

 <p style="text-align: center;"><b>CDM: Proposed new methodology expert form</b> (version 04) (To be used by methodology experts providing desk review for a proposed new methodology)</p>	
Name of expert responsible for completing and submitting this form	Harald Winkler
Related F-CDM-NM document ID number	NM 113
<p>Note to those completing this form, as applicable: Please provide recommendations on the proposed new baseline and monitoring methodologies based on an assessment of CDM-NMB and CDM-NMM 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.</p>	
<b>A. Evaluation of the proposed new methodologies by desk reviewers:</b>	
<b>I. Evaluation of the proposed new baseline methodology:</b>	
Title of new baseline methodology:>> Gas powered combined cycle cogeneration replacing coal based steam generation and grid electricity	
i. Conditions under which this methodology is applicable to other potential projects (e.g. project type, region, data availability): >> Provided by the project participants, with <i>comments by desk reviewer in italics</i> : <ol style="list-style-type: none"> <li>1. Fuel switching from imported grid (dominated by coal) electricity and coal based steam generation to combined heat and power provision to an industrial plant wherever the data exists to calculate the baseline and project activity emissions. <i>Consider adding (dominated by coal and/ or oil)</i></li> <li>2. Where the cogeneration plant is owned and run by the plant it provides energy to, or by a third party operator.</li> <li>3. The heat and power provided by the cogeneration plant contributes part of the energy requirements for the demand of the plant to which it provides utility. <i>Significant if avoided transmission &amp; distribution (T&amp;D) losses are claimed.</i></li> <li>4. The leakage calculation includes a component that is applied to the production of a synthetic gas equivalent in part to natural gas. <i>Note: this does not seem to be an applicability condition; it seems to be a specific issue for the underlying project's emission factors. Consider omitting.</i></li> <li>5. This methodology is to be used in conjunction with "Monitoring methodology for gas powered combined cycle cogeneration replacing coal based steam generation and grid electricity." <i>Always linked to NMM, consider omitting.</i></li> <li>6. Excess electricity is not exported to the grid.</li> </ol> Further conditions for consideration by the Panel: <ol style="list-style-type: none"> <li>7. Foot note 10 refers to retrofits and the guidance from EB8. Is the NMB applicable only up to existing capacity of the facility? Also, D.7 introduces a constraint relationship which "ensure[s] that the useful heat needed is common for each element process in both projectand baseline scenarios". If not, a different baseline must be applied to the extension beyond existing capacity.</li> </ol>	
ii. Strengths and weaknesses of the methodology: >> Strengths:	

The methodology draws on approved methodologies, notably ACM0002, AM0008, AM0014 and the additionality tool.

The methodology allows for the use of syngas as equivalent to natural gas, but would be applicable in cases where only natural gas is used.

Weaknesses:

The methodology draws on the additionality tool, but in places suggests that some parts of the tool alone are sufficient (see B.I.2.d).

The methodology in some places takes a “cut-and-paste approach” to approved methodologies, without sufficiently adapting them to the specific methodology being proposed. This is the case in section D.3 in particular (see minor changes below).

Furthermore, consideration should be given in D.6 whether all options for the operating margin are applicable to this NMB. The NMM requires monitoring of  $\lambda$ , which possibly implies that the simple adjusted OM is to be used.

A narrative description of the project boundary would be helpful (see section 5 below).

- iii. Any changes needed to improve the methodology:
  - a. Minor changes:>>

In D.3

- The additionality tool is largely replicated. However, the applicability conditions make clear that other benefits will be needed, and so sub-step 2a (simple cost analysis) is redundant and should be omitted. Similarly, in 2b, government bond rates and bankers views seem unnecessary as benchmarks, the company internal benchmark would be appropriate for a fuel switch.
- Sub-step 2c correctly includes that the PDD should include “a clear comparison of the financial indicator”, but this is absent in the associated PDD, raising doubt whether the methodology is clearly understood.
- Sub-step 3a: are investment barriers needed, since the NMB proposes using step 2 (investment test) separately?
- Sub-step 3a: For technological barriers, the PDD includes a flow-chart which is not included in the NMB. Since the project participants have developed a means of testing this barrier, it should be included in the NMB.

