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TYPE III - OTHER PROJECT ACTIVITIES

Project participants shall take into account the general guidance to the methodologies, information on additionality, abbreviations and general guidance on leakage provided at
http://cdm.unfccc.int/methodologies/SSCmethodologies/approved.html.

III.W. *Methane capture and destruction in non-hydrocarbon mining activities*

Technology/measure

1.   This methodology comprises activities that capture and destroy methane released directly from holes bored to geological formations specifically for mineral exploration and prospecting.

2.   Following conditions are applicable:

(a)   Abandoned or decommissioned mines, as well as open cast mines are excluded. Coal extraction mines or oil shale, as well as boreholes or wells opened for gas/oil exploration or extraction do not qualify under this methodology.

(b)   Project participants are able to demonstrate that the methane captured would have been emitted to the atmosphere in the absence of the project activity using historic mine records and safety procedures. The exploration plans shall be available as required evidence.

(c)   Only methane emitted from structures (adits, boreholes, etc.) designed and installed solely for prospecting of minerals[1] qualify; pre mining drainage related to minerals for which the mine was developed and is being operated does not qualify. Dedicated methane or natural gas extraction is excluded.

(d)   This methodology is applicable to the following cases:

(i)   Structures installed, or boreholes drilled before end of 2001; or

(ii)   Structures installed, or boreholes drilled after 2001 but a minimum of 5 years prior to the submission of the project activity for validation, where it can be demonstrated that the structures or the boreholes were part of an exploration plan.

(e)   This methodology is applicable if baseline scenario is a total atmospheric release of methane. That is, the methodology is not applicable to project activities where part of the methane released is already combusted or used for an application before the implementation of the project activity

(f)   The methodology requires that baseline scenario is compliant with national or local safety requirement or local regulations.

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[1] Reference to 'mineral' in this methodology is to be considered as 'non hydrocarbon mineral'.

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III.W.   Methane capture and destruction in non-hydrocarbon mining activities (cont)

3.   The methodology is applicable to project activities that capture and destroy methane within the project boundary. That means, there will be no transportation, distribution or selling of methane or natural gas to users outside the mining site.

4.   This methodology excludes measures that would increase the amount of methane emissions from the boreholes beyond the natural release as would occur in the baseline. This means forced extraction by pumping; the use of CO_2 or any other fluid/gas to enhance methane drainage is excluded. If a flare is used, the lowest possible fan capacity should be established under which flare can properly operate.

5.   This methodology is not applicable if a combustion facility is used for heat and/or electricity generation. Should there be a case for generation of electricity or thermal energy from the methane, a request for revision of this methodology may be submitted in accordance with the procedures.

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

Boundary

7.   The project boundary is the actual area of the borehole or venting shaft and the infrastructure under the project activity (e.g. pipes, flares, fans, fire breaks, fences and security).

Baseline

8.   In the baseline scenario methane is emitted to atmosphere. The baseline emissions are calculated *ex post* as the methane in the residual gas multiplied with the global warming potential for methane. The baseline emissions are calculated in accordance with the procedures of "Tool to determine project emission from flaring gases containing methane":

$$BE_y = \sum_{h=1}^{8760} TM_{RG,h} * \frac{GWP_{CH4}}{1000} \qquad \textbf{(1)}$$

Where:

BE_y Baseline emissions in year y (tCO₂e)

$TM_{RG,h}$ Mass flow rate of methane in the residual gas (in the Tool it is defined as the gas stream flowing to the flare) in the hour h (kg/h)

GWP_{CH4} Global warming potential for methane (value of 21)

1/1000   Factor to convert kg/y to tonne/y

The *ex ante* baseline emissions is calculated based on measured data prior to the project activity. This requires sampling to assess the expected flow and composition of the residual gas. Such sampling should cover a sufficiently long period of at least one year. If the measurements detect

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any long time trend of decreasing flow or concentration, this should be taken into account for conservative estimations for the crediting period.

Leakage

9.   If the methane recovery and combustion technology is equipment transferred from another activity or if the existing equipment is transferred to another activity, leakage is to be considered.

Project activity emissions

10.   Project activity emissions consist of:

   (a)   Any grid electricity or fossil fuel used in the project equipment. The emissions associated with grid electricity consumption should be calculated in accordance to AMS-I.D.

   (b)   The CO_2 emissions from the combusted methane are calculated and included as project emissions because the methane is from fossil origin.

   (c)   Emissions from un-combusted methane is calculated in accordance with the "Tool to determine project emission from flaring gases containing methane."

Project emissions can be determined as follows:

$$PE_y = PE_{ME,y} + PE_{MD,y} + PE_{UM,y}$$ **(2)**

Where:

PE_y Project emissions in year y (tCO$_2$e)

$PE_{ME,y}$ Project emissions from energy use to capture and use methane in year y (tCO$_2$e)

$PE_{MD,y}$ Project emissions from methane destroyed in year y (tCO$_2$e)

$PE_{UM,y}$ Project emissions from un-combusted methane in year y (tCO$_2$e)

11.   Project emissions from energy use ($PE_{ME,y}$) to capture and destroy methane in year y shall be determined as follows:

$$PE_{ME,y} = PE_{ELEC,y} + PE_{FF,y}$$ **(3)**

Where:

$PE_{ELEC,y}$ Project emissions from the use of electricity for the operation of the facilities installed in the project activity in year y calculated in accordance to AMS-I.D (tCO$_2$)

$PE_{FF,y}$ Project emissions from the combustion of fossil fuels for the operation of the facilities installed in the project activity in year y calculated in accordance with the "Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion" (tCO$_2$e)

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III.W.   Methane capture and destruction in non-hydrocarbon mining activities (cont)

12.   Project emissions from methane destroyed in year *y* ($PE_{MD,y}$) shall be determined as follows:

$$PE_{MD,y} = \sum_{h=1}^{8760} TM_{RG,h} * (\eta_{flare,h}) * \frac{CEF_{CH4}}{1000} \tag{4}$$

Where:

CEF_{CH4} Carbon emission factor for combusted methane (2.75 tCO_2/tCH_4)

$\eta_{flare,h}$ Flare efficiency in hour *h*, according to the "Tool to determine project emission from flaring gases containing methane"

1/1000   Factor to convert kg/y to tonne/y

13.   Project emissions from un-combusted methane in year *y* shall be determined as follows:

$$PE_{UM,y} = \sum_{h=1}^{8760} TM_{RG,h} * (1 - \eta_{flare,h}) * \frac{GWP_{CH4}}{1000} \tag{5}$$

Monitoring

14.   The emission reduction achieved by the project activity will be measured as the difference between the baseline emissions and the project emissions and leakage.

$$ER_y = BE_y - PE_y - LE_y \tag{6}$$

Where:

ER_y Emission reductions in year *y* (tCO_2e)

LE_y Leakage emissions in year *y* (tCO_2e)

15.   The amount of methane actually flared should be monitored in accordance with the "Tool to determine project emission from flaring gases containing methane".

16.   This methodology requires monitoring of the consumption of grid electricity and/or fossil fuel by the project.

Project activity under a programme of activities

This methodology is not applicable to project activities under a programme of activities.

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III.W.   Methane capture and destruction in non-hydrocarbon mining activities (cont)

History of the document

Version	Date	Nature of revision
01	EB 42, Annex 15 26 September 2008	Initial adoption.