

 <p style="text-align: center;"><b>CDM: Proposed New Methodology</b>  <b>Meth Panel recommendation to the Executive Board</b>  <b>(version 03)</b>  <i>(To be used by the Meth Panel to make a recommendation to the Board regarding a proposed new methodology)</i></p>	
Date of Meth Panel meeting:	8-9 September, 2003
Related F-CDM-NM document ID number (electronically available to EB members)	NM0021 CERUPT Methodology for Landfill Gas Recovery
Related F-CDM-NMEx document ID number(s) (electronically available to EB members)	F-CDM-NMEx0021: Stephen Thorne/Naoki Matsuo
Related F-CDM-NMpu document ID number(s) (electronically available to EB members)	F-CDM-NMpu0019: Thomas Martinsen Lambert Schneider
<p><i>Note to those completing this form, as applicable: Please provide recommendations on the proposed new baseline and monitoring methodologies based on an assessment of annexes 3 and 4 and of their application in sections A to E of the draft CDM PDD, desk reviews and public input. Please ensure that the form is entirely filled and that arguments and expert judgements are substantiated.</i></p>	
<b>A. Preliminary recommendations by the Meth Panel</b>	
<b>I. Recommendation on the proposed new baseline methodology: (checkmark the choice made)</b>	
Title of proposed new baseline methodology:>>Baseline methodology for landfill gas recovery with electricity generation and no capture or destruction of methane in the baseline scenario	
<p>a. To approve this proposed methodology with minor changes</p> <p><input type="checkbox"/></p> <p>i. Conditions under which this proposed methodology is applicable to other potential CDM project activities (e.g. project type, region, data availability):</p> <p>&gt;&gt;</p> <p>ii. Minor changes:</p> <p>&gt;&gt;</p>	
<p>b. To reconsider this proposed methodology, subject to required changes</p> <p><input checked="" type="checkbox"/></p> <p>i. Conditions under which the proposed methodology is applicable to other potential projects (e.g. project type, region, data availability):</p> <p>&gt;&gt; Landfill gas projects where there is no partial capture or destruction of methane in the baseline scenario (e.g. no legal obligation, nor contractual agreement for capturing or destroying methane), so that situation without the project would have implied in full atmospheric release of landfill gas. Methodology only applies to projects generating electricity but not claiming emission reduction credits from electricity generation.</p> <p>ii. Required changes:</p> <p>&gt;&gt;The Methodologies Panel has recommended the proposed new methodologies for case NM 0005–rev: "Nova Gerar Landfill Gas to Energy Project" for approval by the</p>	

Executive Board. As proposed new methodologies are approved for similar projects types (e.g. land fill gas recovery) the applicability of each methodology will be clearly defined to avoid the possibility that a project could qualify under multiple methodologies. The Meth Panel may propose revisions to approved methodologies in order to consolidate them in a more general methodology, as appropriate. If both proposals NM005 rev and NM0021 would be approved by the Executive Board the two methodologies will require such consolidation.

Methodology should include an improved explanation on why the main assumption related to the use of the volume of landfill gas actually recovered is a conservative estimation of the additional volume of gases that would have been emitted without the project, once effects related to rate of diffusion of methane to the surface, the percentage oxidation of methane into CO<sub>2</sub>, and the impact of the gas collecting equipments possibly affecting the organic anaerobic fermentation condition from the non-equipments baseline case, are taking into account.

Methodology should include a description on how the project proponents intend to use IRR in their economic analysis, in order to evaluate the different scenarios that show that the situation without the project would have implied full atmospheric release of GHG.

Methodology should define clearly all the terms that are used in the text.

*(Project participants shall make required changes to the proposed new methodology and send it back to the Meth Panel. The proposed new methodology will be reconsidered by the Meth Panel if changes required are made by the project participants. The Executive Board will only consider this proposed new methodology after the revised proposed methodology has been reconsidered by the Meth Panel.)*

c. Not to approve the proposed methodology

☐

i. Reasons for non-approval:

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*(A new proposal should be submitted in accordance with the procedures for submission and consideration of proposed new methodologies of the Executive Board.)*