D.6

- The paragraph on additionality (starting “The methodology uses ...”) is redundant.
- Step 3 of combined margin: Delete the sentence on “Alternative weights ...” as none are proposed.
- Rename factors  $BE_y$  to separate the electricity baseline ( $BE_{y,elec}$ ) and heat baseline ( $BE_{y,heat}$ ) and reserve  $BE_y$  for the total baseline emissions.
- The project participants need to re-write the formula for total baseline emissions in the standard format, e.g.  $BE_y = BE_{y,heat} + BE_{y,elec}$ . The current formulation includes previously undefined terms (MCEO, which should be  $GEN_y$ ), etc. The way  $EF_{y,T\&D}$  is used here would only count the emissions associated with avoided T&D losses (since Equation 13 subtracts  $EF_y$ ) which does not seem to be the intention. It is unclear what the term  $BE_y/Y$  means.
- All equations need to be numbered consecutively, this is started but not carried through.
- In D.8, the equation for  $LE_y$  is repeated; the final term should be in the same notation as other terms; and each new term should be described below the equation (as done for equation 4 and several others).
- Similarly in D.9, the formula should be  $ER_y = BE_y - PE_y - LE_y$

See further detailed comments in Section B.1 below.

## b. Major changes:&gt;&gt;

Avoided T&D losses are counted to increase baseline emissions and hence ultimately CERs (D.6, step 3 of the OM). While the rest of the combined margin for the electricity baseline is taken directly from ACM0002, this introduces a new element. No clear methodology is proposed for estimated T&D losses, other than being “supported by documentary evidence”. Its use in the formula for total baseline emissions seems to be erroneous (see minor change above).

The panel might consider omitting this part of the methodology, OR retaining it, but strengthening the applicability condition to refer only to auto-generators, explicitly ruling out consideration of non-technical losses and requiring the project participants to provide suggestion on how the location of the plant within the grid is to be taken into account.

Note: AM 0010 (LFG with electricity generation, based on Durban LFG) does not adjust for T&D losses, but uses a system-average emission factor.

**II. Evaluation of the proposed new monitoring methodology:**

Title of new monitoring methodology: >> [Baseline methodology for gas powered combined cycle cogeneration replacing coal based steam generation and grid electricity](#)

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

>> [See conditions for NMB.](#)

- ii. Strengths and weaknesses of the methodology:

>>

[Strengths:](#)

[Includes a wide range of parameters to be monitored.](#)

[Appropriate for use with the NMB.](#)

[Weaknesses:](#)

[The methodology in some places takes a “cut-and-paste approach” to approved methodologies, without sufficiently adapting them to the specific methodology being proposed. In particular, long sections of the combined margin NMB are repeated in the NMM.](#)

- iii. Any changes needed to improve the methodology:

- a. Minor changes:>>

[Shares of natural gas \(NG\) and syngas might be monitored.](#)

[See detailed comments in section B.II below.](#)

- b. Major changes:>>

**B. Details of the evaluation of the proposed new methodology by the desk reviewer:**

**I. Proposed new baseline methodology (*specify title here*): >>** [Gas-powered combined-cycle cogeneration replacing coal-based steam-generation and grid-electricity](#)

**(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:*

>> [Synthetic gas generated from natural gas with the emissions intensity per unit energy of natural gas equivalent \(separately verified\) is supplied by pipeline for the production of heat and power using a combined cycle gas turbine. The heat and electricity generated in the project activity is used at the industrial plant partly replacing existing sources of heat and power. The project activity heat replaces that](#)

generated by coal on site and the electricity from the project activity replaces that generated by coal on site and that imported from the national grid. The baseline emissions consist of existing actual emissions or historical emissions from the coal fired boilers and the emissions from the production of grid electricity taking into account transmission and distribution losses.

A combined margin methodology is used to calculate the baseline emissions for the electricity component, while the baseline emissions for heat draw on emissions factors for the various fuels. Additionality is established using the additionality tool, with particular emphasis on technological barriers.

*b) State the approach selected:*

>> 48a

*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 approach is appropriate for a fuel switch in an existing facility.

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

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

>> Yes.

Step 1: establish the alternative to the project activity.

Step 2: assess which alternatives are plausible.

Step 3: assess the investment requirements for the project activity base-case.

Step 4: compare the investment requirements with the alternatives to the project activity.

Step 5: establish whether the return on the base case is sufficient to allow it to proceed (if so the project activity is the baseline unless there are other barriers.)

Step 6: assess the project for barriers to implementation (technical, normal practice, availability of finance etc.)

Step 7: calculate the emissions in the baseline and the project activity.

