CDM: Proposed new methodology expert form (version 04)

(To be used by methodology experts providing desk review for a proposed new methodology)

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Related F-CDM-NM document ID number	NM0126

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.

A. Evaluation of the proposed new methodologies by desk reviewers:

I. Evaluation of the proposed new baseline methodology:

Title of new baseline methodology:>>

Measurement of the abatement of Nitrous Oxide (N_2O gas) from a nitric acid plant

*[**Note**]*

The proposed methodology NM0126 is almost (97%?) identical to NM0117 (and to NM0111 (90%?)). The difference is:

- NM0111: Targeting N_2O decomposition at the tail gas point;

- NM0117: Targeting N_2O decomposition is by installation of secondary catalyst in the reactor (baseline emissions measurement at the inlet of the destruction facility ex post).

- NM0126: Targeting N_2O decomposition is by installation of secondary catalyst in the reactor (baseline emissions measurement in the stack gas prior to catalyst installation).

i.e., mainly differentiated by the point of N_2O destruction (NM0111 and others) and when baseline emissions are monitored (NM0117 and NM0126).

The desk reviewer was in charge of a desk review for NM0117 (not for NM0111), which is almost the same as NM0126. Therefore, the resulted review is almost the same as for NM0117.

The changes (additional points) of the desk review of NM0126 from NM0117 are specified in red.

The desk reviewer considers that the project participants of Annex I (they are common for NM01117 and NM0126) should provide one methodology which covers both cases in order to avoid utilizing resources of the Meth Panel to review and consolidation.

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

>>Modified by the desk reviewer with the explanation [*italic* in the bracket is the comments by the desk reviewer]

Project type:

N_2O destruction project from N_2O waste stream from a nitric acid production plant.

[In the original methodology, it says that the N_2O from "stack gas". This may cause some confusion; therefore, the term "waste stream" is used here instead. It also says that catalytic technology is applied for N_2O destruction. This condition can be removed (if taking account of energy use by the destruction technology).]

Applicability conditions:

- The abatement technology does not target the N_2O forming process;
  [This is redundant when we limit the technology targeting "destruction of waste stream". However, it may be better to clarify it as an applicability condition.]

In the original methodology, the following conditions are specified.
[*However, these are not needed theoretically.*]

- The nitric acid plant has not installed any N_2O destruction or abatement technology that reduces the entire N_2O in the waste gas stream;

In the original methodology, the following conditions are specified.
[*However, this condition is not needed because the original methodology cover the cases of installation of some regulation. As far as the desk reviewer knows, no non-Annex I country has introduced regulation to reduce N_2O emissions from nitric acid plant. Therefore, taking the type E− policy consideration into account, this condition is not needed.*]

- The host country regulations do not restrict N_2O emissions;

In the original methodology, the following conditions are specified.
[*However, these may not be relevant because the abatement technology only focuses on the waste stream of N_2O.*]

- The project activity does not cause a nitric acid production increase;

In the original methodology, the following conditions are specified. [*However, This may not be justified because the abatement technology may use electricity or heat, thus increase CO_2. If not, how to demonstrate whether this condition is met should be described in the methodology. In case to consolidate this methodology to NM0111 (targeting the tail gas), this condition shall be omitted anyway.*]

- The project activity in specific to the reduction of N_2O only and will not lead to an increase in any other gases present in the waste gas stream;

In the original methodology, the following conditions are specified.
[*However, it is not relevant to specify the "baseline" emissions in the applicability condition because the "baseline" is determined after applying the conditions. Only "the amount of N_2O" is enough, or this condition is not needed in the "baseline" methodology.*]

- The N_2O baseline emissions and N_2O emissions related to the project activity are measurable in real time upstream and downstream of the catalytic destruction facility;

In the original methodology, the following condition is specified. This condition is needed.
[*Section D.6. says that "the presence of the existing SCR-DeNO_X unit tends to increase rather than decrease the N_2O emissions of a nitric acid plant. Therefore, the ex-ante measurement of the baseline emission at the inlet of the N_2O destruction catalyst installation represents a conservative determination of the baseline N_2O emissions". This is the reason why NSCR-case is excluded because this case is not justified. On the other hand, IPCC Good Practice Guidance says that SCR-DeNO_X unit does not affect N_2O. It is better to clarify this point.*]

- The nitric acid plant has not already installed a Non-Selective Catalytic Reduction Unit (NSCR) for the destruction of NO_X.