## **II. Recommendation on the proposed new monitoring methodology: (checkmark the choice made)**

Title of proposed new monitoring methodology: >> [Monitoring methodology for landfill gas recovery without partial capture or recovery of methane](#)

a. To approve this proposed methodology with minor changes

☐

i. Conditions under which methodology is applicable to other potential projects (e.g. project type, region, data availability):

>>

ii. Minor changes:

>>

b. To reconsider this proposed methodology, subjected to required changes

☒

i. Conditions under which the proposed methodology is applicable to other potential projects (e.g. project type, region, data availability.):

>> Landfill gas project activities where there is no consideration of partial capture, or destruction of methane, required or not by legislation, in the baseline scenario, so that situation without the project would have implied in full atmospheric release of landfill gas. Methodology only applies to projects not claiming emission reduction credits from electricity generation.

ii. Required changes:

>> Complete presentation of the methodology should be made including appropriate descriptions of the data to be monitored, recording frequency, as well as exact location where monitoring will take place.

Presentation of the relevant information required for quality control and quality assurance procedures should be included in Annex 4.

*(Project participants shall make required changes in the proposed new methodology and send it back to the Meth Panel. The proposed new methodology will be reconsidered by the Meth Panel if changes required are correctly made by the project participants. The Executive Board will only consider this proposed new methodology after required changes proposed have been made and the revised proposed methodology has been reconsidered by the Meth Panel.)*

c. Not to approve the proposed methodology

i. Reasons for non-approval:

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*(A new proposal should be submitted in accordance with the procedures for submission and consideration of proposed new methodologies of the Executive Board.)*

## **B. Details of the evaluation of the proposed new methodology by the Meth Panel:**

**I. Proposed new baseline methodology (specify title here):** >> Baseline methodology for landfill gas recovery without partial capture or destruction of methane

**(1) Short description of the methodology, including an assessment of which approach from paragraph 48 of the CDM modalities and procedures was used:**

*a) Describe the methodology:*

>> Recovery of LFG, a mixture of mostly methane and CO<sub>2</sub>, is an effective way to reduce the emissions released by a landfill. Taking into account uncertainties and difficulties related to estimation of emissions from land fill operations, the methodology states that it is to be accepted that, for LFG CDM projects, the volume of the LFG actually captured is assumed to be a conservative indication of the additional volume of gas(es) that would have been emitted without the project, which is determined ex-post by measuring and monitoring the project's performance. The baseline setting is focussed substantiating that in the absence of the project there will be full atmospheric release of methane. The methodology provides for the use of a first-order decay model to be used as an ex-ante estimation tool to quantify LFG generation, by using a set of parameters related to waste disposal rate, methane generation potential, methane generation rate, and other parameters (such as temperature, waste distribution, waste volume, landfill depth). The additionality is checked (tested) by using a three-step procedure by considering: a) assessment of legal barriers, b) assessment of economic attractive courses of action, and c) assessment of barriers and common practice.

*b) State the approach selected:*

>>Emissions from a technology that represents an economically attractive course of action, taking into account barriers to investment.

*c) Indicate (in summary form) why the approach selected is the most appropriate. Please provide your expert judgement on the appropriateness of the selected approach to the project category:*

>>The methodology emphasises the use of economic and financial criteria to determine whether the proposed project activity is additional and next a key factor analysis to establish the baseline scenario and calculate baseline emissions. The methodology states that estimation of baseline emissions as such is not so relevant for LFG CDM projects. Emissions reductions are defined as avoided methane emissions that are, by definition, determined ex-post by monitoring amount of LFG extracted. The methodology chooses to give guidance on the estimation of baseline emissions as it plays a crucial role in the ex-ante trade of CERs for these kind of projects.

## **(2) Basis for determining the baseline scenario:**

*a) State whether the documentation explains how the baseline scenario is to be chosen and identified:*

>>The documentation defines the baseline scenario that is most likely to occur in the absence of the proposed project as either: the scenario with the lowest cost/highest IRR or the scenario that would occur after considering common practice or barriers to investment. Project developer must show that the situation without the project would have implied full atmospheric release of LFG.

*b) State the basic underlying rationale for algorithms/formulae used (e.g. marginal vs. average basis) (see also section 4 below):*

>>Comparison of scenarios based on long term cost calculations, assuming no or little income from electricity generation. In case income from electricity generation is considerable, IRR calculation should be used.

