

CDM-SSCWG45-A02

Draft Small-scale Methodology

AMS-I.G: Plant oil production and use for energy generation in stationary applications

Version 02.0

Sectoral scope(s): 01



DRAFT



United Nations
Framework Convention on
Climate Change

COVER NOTE

1. Procedural background

1. Following the approval of the methodological tool “Project emissions from cultivation of biomass” at the seventy-fifth meeting of the Executive Board (hereinafter referred to as the Board) of the clean development mechanism (CDM), the Small-Scale Working Group (SSC WG) requested a mandate from the Board to integrate this tool into SSC methodologies. Consequently, the Board mandated this task at its seventy-sixth meeting (EB 76, para 53).

2. Purpose

2. The draft revision:
 - (a) Introduces the methodological tool “Project emissions from cultivation of biomass”, taking advantage of its procedures and applicability criteria, and removing obsolete procedure;
 - (b) Streamlines transport related project emissions procedures;
 - (c) Removes restrictions for application in a PoA.

3. Key issues and proposed solutions

3. None.

4. Impacts

- (a) Increased environmental integrity;
- (b) Simplified and streamlined procedures.

5. Subsequent work and timelines

4. Not applicable.

6. Recommendations to the Board

5. The SSC WG recommends that the Board adopt this draft revised methodology, to be made effective at the time of the Board’s approval.

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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)	Plant oil production that is used for generation of thermal, mechanical and electrical energy in stationary equipment including cogeneration. The plant oil is produced from pressed and filtered oilseeds from plants that are cultivated on dedicated plantations
Type of GHG emissions mitigation action	Renewable energy. Displacement of more-GHG-intensive fossil fuel for combustion in stationary installations

2. Scope, applicability, and entry into force

2.1. Scope

2. This methodology comprises activities involving the cultivation of oilseeds and the production of plant oil[†] to generate thermal/mechanical/electrical energy including cogeneration to displace fossil fuel and/or fossil fuel based technologies. Plant oil in contrast to bio-diesel is not trans-esterified but only pressed and filtered from oilseeds.

2.2. Applicability

3. The methodology is applicable under the following conditions:
- Pure plant oil and blends with fossil fuel above 10 per cent by volume of plant oil shall be used in equipment² that is specially built or modified;
 - Plant oil must comply with national quality regulations or in absence of the latter with the quality standards stipulated in Table III.T.1.2 of the methodology “AMS-III.T: Plant oil production and use for transport applications”;
 - The retailers, final users and the producer of the plant oil or its blend are bound by a contractual agreement allowing emission reductions to be claimed only by the project proponent;
 - ~~In accordance with the approved “General guidance on leakage in biomass project activities” for small scale projects, the project participants should demonstrate that the area where the biomass is grown is not a forest (as per DNA forest definition) and has not been deforested, according to the forest definition by the national DNA, during the last 10 years prior to the~~

[†] Plant oil, or vegetable oil, is oil of plant origin composing of triglycerides. Although many different parts of the plants may yield oil, most often oil is extracted from the seeds or fruits of the plant. Examples of plant oil are sunflower oil, rapeseed oil and jatropha oil.

² For internal combustion engines conversion measures include adaptations of fuel supply, combustion and injection mechanisms.

implementation of the project activity. In the absence of forest definition from the DNA, definitions provided by relevant international organizations (e.g. FAO) shall be used. The crop cultivation plantations shall not be established on peatlands;

- (d) The export of plant oil produced under this category is not allowed;
 - (e) Plant oil is not co-fired with solid fuels;
 - (f) If the project activity utilizes biomass sourced from dedicated plantations, the applicability conditions prescribed in the methodological tool "Project emissions from cultivation of biomass" shall apply.
4. The plant oil produced by the project activity may be used as a blend with pure petrodiesel or with petrodiesel that has already been blended with biofuel.³ In the latter case baseline emissions only from the petrodiesel fraction shall be calculated, the biofuel content of the primary blend shall be considered as carbon neutral, however, in the calculation of the project emissions, the fuel used for blending (primary blend) shall be considered as pure petrodiesel i.e. 100 per cent petrodiesel fraction. This conservative approach is used because it may not be feasible to determine the upstream emissions associated with the production of the biodiesel used for the primary blending.
5. Project eligibility limits (capacity limits) are in accordance with the guidelines in:
- (a) AMS-I.C for thermal energy and cogeneration applications;
 - (b) AMS-I.B for mechanical energy applications;
 - (c) AMS-I.D, AMS-I.F or AMS-I.A as the case may be for electricity applications.