[*The desk reviewer believes that one more applicability condition is needed:*

- *The nitric acid plant does not have a plan to change its production configurations; or if such change is planned, it shall be demonstrated the change would not to increase N_2O emission rate.*

The reason why this condition should be added is as follows. The N_2O emission rate depends on the nitric acid production process. Therefore, there are possibilities to change/manipulate the configuration of the nitric acid production process to emit more N_2O to be destructed in order to get more CERs afterwards. In order to exclude this case, additional condition is needed. Another possibility to exclude this case is to set the ceiling rate on $(N_2O)/(HNO_3)$ as in

the case of AM0001.

In addition, it may be better to confirm that all N_2O is emitted to atmosphere before implementation of the project, in order to avoid the case that N_2O is sold/used somewhere (e.g., for anesthesia purpose…)]

ii. Strengths and weaknesses of the methodology:

>>Strength:

Basically, the methodology covers most of the relevant aspects of the methodology of this type of the project.

Weakness:

Minor corrections and/or shortening the logics are preferable (because of redundancy) as shown below. It should be mentioned that the *ex ante* (prior to installation of the catalyst) monitoring of the baseline emissions specified in the methodology is "very conservative" (section C.2.) in comparison to *ex post* (after implementation of the project) one shown in NM0117. The explanation "accurate but very conservative" means contradiction. (Graph one is lack of explanation).

iii. Any changes needed to improve the methodology:

a. Minor changes:>>

- For applicability conditions, see above.
- Energy use for destruction technology should be included or discussed appropriately.
- Baseline scenario identification needs some more explanation.
- Additionality test can be streamlined.
-

b. Major changes:>>

Explanation why the *ex ante* method to monitor the baseline emissions is conservative. It seems that the *ex post* method shown in NM0117 is more accurate.

The desk reviewer believes that this methodology should be consolidated to NM0111 and NM0117 if the appropriateness (conservativeness in this case) is explained properly.

II. Evaluation of the proposed new monitoring methodology:

Title of new monitoring methodology: >>

Measurement of the abatement of Nitrous Oxide (N_2O gas) from a nitric acid plant

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

>>Same as the baseline methodology.

It is possible and preferable to set the condition that the continuous monitoring shall be done at the input and output points of the destruction equipment in the monitoring methodology if it is not in the applicability conditions in the baseline methodology.

ii. Strengths and weaknesses of the methodology:

>>

Strength:

Simple and well elaborated.

Weakness:

Some discussion/assessment on the calibration frequency may be needed.

Energy CO_2 for operation of the destruction equipment may need to be monitored (if some justification to neglect it is not provided) while how to monitor it is lacking.

Monitoring points should be specified in a figure.

Not all of parameters are specified in the table.

Ex ante or *ex post* measurements are not explicitly mentioned.

iii. Any changes needed to improve the methodology:

a. Minor changes:>>See above weakness.

Some figure is better to be provided specifying the monitoring points of all parameters.

b. Major changes:>>No.

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

I. Proposed new baseline methodology *(specify title here):* >>

Measurement of the abatement of Nitrous Oxide (N_2O gas) from a nitric acid plant

(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:

>>

Followings are what/how the desk reviewer understands the methodology. The original methodology includes some redundant explanations:

As the result, emission reductions of N_2O are monitored as the "difference between the emissions of output (measured *ex ante*) and output (measured *ex post*) of the destruction equipment".

This is justified by the followings:

(1) The project focuses on the "N_2O destruction after formation",

(2) De-NO_X equipment after the N_2O destruction equipment does not lead to count more emission reductions.

(3) Nitric acid plant configuration change will not generate more N_2O than otherwise.