*c) State whether the documentation explains how, through the use of the methodology, it can be demonstrated that a project activity is additional and therefore not the baseline scenario. If so, what are the tools provided by the project participants?*

>>Methodology includes general guidelines on three steps to be followed in testing for additionality. There are no specific tools provided by project participants with respect to the definition of the baseline scenario, which is to be identified based on project proponent's ability to set alternative scenarios that would have implied in full atmospheric release of LFG.

*d) State whether the basis for determining the baseline scenario and for assessing additionality is appropriate and adequate:*

>>Baseline scenario selection is a result of the application of a flow chart process to determine additionality. Basis for assessing additionality is the application of the same flow chart that looks at a sequence of legal/economic/financial/barrier analysis to be conducted on scenarios to be defined by the project proponent. There is no methodological definition on how those scenarios can be created by the project proponent.

## **(3) Assessment of the description of the proposed methodology and its applicability**

*a) State whether the methodology has been described in an adequate manner:*

>>Methodology description is adequate as a set of general guidelines, but not adequate as an implementation tool. Methodology does not fully provide methods for all relevant types of landfill projects. Methodology does not check for anaerobic condition between the project scenario and the baseline scenario. Description of methodology is very general and leaves important issues open to project developers. Project boundary includes electricity generation, heat generation and gas purification and the supply of these products to third parties, without presenting methods for calculating associated emissions and reductions.

*b) State whether the proposed methodology is appropriate for the referred proposed project activity and the referred project context (described in Sections A-E of the draft CDM-PDD and submitted along with Annex 3):*

>>Methodology is appropriate to the context of the project; i.e. legislation does not require any activity other than that currently conducted (no enforced methane recovery or extraction and destruction).

*c) State whether the application of the methodology could result in a baseline scenario that reasonably represents the anthropogenic emissions by sources of greenhouse gases that would occur in the absence of the proposed project activity.*

>>Probably yes, but it has to be better substantiated.

*Please explain:*

>>An explanation has to be provided on why it is reasonable (and conservative) to assume that emissions from the landfill are identical for both baseline (release) and project (capture) cases.

#### **(4) Assessment of algorithms/formulae and type of data needed:**

*a) State whether the description of the methodology includes algorithms and generic formulae that can be applied to other potential project activities (if not, the proposed new methodology will be considered as a project-specific methodology):*

>>Methodology states that baseline emissions are determined ex-post by monitoring the amount of LFG extracted. Therefore, ex-ante estimation of them is not so relevant. Methodology gives some guidance for estimating emissions reductions by presenting a simple first-order decay model for the estimation of methane emitted through time (at the same time, the methodology states that the user of the methodology should feel free to use other estimation methods).

Methodology is not clear on the criteria to be used in selecting values for certain coefficients to be used in applying the formulae (for example the coefficient k for landfill gas generation rate).

*b) Explain the spatial scope of data used to determine the baseline and whether the scope is appropriate:*

>>Methodology does not address in an explicit way the treatment of spatial scope of data to be used.

*c) Explain the vintage of data used (in relation to the duration of the project crediting period) and whether the vintage of data is appropriate, indicating the period covered by the data:*

>>The vintage of data is not addressed directly by the methodology.

#### **(5) Definition of the project boundary related to the baseline methodology:**

*a) State how the project boundary is defined in terms of:*

*i) Gases and sources*

>>Indicative steps are presented only for the project scenario and not the baseline scenario. Methodology indicates that all GHG's should be separately listed, and emissions contributing less than 1 percent to the total baseline emission should not be discounted for, suggesting that, in practice, often only methane and CO<sub>2</sub> apply to landfills.

*ii) Physical delineation*

>>Methodology provides a flow chart as well as steps to be considered in doing the physical delineation of the project boundary. It includes the related technologies that affect the project activity emissions: landfill, leachate treatment plant and flare.

*b) Indicate whether this project boundary is appropriate:*

>> Yes.