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

>> For electricity, a combined margin approach is used, BUT adding avoided T&D losses.

The heat baseline considers the fuel consumption \* emission factor for each fuel in the baseline scenario and the project activity.

*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?*

>> Yes, it uses the additionality tool.

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

>> Yes, except for suggestions in places that single parts are sufficient on their own, e.g. section B: "Key tests are the investment analysis and the technical barrier approach" and D.3: "The argument for the additionality of the project is based on the technology barrier element."

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

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

>> It is generally adequate. However, improvements in drafting would include

- more careful *application* of approved methodologies, rather than simple cut and paste.
- consistent numbering and formatting of formulas

*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 CDM-NMB):*

>> Yes, it is appropriate for the fuel switch project described in the underlying PDD, with appropriate modifications.

*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.*

>> Yes.

*Please explain:*

>> The combined margin is an accepted means of establishing the baseline emission for electricity generation. The heat baseline uses a simple (activity level \* emission factor) approach.

The only question relates to T&D losses.

#### **(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):*

>> Yes, it could be used for other project activities. Indeed, other cases might well not use syngas, but could use this methodology without the specific factors for syngas.

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

>> The spatial level of the data is specified in Table 2, E.4. Most of the data is at local scale, with a few national data points, and only emission from natural gas being international. Electricity-related items (ID 6 and 20) should be national (or grid operator).

*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 NMB indicates that Consolidated data over the past 3 years prior to the crediting period should be used where possible.

#### **(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*

>> The gases are clearly listed in D.5, and include CO<sub>2</sub>, CH<sub>4</sub> and N<sub>2</sub>O from combustion on site, as well as "CH<sub>4</sub> leaks" (a good term for fugitive emissions); CO<sub>2</sub> from electricity generation and CO<sub>2</sub> -eq from transportation

*ii) Physical delineation*

>> A diagram is provided in D.5, but no narrative.

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

>> The description of gases and sources is appropriate, except that the transportation emissions should also include transport of natural gas

However, a narrative description of the physical delineation would help avoid confusion about the project boundary. The diagram is very specific to the underlying project.

In particular, it is not clear whether electricity imported from the grid are within the project boundary. The project participants may wish to define a 'system boundary' for electricity, especially if they want to adjust for avoided T&D losses.

#### **(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:*

>> Several important key assumptions are included in the applicability conditions stated by the project participants (See A.1.i above).

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

>> Mostly transparent, except in relation to T&D losses.

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

>> The inclusion of T&D losses depart from ACM0002.

The derivation of the emission factors for syngas is not clear.

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

>>

The data sources are listed clearly in E.2, and include IPCC, gas suppliers, T&D authority and many “to be elaborated by PP”.

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

>> In many cases these are adequate, but better sources should be

- baseline power production: grid operator

- baseline heat production: company records, public

- Quantity of NG used to produce syngas: syngas company records

f) *State possible data gaps:*

>> As above.

**(7) Assessment of uncertainties:**

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

i) *The basis for determining the baseline scenario:*

>> Yes, if the set of plausible alternatives is incomplete.

ii) *Algorithms/formulae:*

>> Yes, if financial analysis is not conservative.

iii) *Key assumptions:*

>> As above, plus gas provision in the project activity.

iv) *Data:*

>> No.

b) *State whether the uncertainties presented are reasonable:*

>> Yes, the PP propose to use ISO QA/QC systems.

**(8) Leakage:**

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

>>

Emissions from the use of the incremental natural gas at a synthetic fuel plant, fugitive CH<sub>4</sub> emissions from

gas transmission and CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O emissions from coal and ash transportation are categorized as leakage. Emissions from fuel transportation are counted only if the fuel is transported in a non-Annex I country.

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

>> Generally adequate. The reduced emissions from coal transport would be ‘positive leakage’, and should be balanced not only by consideration of fugitive emissions of natural gas, but possibly also by the energy required for the transport of the natural and synthetic gases.

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

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

>> Yes, in most aspects, the methodology is transparent. What is not clear:  
 - the methodology for comparing the financial indicator is only asserted, and is not implemented in the associated PDD.  
 - No clear steps to estimate T&D losses (see ‘major changes’ above).

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

>> Mostly yes, but excluding avoided T&D losses, or a tighter definition together with strong applicability conditions limiting it to auto-generators, would make it more conservative.

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

>>

**Strengths:**

The methodology draws on approved methodologies, notably ACM0002, AM0008, AM0014 and the additionality tool.