(4) The N_2O generation rate (from nitric acid plant) nor destruction rate (at the DeN_2O equipment) does not affect the resulted reduction amount although they may vary dependent on temperature and pressure.

Explanation for (1):

If the N_2O abatement focuses on the "forming process" of N_2O/nitric acid, the abatement activity may influence the amount of nitric acid produced or improve energy efficiency or add some other values. On the other hand, as this methodology focuses on the destruction of waste N_2O, it does not lead to generate other values. Of course the project needs some cost, additionality is apparent and it can be concluded that the baseline scenario is "without the project activity" case. (In case something is installed in the nitric acid production process, it does not affect the emission reduction amount to be monitored afterwards.)

Explanation for (2):

As the DeNO_X equipment is situated after the DeN_2O equipment for this case (NM0111 case may be different), if the DeNO_X equipment reduces N_2O, the reduction of N_2O at the DeN_2O equipment over-count the resulted reductions. This possibility is excluded in the applicability condition.

Explanation of (3):

As explained in the applicability conditions above, this condition (added by the desk reviewer) exclude the

case of manipulation to generate more N_2O in order to obtain more CERs.

Explanation of (4):

The N_2O generation rate is "independent" of the existence/non-existence of the DeN_2O equipment. Even if the DeN_2O rate varies, direct measurement of input and output points N_2O stream ensures the real reduction at the DeN_2O equipment. This is not the case if we use some "default" values.

On the other hand, the methodology lacks the assessment of the scenario "NSCR-$DeNO_X$ equipment will be installed" as the baseline scenario. This scenario reduces more N_2O than current SCR-$DeNO_X$ equipment. (The methodology specifies that the NSCR-type is not installed before implementation of the project in the applicability condition, while the baseline scenario is the scenario in the *future*.)

b) State the approach selected:

>>(a) Existing actual or historical emissions, as applicable.

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 above selection is more appropriate than others as the direct measurement is the key characteristic of the methodology.

(2) Basis for determining the baseline scenario:

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

>>The methodology explains:

> Step 1: Determine the baseline scenario by analysing all the options available to the project participants
>
> The first step includes the continuation of the status quo, the proposed project scenario and any other scenario that might be applicable.

without explaining what kind of other scenarios are possible. This may be insufficient. However, as explained in B.I.(1) a above, the baseline scenario is easily concluded as the "no DeN_2O equipment" case because the project does not generate other values than N_2O reductions as in the case of approved methodologies for HFC23 destruction from HCFC22 plant and N_2O destruction from adipic acid plant.

In the PDD, three different types of N_2O abatement technology are mentioned as the alternatives. The primary one is related to the forming process of N_2O, therefore it is excluded by using the last applicability condition added by the desk reviewer. Other two options targets waste stream of N_2O, therefore they cannot be the baseline scenario without any regulation on N_2O emissions.

On the other hand, the methodology lacks the assessment of the scenario "NSCR-DeNO_X equipment will be installed" as the baseline scenario. This scenario reduces more N_2O than current SCR-DeNO_X equipment. (The methodology specifies that the NSCR-type is not installed before implementation of the project in the applicability condition, while the baseline scenario is the scenario in the *future*.)

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

>> See B.I.(1) a above.

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?

>>The methodology utilizes the "Additionality Tool" successfully.

However, the additionality is apparent for this case (because there are no other values), even without the Tool which is for more general cases (See B.I.(1) a above).

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

>>Appropriate.

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

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

>>Yes, although some simplification and/or minor modifications are needed.

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.

But the desk reviewer recognizes that this judgement is beyond the review process of the "methodology"

(*i.e.*, role of the DOE).

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. But the desk reviewer recognizes that this judgement is beyond the review process of the "methodology" (*i.e.*, role of the DOE).

Please explain:
>>This is straightforward as shown in B.I.(1) a above.