#### **(6) Key assumptions/parameters (including emission factors and activity levels) and data sources:**

a) List the implicit and explicit key assumptions. Identify those, if any, which are problematic and explain:

>>Most important assumption is that the amount of captured methane is considered to be the best estimate of the additional amount of methane released in the absence of the project. As project proponents state in the draft CDM-PDD, the amount of methane released depends on many factors. Among them, the rate of diffusion of methane through the surface of the landfill and how much methane is oxidized as CO<sub>2</sub>.

b) State whether the key assumptions are arrived at in a transparent manner:

>>Generally transparent, with a few exceptions, such as the assumption that the actual volume of methane captured with the project is a conservative estimate of what would have been emitted extra without the project.

c) Give your expert judgement on whether the assumptions/parameters are adequate:

>>Assumptions/parameters seem to be appropriate but reasons/justifications have to be provided.

d) Indicate which data sources are used and how the data are obtained (e.g. official statistics, expert judgement):

>>No data sources are provided for the rationality of the assumption above.

e) Give your expert judgement on whether the data used are adequate, consistent, accurate and reliable:

>>Data to be used to establish baselines will be obtained ex-post.

f) State possible data gaps:

>>Flare efficiency.

#### **(7) Assessment of uncertainties:**

a) State whether the methodology includes an assessment of uncertainties regarding:

i) The basis for determining the baseline scenario:

>>No.

ii) Algorithms/formulae:

>>No.

iii) Key assumptions:

>>No.

iv) Data:

>>No.

b) State whether the uncertainties presented are reasonable:

>>Incomplete treatment of uncertainties apart from stating that, in LFG projects, it is impossible to predict future emissions levels especially with respect to production levels and extraction efficiency, which depend on a large number of practical and operational factors.

#### **(8) Leakage:**

a) State how the baseline methodology addresses any potential leakage due to the project activity:

>>Methodology states that, for landfill gas recovery projects, no leakage risk is identified, as landfill operation is considered a closed system that does not influence off-site emissions.

b) Indicate whether the treatment for leakage is appropriate and adequate:

>>Treatment of leakage is not appropriate and consistent. Treatment of leakage should consider aspects such as indirect emissions associated with the electricity input through project boundaries, as is the case in

the demonstration of the methodology in the proposed project.

**(9) Transparency and “conservativeness”:**

*a) Indicate whether the baseline methodology was developed in a transparent way:*

>>Baseline methodology is partly transparent, since most of the descriptions seem to correspond to guidelines rather than a definite methodology.

*b) State whether the baseline methodology is conservative:*

>>Hard to assess. Explanation of why the baseline methodology is conservative is not included .

**(10) Potential strengths and weaknesses of the proposed baseline methodology (please explain):**

>>**Strength:**

Methodology is simple in its guidelines.

Methodology suggests using ex-post monitoring of captured amount of methane as the base for estimating emissions reductions, while providing a simple approach for ex-ante estimation of the certified emissions reductions.

Additionality determination is easy, once the baseline scenario and related carbon emissions factors have been set.

**Weakness:**

Construction of cases for the determination of additionality is not clearly indicated.

Methodology does not provide enough reasons to assert that biogas generation and oxidation in the landfill are identical for both the baseline and project cases.

Criteria for defining factors and data to be used are not clearly defined., No equations for the calculation of the emissions reductions are provided, making very difficult to determine what factors are to be taken into account in the calculation (particularly any oxidation in the top layer as well as deposition practices that may affect methane release in the absence of the project).

**(11) Other considerations, such as a description of how national and/or sectoral policies and circumstances have been taken into account (please explain):**

>>Methodology indicates that national landfill operation legislation has to be taken into account when addressing the first assessment to test additionality through the use of the legal obligations of project operation. In case national and/or sectorial policies and circumstances require partial capture of methane, baseline methodology cannot be used.

**(12) Applicability of the proposed methodology across project types and regions (please indicate):**

>>Methodology is intended for use in different types of landfill gas recovery projects, as long as there are no obligations for partial capture of methane.

**(13) Any other comments:**

*a) State whether any other source of information (i.e. other than documentation on this proposed methodology available on the UNFCCC CDM web site) has been used by you in evaluating this methodology. If so, please provide specific references:*

>>None.

*b) Indicate any further comments:*

>>No further comments.



