-esterification process in year *y* (t CO_2e)
$PE_{BC,s,y}$	=	Emissions from cultivation of land for feedstock type *s* in year *y* (t CO_2e)

29. The allocation factors are calculated as per the methodological tool “Apportioning emissions from production processes between main product and co and by-product”.

5.4. Leakage

30. Leakage emissions are calculated as follows:

$$LE_y = LE_{BR} + LE_{MeOH,y} - LE_{FF,y} \quad \text{Equation (7)}$$

Where:

$LE_y =$	=	Leakage emissions in year *y* (t CO_2)
LE_{BR}	=	Leakage emissions due to displacement of existing uses of waste oil/fat or biomass residues in year *y* (t CO_2)
$LE_{MeOH,y}$	=	Leakage emissions associated with production of methanol or the chemicals used for pre-treatment and/or hydrolysis of lignocellulosic biomass used in biofuel production in year *y* (t CO_2)
$LE_{FF,y}$	=	Negative leakage due to reducing indirect emissions associated with the production of fossil fuel (t CO_2)

5.4.1. Leakage emissions due to displacement of existing uses of waste oil/fat or biomass residues

31. Leakage emissions from the diversion of existing applications of waste oil/fat and/or biomass residues are estimated in accordance with the methodological tool: "Project and leakage emissions from biomass".

5.4.2. Leakage emissions associated with production of methanol/chemicals used in biofuel production

32. Leakage effects due to the upstream emissions for the methanol production may be disregarded if the leakage due to the avoided production of fossil fuel (including production of crude oil and refining of crude oil) is also disregarded. Otherwise, the leakage emissions due to the production of methanol used in the esterification process shall be calculated as follows:

$$LE_{MeOH,y} = MC_{MeOH,y} \times EF_{MeOH,PC} \quad \text{Equation (8)}$$

Where:

$LE_{MeOH,y}$ = Leakage emissions associated with production of methanol used in biofuel production in year *y* (t CO_2)

$MC_{MeOH,y}$ = Quantity of methanol consumed in the biofuel plant, including spills and evaporation on-site in year *y* (t MeOH)

$EF_{MeOH,PC}$ = Pre-combustion (i.e. upstream) emissions factor for methanol production (t CO_2/t MeOH)

33. Emissions from production of chemicals that are used for pre-treatment and/or hydrolysis of lignocellulosic biomass to produce cellulosic ethanol are estimated in accordance with the methodological tool: "Baseline, project and/or leakage emissions from electricity consumption and monitoring of electricity generation".

5.4.3. Leakage related to the avoided production of fossil fuel

34. The substitution of fossil fuels by biofuel reduces indirect ("upstream") emissions associated with the production of fossil fuels ($LE_{FF,y}$) and is treated as negative leakage[5] and can be calculated based on the default emission factors included in the methodological tool "Upstream leakage emissions associated with fossil fuel use", as follows:

$$LE_{FF,y} = BF_y \times \sum_x \sum_i \sum_j NCV_{BF,y} \times EF_{i,j,x,y} \quad \text{Equation (9)}$$

Where:

$LE_{FF,y}$ = Leakage related to the avoided production of fossil fuel in year *y* (tCO_2)

[5] Emission reduction from reducing international bunker fuel consumption is not eligible under CDM as per EB 25 report, paragraph 58.

BF_y	=	Quantity of biofuel eligible for crediting in year *y* (t)
$NCV_{BF,y}$	=	Net calorific value of biofuel produced in year *y* (GJ/t)
$EF_{i,j,x,y}$	=	Emission factor for upstream emissions stage *i* associated with consumption of fossil fuel type *x* from fossil fuel origin j applicable to year y (t CO2e/TJ)

35. For the purpose of this methodology, the following upstream emissions are considered:

(a) Production of crude oil. These include emissions from venting, flaring and energy uses;

(b) Oil refining. These include emissions from energy uses, production of chemicals and catalysts, disposal of production wastes (including flaring) and direct emissions;

(c) Long distance transport.[6]

5.5. Emission reduction

36. The emission reductions achieved by the project activity shall be calculated as the difference between the baseline emissions and the sum of the project emissions and leakage.

$$ER_y = BE_y - MAX(PE_y + LE_y, 0) \quad \text{Equation (10)}$$

Where:

ER_y	=	Emission reductions in the year *y* (t CO_2e)
LE_y	=	Leakage emissions in year *y* (t CO_2e)

6. Monitoring methodology

37. Relevant parameters shall be monitored as indicated in the tables below. The applicable requirements specified in the "General guidelines for SSC methodologies" (e.g. calibration requirements, sampling requirements) are also an integral part of the monitoring guidelines specified below and therefore shall be referred by the project participants.

Data / Parameter table 1.

Data / Parameter:	$P_{BF,y}$
Data unit:	tonnes
Description:	Production of biofuel in the project plant in year *y*

[6] Emissions from international long distance transport (transport of crude oil to the refinery) will not be taken into account since the EB has clarified that CDM project activities cannot claim emission reductions from reducing international bunker fuel consumption. EB 25 report paragraph 58 states that "The Board agreed to confirm that the project activities/parts of project activities resulting in emission reductions from reduced consumption of bunker fuels (e.g. fuel saving on account of shortening of the shipping route on international waters) are not eligible under the CDM."