(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.
The formula includes the cases separated by the type of regulation to be set in the future. However, considering the "type E–" policy, these cases do not have to be considered.

b) Explain the spatial scope of data used to determine the baseline and whether the scope is appropriate:
>>The data used are the emissions monitored at the input and output points of the destruction facility. This scope is appropriate. However, the CO_2 associated with the energy use at the destruction equipment shall be incorporated.

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 data used are monitored *ex post* for project emissions, while *ex ante* for baseline emissions. The vintage for project emissions is appropriate, while the reason why *ex ante* estimation is better should be explained.

(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

>>N_2O generated from the nitric acid production process (for the baseline measured *ex ante*) and remained N_2O after destruction (for the project) measured at the output points of the destruction equipment *ex post*.

ii) Physical delineation

>>Nitric acid production facility including the destruction equipment.

b) Indicate whether this project boundary is appropriate:

>>Appropriate. In addition, CO_2 from additional energy use by the operation of destruction equipment is needed or demonstrated to be negligibly small. (It is mentioned in the monitoring methodology without specifying how to calculate/monitor it).

(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:

>>The key parameters are the amount of N_2O *ex ante* and *ex post* at the point after the destruction equipment. No significant assumptions.

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

>>No significant assumptions.

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

>>Key parameters are adequate if this methodology (*ex ante* monitoring for the baseline emissions) is justified.

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

>>No outer sources are used.

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

>> No outer sources are used. Data to be monitored are appropriate.

f) State possible data gaps:

>>None.

(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:

>>No. It is preferable to assess the uncertainty range of the resulted amount of emission reductions, *e.g.*, difference between *ex ante* and *ex post* measurement, originated by the errors associated by the flowmeter, CO_2 from additional energy use at the destruction equipment (which is lack of the methodology, while it may be under the error range of N_2O measurements).

(8) Leakage:

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

>>No leakage is identified.

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

>>At least, CO_2 from additional energy use at the destruction equipment (which is lack of the methodology, while it may be under the error range of N_2O measurements) should be discussed.

(9) Transparency and "conservativeness":

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

>>Yes.

b) State whether the baseline methodology is conservative:

>>As far as the $DeNO_X$ equipment is concerned, SCR $DeNO_X$ units may provide some conservativeness, while the associated amount is not provided.

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

>>The methodology is simple and appropriate, if it reduces redundancies/streamlines the logics and adds some minor points as shown in this comment.

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

>>It can be broadly applicable to most of the non-Annex I countries without N_2O regulation.

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

>>Please see A.I.i abobe.

(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:

>>IPCC Good Practice Guidance.

b) Indicate any further comments:

>>None.

II. Proposed new monitoring methodology *(specify title here):* >>

Measurement of the abatement of Nitrous Oxide (N_2O gas) from a nitric acid plant

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:

>>As the amount of N_2O emission reduction is represented by the N_2O amount difference between *ex ante* and *ex post* of the installation of the destruction equipment (as specified in the baseline methodology), the monitoring methodology focuses on how to monitor such amounts as the product of "volume flow rate", "N_2O concentration" and "operation hours".

(2) Key assumptions/parameters:

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

>>The algorithm is provided in the baseline methodology. Minor missing item is how to monitor the energy CO_2 at the destruction facility.

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

>>Yes.

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

>>Yes.

(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):

>>All data are directly measured. (No default value is used).

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

>>Adequate.

c) *State possible data gaps:*

>>No.

(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:

>>Yes.

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. Although the desk reviewer believes that this is beyond the role of the methodology assessment.

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)*:

>>No leakage is specified.

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

>>Only qualitative statement is provided. It is preferable to describe the frequency of the calibration with suitable assessment (*e.g.*, error range estimation).

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

>>The methodology is simple and appropriate.

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

>>This is applicable to the project specified in the applicability conditions which is common for the baseline methodology.

It is possible and preferable to set the condition that the *continuous* monitoring shall be done in the monitoring methodology if it is not in the applicability conditions in the baseline methodology.

(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:

>>IPCC Good Practice Guidance.

b) Indicate any further comments:

>>None.

Signature of desk reviewer ……

Date: 04 / 08 / 2005

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