The methodology allows for the use of syngas as equivalent to natural gas, but would be applicable in cases where only natural gas is used.

**Weaknesses:**

The methodology draws on the additionality tool, but in places suggests that some parts of the tool alone are sufficient (see B.I.2.d).

The methodology in some places takes a “cut-and-paste approach” to approved methodologies, without sufficiently adapting them to the specific methodology being proposed. This is the case in section D.3 in particular (see minor changes above).

Furthermore, consideration should be given in D.6 whether all options for the operating margin are applicable to this NMB. The NMM requires monitoring of  $\lambda$ , which possibly implies that the simple adjusted OM is to be used.

A narrative description of the project boundary would be helpful (see section 5 above).

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

>> Specific circumstances of a syngas industry have been taken into account.

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

>> With appropriate modifications, the methodology could be applicable to switches to natural gas (even without syngas) from coal or oil.

**(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:

>> [ACM0002, AM0008, AM0014 and the additionality tool.](#)

b) Indicate any further comments:

>> [None.](#)

**II. Proposed new monitoring methodology (specify title here):** >> [Monitoring methodology for gas-powered combined-cycle cogeneration replacing coal-based steam-generation and grid-electricity](#)

*In respect of the proposed new monitoring methodology, evaluate each section of CDM-NMM to the draft CDM-PDD. Please provide your comments section by section:*

**(1) Brief description of new methodology:**

*Describe new methodology:*

>>

The methodology requires monitoring of the quantity of natural gas used in the combined heat and power plant and monitoring the quantities of both heat and power that are provided for the operations. The amount of heating and electricity provided in the project activity can then be used to estimate the emissions from the baseline electricity and heat sources. The grid emission factor and parameters needed to calculate the combined margin are monitored. T&D losses and other aspects of grid operation are also included. The factor  $\lambda$  is monitored for the OM. Fuel efficiency are either measures *ex ante* or in the case of the natural gas, “early”.

**(2) Key assumptions/parameters:**

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

>> [Avoided T&D losses can be counted. See discussion in NMB above.](#)

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

>> [The key assumption are mostly transparent, except for T&D losses.](#)

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

>> [Generally adequate,](#)

[In Table B.2.1 and / or B.4.1, a factor indicating the shares of NG and syngas might be included.](#)

[The NMM could be improved by defining “early”, e.g. within the first 3 months of project operation.](#)

[In Table B.2.3, it should read “electricity imported from the grid” not exported. CO<sub>2</sub> should have a subscript.](#)

[The detailed repetition of the NMB steps for the combined margin \(section B.2.4\) seems unnecessary.](#)

**(3) Data sources and data quality:**

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

>> [Several data variables are measured.](#)

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

>> [Yes.](#)

c) *State possible data gaps:*

>> [Shares of syngas and natural gas.](#)



**(4) Assessment of the description of the proposed methodology and its applicability:**

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

>> The NMM is generally adequately described. However, in some parts, the NMM suggests that the baseline is monitored (e.g. sub-heading “baseline monitoring methodology”). Reference should be made to monitoring parameters that may be used to update the baseline emission, and the frequency of such updates (annual, at the renewal of the crediting period) should be specified).

*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 CDM-NMM):*

>> Yes, it is appropriate to the fuel switch project described in the associated PDD.

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

>> Yes.

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

>> As with the NMB, the energy emissions associated with natural gas transport might be monitored, if positive leakage from avoided emissions from coal transport are to be counted.

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

>> This is adequately considered in B.7; however, the project participants should clarify “PI system”.

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

>>

Strengths:

Includes a wide range of parameters to be monitored.

Appropriate for use with the NMB.

Weaknesses:

The methodology in some places takes a “cut-and-paste approach” to approved methodologies, without sufficiently adapting them to the specific methodology being proposed. In particular, long sections of the combined margin NMB are repeated in the NMM.

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

>> With appropriate modifications, the methodology could be applicable to switches to natural gas (even without syngas) from coal or oil.

**(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:*

>> ACM0002, AM0008, AM0014 and the additionality tool.

*b) Indicate any further comments:*

>> None.

Signature of desk reviewer .....

Date: / /

Information to be completed by the secretariat	
F-CDM-NMex doc id number	
Date when the form was received at UNFCCC secretariat	
Date of transmission to the Meth Panel and EB	
Date of posting in the UNFCCC CDM web site	