2.3. Entry into force

6. The date of entry into force is the date of the publication of the EB 81 meeting report.

3. Normative references

7. Project participants shall apply the "General guidelines for SSC CDM methodologies", and "Guidelines on the demonstration of additionality of small-scale project activities" information on additionality (attachment A to Appendix B) and general guidance on leakage in biomass project activities (attachment C to Appendix B) provided at <http://cdm.unfccc.int/methodologies/SSCmethodologies/approved.html> <https://cdm.unfccc.int/Reference/Guidclarif/index.html> mutatis mutandis.
8. This methodology also refers to the latest approved versions of the following approved methodologies, guidelines⁴ and tools:
- (a) "AMS-I.A: Electricity generation by the user";
 - (b) "AMS-I.B: Mechanical energy for the user with or without electrical energy";

³ It is expected that plant oil is blended with pure petrodiesel, however where the project proponent has no access to pure petrodiesel (e.g. due to local regulations requiring sale of blended petrodiesel in the region/country) blended fuel may be used.

⁴ Please refer to: <https://cdm.unfccc.int/Reference/index.html>.

- (c) “AMS-I.C: Thermal energy production with or without electricity”;
- (d) “AMS-I.D: Grid connected renewable electricity generation”;
- (e) “AMS-I.F: Renewable electricity generation for captive use and mini-grid”;
- (f) “AMS-III.F: Avoidance of methane emissions through composting”;
- (g) “AMS-III.G: Landfill methane recovery”;
- (h) “AMS-III.H: Methane recovery in wastewater treatment”;
- (i) “AMS-III.T: Plant oil production and use for transport applications”;
- ~~(j) —AMS-III.AK “Biodiesel production and use for transport applications”;~~
- (j) “Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion”;
- (k) “Tool to calculate baseline, project and/or leakage emissions from electricity consumption”;
- (l) “Project emissions from cultivation of biomass”;
- (m) “Project and leakage emissions from transportation of freight”.

4. Definitions

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

10. Furthermore, the following definition applies:

- (a) **Plant oil**, or **vegetable oil**, is oil of plant origin composing of triglycerides. Although many different parts of the plants may yield oil, most often oil is extracted from the seeds or fruits of the plant. Examples of plant oil are sunflower oil, rapeseed oil and jatropha oil.

5. Baseline methodology

5.1. Project boundary

11. The project boundary is the geographical area of the cultivation, production and processing of oil-seeds, disposal of waste products and the areas where plant oil is processed/blended. The boundary also extends to the users where plant oil is consumed in the project equipment to produce thermal/electrical/mechanical energy and the end users of the produced energy.

5.2. Baseline emissions

12. The energy baseline and the corresponding baseline emissions for plant oil based renewable energy sources and/or technologies shall be chosen as follows:

- (a) As per the procedures of AMS-I.A if the project activity is for standalone off-the-grid power systems supplying electricity to households/users included in the boundary;

- (b) As per the procedures of AMS-I.F if the project activity displaces electricity from an electricity distribution system that is or would have been supplied by at least one fossil fuel fired generating unit;
 - (c) As per the procedures of AMS-I.D if the project activity supplies electricity to a regional or national grid;
 - (d) As per the procedures of AMS-I.C if the project activity produces thermal energy and/or cogenerates heat and electricity;
 - (e) As per the procedures of AMS-I.B if project activity is generating mechanical energy.
13. For project activities that involve retrofit of an existing facility and/or capacity addition at an existing facility, the baseline emissions shall be calculated following the applicable principles described in AMS-I.D.

