CDM: Proposed New Methodology
Meth Panel recommendation to the Executive Board
(version 04)
(To be used by the Meth Panel to make a recommendation to the Board regarding a proposed new methodology)

Date of Meth Panel meeting:	October 17 - 19, 2005
Related F-CDM-NM document ID number (electronically available to EB members)	F-CDM-NM0126: "National Fertilizers Limited (NFL) Nitrous Oxide Abatement Project "
Related F-CDM-NMex document ID number(s) (electronically available to EB members)	F-CDM-NMex0126: Brodmann / Matsuo
Related F-CDM-NMpu document ID number(s) (electronically available to EB members)	F-CDM-NMpu0126: Heilig / Zheng

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. Preliminary recommendations by the Meth Panel

I. Recommendation on the proposed new baseline methodology: *(checkmark the choice made)*

Title of proposed new baseline methodology:>> Measurement of the abatement of Nitrous Oxide (N_2O gas) from a Nitric acid plant.

a. To approve this proposed methodology with minor changes

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

>>

ii. Minor changes:

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

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

>> (As proposed in the methodology)

The methodology is applicable to project activities in existing nitric acid plants which destroy nitrous oxide (N_2O) in the stack gas of the nitric acid plants under following conditions [though section B seems to limit its application to secondary destruction of N_2O (with particular reference to BASF AG of Germany provided technology)].

1) 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
2) The nitric acid plant has not already installed a Non Selective Catalytic Reduction Unit (NSCR) for the destruction of NO_X.
3) The project activity will not cause an increase in nitric acid production.

4) The project activity is 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.
5) The N_2O baseline emissions and N_2O emissions related to the project activity are measurable in real time only upstream of the catalytic N_2O destruction facility.
6) Host country regulations do not restrict N_2O emissions.

Comments:

- Conditions 1, 2 can be aggregated and made more versatile (e.g. The project activity has/ will not install(ed) any N_2O destruction or abatement facility in the tail gas of the nitric acid plant, including NSCR unit for NO_X destruction.)
- Regarding condition 3 and 4, these may be unnecessary if it the methodology is limited to secondary destruction of N_2O (which parts of CDM-NMB seem to suggest).
- Condition 6 is not necessary since the question of national regulation is addressed in the calculation formula.
- In line with similar methodologies （e.g. AM0001 and AM0021, this methodology should apply to existing plants which have been in operation, with its design capacity serving as a limit.

ii. Required changes:

>>

Major changes:

The methodology need to:

1) Clearly delineate what will be measured in the four weeks preceding installation (which would be *ex-ante* measurement and not *ex-post,* as suggested by the project proponent) and what will be measured after the installation *ex-post*. Measuring all relevant baseline items *ex-ante* is not acceptable since this has a serious implication in that the resulting baseline N_2O emission is measured independent of HNO_3 production, which is completely unrealistic. (i.e. project proponents can claim the entire CERs when HNO_3 production is stopped). This should be amended. Calculation of baseline N_2O emission should be linked to actual facility performance figures such as HNO_3 production and / or operating time. It needs to be demonstrated that the duration of measurement period (four weeks in the proposed methodology) is appropriate in terms of addressing measurement fluctuation etc., and the key parameters which might affect N_2O emission (pressure, temperature, catalyst composition and ammonia volume) is within the normal range of variation. During this period, relationship between key parameters and production needs to be analyzed, in order to cater for *ex-post* monitoring.
2) Take into account the possibility of N_2O baseline emission reduction due to the reduction of nitric acid production, or changes in operating conditions (e.g. pressure). Such parameters could be monitored *ex-ante*.
3) Address the possibility of intentional increase in baseline N_2O production (i.e. gaming).
4) Address the potentially large uncertainty with respect to N_2O measurement.
5) Redraft the applicability condition, referring to the comments above.
6) Describe how various baseline options can be evaluated

Minor changes:

1) Pictures 1 and 2 shall be made more clear.
2) All formulas should be numbered.
3) Description of the equation term is repeated, and slightly different

(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

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i. Reasons for non-approval:

>>

(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: >> Measurement of the abatement of Nitrous Oxide (N_2O gas) from a Nitric acid plant.

a. To approve this proposed methodology with minor changes

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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.):

>> The same as in baseline section.

ii. Required changes:

>>

Major changes:

- See comments for CDM-NMB

Minor changes:

- Definitions for variables should be different for baseline and project emissions.
- Regulation should be "measured", not "calculated".
- Description of the equation term is repeated.

(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

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i. Reasons for non-approval:

>>

(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):* >> 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:

>> This methodology concerns projects that destroy N_2O, formulated as a by-product of nitric acid manufacture, through the installation of a secondary catalyst.

N_2O is a gas which passes through the entire process unchanged and is released to the atmosphere with the tail gas, unless abatement equipment is installed. The proposed methodology is intended for project activities which aim at destroying N_2O in the reactor gas of nitric acid plants by installing a special catalyst anywhere between the platinum gauzes of the ammonia burner and the entry of the absorption tower (="secondary" approach for N_2O destruction). The catalyst decomposes N_2O into N_2 and O_2.

The methodology assumes that the project activity has no influence on the amount of N_2O formed. Since N_2O abatement is likely to occur directly after the gauzes located in the reactor basket (preferred location for "secondary approach"), baseline emissions can not be monitored once after the project is implemented. Hence, baseline emissions are monitored ex-ante, prior to the installation of the catalyst.