<b>II. Proposed new monitoring methodology (specify title here):</b> >> CERUPT Methodology for landfill gas recovery
<p><i>In respect of the proposed new monitoring methodology, evaluate each section of annex 4 to the draft CDM PDD. Please provide your comments section by section:</i></p>
<p><b>(1) Brief description of new methodology:</b>  <i>Describe new methodology:</i>  &gt;&gt; Methodology is designed primarily to be used in relation with the CERUPT methodology for landfill gas recovery. The methodology considers monitoring of LFG actually recovered, as an indication of the additional volume of gas that would have been emitted without the project.</p>
<p><b>(2) Key assumptions/parameters:</b></p> <p><i>a) List the implicit and explicit key assumptions. Identify those, if any, which are problematic and explain:</i>  &gt;&gt; Monitoring methodology does not include a description of all the assumptions used in elaborating the new methodology. The key implicit assumptions relate to the consideration of monitored LFG actually recovered as an indication of the volume of gas that would have been emitted without the project.</p> <p><i>b) State whether the key assumptions are arrived at in a transparent manner:</i>  &gt;&gt; The monitoring methodology does not provide information on the implicit assumptions, except from stating a fact on the matter.</p> <p><i>c) Give your expert judgement on whether the assumptions/parameters are adequate:</i>  &gt;&gt; Assumptions need to include better justifications.</p>
<p><b>(3) Data sources and data quality:</b></p> <p><i>a) Indicate which data sources are used and how the data are obtained (e.g. official statistics, expert judgement):</i>  &gt;&gt; Methodology submitted in Annex 4 of the draft CDM-PDD includes the following data to be collected: landfill gas recovered, landfill gas composition, LFG flared, LFG vented. The methodology indicates that a monitoring plan should indicate frequency, responsibility, authority, as well as suggesting that internationally recognized methods should be used for monitoring, measurement and calibration. Methodology also indicates that, in case other methods are to be used, correlation should be established with respect to internationally accepted ones.</p> <p><i>b) Give your expert judgement on whether the data used are adequate, consistent, accurate and reliable:</i>  &gt;&gt; The omission of certain variables and, in some cases, where they should be measured, is an indication that monitoring methodology has to be revised.</p> <p><i>c) State possible data gaps:</i>  &gt;&gt; Flare efficiency.</p>
<p><b>(4) Assessment of the description of the proposed methodology and its applicability:</b></p> <p><i>a) State whether the proposed methodology has been described in an adequate manner:</i>  &gt;&gt; Proposed monitoring methodology is not described in adequate manner. There is no inclusion on aspects such as recording frequency, methods to be used, some variables are not defined.</p> <p><i>b) State whether the proposed methodology is appropriate for the referred proposed project activity and the referred project context (described in Sections A-E of the draft CDM-PDD and submitted along with annex 4):</i>  &gt;&gt; Section D of the draft CDM-PDD is more detailed and clear than the proposed monitoring methodology.</p>



No comment can be made since it seems that Section D has been derived not following the proposed monitoring methodology.

c) State whether this proposed monitoring methodology is compatible with the proposed baseline methodology described in annex 3 of the draft CDM-PDD:

>>Monitoring methodology and baseline methodology are not clearly linked.

**(5) Leakage** (please elaborate, if appropriate):

>>Methodology indicates that leakage indicators are not likely to be available for all purposes, indicating that the nature of the project will determine the need and possibility to estimate project leakage. Guidelines are provided but no concrete parameters related to leakage are discussed.

**(6) Quality assurance and control procedures** (please explain):

>>Only very general guidelines are presented with respect to the need to describe quality assurance of monitoring and measurement activities.

**(7) Potential strengths and weaknesses of the proposed monitoring methodology** (please explain):

>>Monitoring methodology aims to be simple but omits monitoring of key issues, such as flare efficiency and policy changes.

**(8) Applicability of the proposed methodology across project types and regions** (please indicate):

>>Methodology cannot be applied to LFG projects where there is partial capture or destruction of methane in the baseline scenario.

**(9) Any other comments:**

a) State whether any other source of information (i.e. other than documentation on this proposed methodology available on the UNFCCC CDM web site) has been used by you in evaluating this methodology. If so, please provide specific references:

>>None.

b) Indicate any further comments:

>>No further comments..



Signature of Meth Panel Chair .....

Date: 16/09/2003

(Jean-Jacques Becker)

Signature of Meth Panel Vice-Chair .....



Date: 16/09/2003

(Franz Capra Tattenbach)

**Information to be completed by the secretariat**

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