5.3. Project emissions

14. Project emissions include:

- (a) CO₂ emissions from on-site consumption of fossil fuels due to the project activity, calculated using the latest version of the “Tool to calculate project or leakage CO₂ emissions from fossil fuel combustion”, including the consumption of fossil fuels for processing (e.g. pressing and filtering) of plant oil and excluding the consumption of fossil fuels related to the cultivation of oil seeds, if any;
- (b) CO₂ emissions from electricity consumption by the project activity using the latest version of the “Tool to calculate baseline, project and/or leakage emissions from electricity consumption”, including the consumption of fossil fuels for processing (e.g. pressing and filtering) of plant oil and excluding the consumption of fossil fuels related to the cultivation of oil seeds, if any;
- (c) Methane emission from solid waste disposal or waste water 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 waste are disposed in anaerobic conditions;
- (d) Project emissions cultivation of oil seeds are calculated using the latest version of the tool “Project emissions from cultivation of biomass”;
- ~~(e) Emissions related to the cultivation of oil seeds and processing/production of plant oil calculated as per the procedures defined in the latest version of AMS-III.T;~~
- (e) Project emissions from transportation of oil seeds to the oil production plant are estimated using the latest version of the tool “Project and leakage emissions from transportation of freight”, have to be accounted for following the procedures in AMS-III.AK if the transportation distance is more than 200 km;; otherwise they can be neglected.

5.4. Leakage

15. Leakage emissions are calculated as follows:

$$LE_y = -LE_{upstream,y} \quad \text{Equation (1)}$$

Where:

LE_y = Leakage in year y (t CO₂)

$LE_{upstream,y}$ = Negative leakage due to reducing indirect emissions associated with the production of petrodiesel (t CO₂)

14. Leakage emissions due to a shift of pre-project activities shall be accounted for as per the approved “General guidance on leakage in biomass project activities” for small-scale project activities.

16. In case oil seeds are cultivated in the baseline situation in the area of land where oil seeds are cultivated in the project situation, produced from waste oil/fat, the guidance on competing uses for biomass in “the General guidance on leakage in biomass project activities” for small-scale projects shall be taken into account. Leakage emissions (LE_y) shall be estimated accordingly and deducted from the emission reductions. The substitution of plant oil for petrodiesel reduces indirect (“upstream”) emissions associated with the production of petrodiesel ($LE_{upstream}$) and is treated as negative leakage⁵ and can be calculated as per the methodological tool “Upstream leakage emissions associated with fossil fuel use”.

5.5. Emission reductions

16. Emission reductions are calculated as follows:

$$ER_y = BE_y - \text{MAX}(PE_y + LE_y, 0) \quad \text{Equation (2)}$$

~~$$ER_y = BE_y - PE_y - LE_y$$~~

Where:

ER_y = Emission reductions in year y (t CO₂e)

BE_y = Baseline emissions in year y (t CO₂e)

PE_y = Project emissions in year y (t CO₂e)

LE_y = Leakage emissions in year y (t CO₂e)

17. The emissions from the production of plant oil are compared to the emissions from the production of the petrodiesel, which is avoided by displacing petrodiesel consumption with plant oil and is considered as negative leakage. The project emissions from the production of plant oil may be compensated by this negative leakage. However, project proponents shall not claim emission reductions from this comparison.

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

6. Monitoring methodology

18. Monitoring parameters shall be as prescribed by the applicable Type I methodology chosen in section 5.2 per paragraph 11 and 12. Project emissions are monitored as per section 5.3 paragraph 13. The applicable requirements specified in the “General guidelines to for SSC CDM methodologies” (e.g. calibration requirements, sampling requirements) are also an integral part of the monitoring guidelines.
19. The occurrence of shift of pre-project activities and the competing uses of biomass shall be monitored and verified.
20. The contracts between the producer of plant oil and the final users and retailers specifying that only the project proponent can claim CERs.
21. If the paragraph 3(a) is applicable then the equipment modification or the installation of the new equipment shall be monitored.

7. Project activity under a programme of activities

- ~~20. As currently constructed this methodology does not apply to a programme of activities. In order for this methodology to be used under a programme of activities further analyses are required, for instance further analysis concerning issues related to the shift of the pre-project activities in the lands where the oil crops are grown and the competing use of biomass is required. Project Proponents are encouraged to submit procedures to address these issues as revisions to make this methodology applicable to a programme of activities for approval by the Board.~~
22. The methodology is applicable to a programme of activities; no additional leakage estimations are necessary other than that indicated under leakage section above.

Document information

<i>Version</i>	<i>Date</i>	<i>Description</i>
02.0	5 September 2014	SSC WG 45, Annex 2 To be considered at EB 81. This document was issued for call for public input from 16 to 31 May 2014. This revision removes the applicability conditions related to land eligibility and project emission calculations related to the cultivation of biomass, removes the restriction for application of methodology in PoAs in methodologies and includes reference to the approved tools.

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01.0	30 July 2010	EB 55, Annex 28 Initial adoption.

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