Source of data:	
Measurement procedures (if any):	Measurements are undertaken using calibrated meters. Measurement results shall be cross checked with records for consumption or sales (e.g. invoices/receipts)
Monitoring frequency:	Continuously or in batches
QA/QC procedures:	-
Any comment:	-

Data / Parameter table 2.

Data / Parameter:	$P_{BF,on\text{-}site,y}$
Data unit:	tonnes
Description:	Quantity of biofuel consumed at the project production plant and/or the feedstock processing plant(s) in year *y*
Source of data:	
Measurement procedures (if any):	Measurements are undertaken using calibrated meters at production site
Monitoring frequency:	Continuously or in batches
QA/QC procedures:	-
Any comment:	-

Data / Parameter table 3.

Data / Parameter:	$P_{BF,other,y}$
Data unit:	tonnes
Description:	Quantity of biofuel that is either produced with other alcohols than methanol from fossil origin or that is produced using other feedstock or waste oil(s)/fat(s) than those eligible under this methodology according to the applicability conditions
Source of data:	
Measurement procedures (if any):	Measurements are undertaken using calibrated meters at production site
Monitoring frequency:	Continuously or in batches
QA/QC procedures:	-
Any comment:	-

Data / Parameter table 4.

Data / Parameter:	$C_{BF,y}$
Data unit:	tonnes
Description:	Quantity of (blended) biofuel from the project plant consumed/sold to identified consumer/blended in year *y*
Source of data:	

Measurement procedures (if any):	Measurements are undertaken using calibrated meters. Measurement results shall be cross checked with records of sales (e.g. invoices/receipts). For (blended) biofuels that are sold to an identified consumer group $C_{BF,i,y}$ shall be based on the monitored amount of (blended) biofuel sold. In case of biofuels that are blended but neither used in stationary facilities nor sold to an identified consumer group, $C_{BF,i,y}$ shall be based on the amount of biofuel blended at the blending facility(ies)
Monitoring frequency:	Continuously or in batches
QA/QC procedures:	-
Any comment:	-

Data / Parameter table 5.

Data / Parameter:	$NCV_{BF,y}$
Data unit:	GJ/tonnes
Description:	Net calorific value of biofuel produced in year *y*
Source of data:	
Measurement procedures (if any):	Measured according to relevant national/ international standards. Analysis has to be carried out by an accredited laboratory
Monitoring frequency:	Annually
QA/QC procedures:	-
Any comment:	-

Data / Parameter table 6.

Data / Parameter:	$f_{PJ,y}$
Data unit:	%
Description:	Fraction of blending in year *y* (ratio)
Source of data:	
Measurement procedures (if any):	Measured volumes or flows by calibrated meters at blending stations
Monitoring frequency:	Every produced blend must be monitored
QA/QC procedures:	During the process of creating the blended biofuel at the blending station, the blending operation shall be monitored to assure adequate mixing of the products in the correct proportions. This includes measuring and recording the volumes and blend levels as verified through bills of lading, meter printouts or other auditable records of both the biofuel and fossil fuel, which comprise the blend
Any comment:	See “BQ-9000 Quality Assurance Program Requirements for the Biodiesel industry” for further information

Data / Parameter table 7.

Data / Parameter:	$f_{FF,y}$
Data unit:	%
Description:	Blending fraction of the fuel used for blending
Source of data:	
Measurement procedures (if any):	Data from the supplier of the fuel used for blending
Monitoring frequency:	Continuously or in batches
QA/QC procedures:	-
Any comment:	-

Data / Parameter table 8.

Data / Parameter:	$FP_{BF,s,y}$
Data unit:	tonnes
Description:	Amount of biofuel produced with feedstock type *s* by the project activity in the year *y* (tonnes)
Source of data:	
Measurement procedures (if any):	Measurements are undertaken using calibrated meters. Measurement results shall be cross checked with records for consumption and sales (e.g. invoices/receipts)
Monitoring frequency:	Continuously or in batches
QA/QC procedures:	-
Any comment:	-

Data / Parameter table 9.

Data / Parameter:	$MC_{MeOH,y}$
Data unit:	tonnes
Description:	Mass of MEOH/chemicals consumed in the biofuel plant, including spills and evaporation, in year *y*
Source of data:	
Measurement procedures (if any):	Measured continuously by calibrated equipment at the project site. Cross-checked with purchase data and adjusted for stock changes when deemed necessary
Monitoring frequency:	Continuously or in batches
QA/QC procedures:	-
Any comment:	-

Data / Parameter table 12.

Data / Parameter:	$A_{s,y}$
Data unit:	Ha

Description:	Area in which biomass feedstock type *s* is cultivated for use in the project plant in year *y*
Source of data:	Project participants
Measurement procedures (if any):	-
Monitoring frequency:	Annually
QA/QC procedures:	-
Any comment:	-

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Document information

Version	*Date*	*Description*
03.0	1 March 2018	EB 98, Annex 7 Revision to broaden the applicability of biofuel and reference to TOOL12, TOOL15 and TOOL16.
02.0	28 November 2014	EB 81, Annex 17 This revision removes the applicability conditions related to land eligibility and project emission calculations related to the cultivation of biomass and includes reference to the approved tools.
01.0	30 July 2010	EB 55, Annex 30 Initial adoption.

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