Project emissions are determined based on the monitored volume and N_2O content of the stack gas. Installation of the catalyst is assumed not to result in any other emissions (e.g., no consumption of fuels, electricity, or reducing agents).

Emission reductions are the difference between the baseline and project emissions. No leakage of emissions outside the project boundary is expected.

b) State the approach selected:

>> The approach selected is as per paragraph 48 (a) of the CDM modalities and procedures: "Existing 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:

>> This approach was selected on the grounds that it is the most consistent approach.

Judgement:

Existing or historical emissions may be the most plausible approach, but this is selected without consideration of alternatives. Conceivable options are recycling of N_2O as feedstock or external use of N_2O. Such possibilities may be small, but some examination of such baseline scenario options would be called for.

(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 to analyse the status quo, the proposed project scenario, and any other scenario that might be applicable to determine the baseline scenario, but does not define how. In its present form, it is a foregone conclusion that, in the absence of regulations to limit N_2O emissions, the only option is the status quo, i.e., to vent the gas destroyed.

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

>> The formula for emission reduction is based on comparison of quantity of N_2O emissions prior to and after the installation of the catalyst. The quantity of N_2O is calculated as the product of N_2O concentration and the volume of gas containing N_2O; baseline emission is monitored ex-ante (prior to catalyst installation) and project emission is monitored ex-post. The methodology does not take into account the (unintended) reduction of baseline emissions due to the reduction of nitric acid production or changes in operated conditions.

If regulation to limit N_2O is implemented, baseline emission is the emission limit of N_2O (i.e. N_2O reductions are additional only when reduction in emission is in excess of what is mandated by the regulation).

It is assumed that for N_2O, the operating pressure of the ammonia burner influences N_2O production. This implicates the necessity of the monitoring of operating conditions, to prevent the overestimation of baseline emissions. The methodology should address this issue, quantifies its effect, and seek adjustments in the estimation of baseline (either by quantifying its effect or ensuring conservativeness by other means)

The methodology attempts to measure the relevant parameters related to baseline emissions in the four weeks preceding installation of the project activity. This is not acceptable since this has a serious implication, as the resulting baseline N_2O emission is measured to be independent of HNO_3 production, which is completely unrealistic. (i.e. project proponents can claim the entire CERs when HNO_3 production is stopped). This is not *ex-post* measurement as is asserted by the methodology, rather this is *ex-ante* (the mention of an ex-post determination prior to installation (section D.6) is self-contradictory). This has to be amended. Calculation of baseline N_2O emission should be linked to actual facility performance such as HNO_3 production and / or operating time.

It needs to be demonstrated that the duration of measurement period (four weeks in the proposed methodology) is appropriate in terms of addressing variations in the key parameters which might affect N_2O emission (pressure, temperature, catalyst composition and ammonia volume) and are within the normal range of variation. During this period, relationship between key parameters and production needs to be analyzed, in order to cater for *ex-post* monitoring. .

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 NM demonstrates additionality through the four steps, which, while not identical with the "tool to demonstrate additionality", draws upon the tool.

Condition:	Corresponding step of "Tool for the demonstration and assessment of additionality:
1. Compliance with N_2O regulation at project start.	Step 1 (w/o identifying lawful alternatives)
2. Project activity is not common practice.	Step 4 (largely literal quote)
3. Project activity not commercially viable w/o CERs	Steps 2 (largely literal quote)
4. CER revenue makes project activity financially viable.	Step 5

As an additional key element, the methodology provides for monitoring of N_2O regulation during the crediting period. Regulatory requirements to control N_2O emissions will be incorporated in the baseline from the moment implementation of such control becomes mandatory.

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

>>

1) Baseline scenario determination

The methodology does not adequately address the issue of baseline scenario determination. Section D.1 (baseline determination scenario) should be examining the option of various baselines, not defining a decision formula of whether the project activity is additional. Plausible baseline alternatives other than continuation of current practices are as follows:

- External use of N_2O (anaesthesia, etc.)
- "Incidental" reduction of N_2O due to policies to reduce NO_X (such as NSCR, which, while being costlier to operate, has the benefit of reducing both NO_X and N_2O)
- The project activity or other measures which intentionally or unintentionally reduce N_2O.

2) Additionality

The methodology deals with recovery and destruction of N_2O currently vented as a byproduct. As with the case of AM0001 and AM0021, additionality is straightforward to demonstrate if it becomes apparent that the baseline is the continuation of current activities. It is concluded that, additionality determination is treated appropriately and adequately save for the cases when "incidental" N_2O reduction is anticipated in as a side effect of NO_X reduction.

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

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

>>The methodology is described in an adequate manner, to the extent that the calculation is simple and straightforward. However, there are reservations, as shown below.

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):

>>Not appropriate, for the following reasons:

- According to this methodology, all relevant parameters pertaining to baseline emission will be measured *ex-ante*, in a four-week period. Since N_2O production is affected by nitric acid production as well as operating conditions, this may lead to a clearly unrealistic baseline emission when HNO_3 production is decreased or stopped. A clear distinction of parameters to be measured *ex-ante* and *ex-post* should be made. Section F (uncertainties) may be addressing this case, if so it is not clear. This has to be amended by e.g. combining *ex-ante* measurement of baseline emission rate (e.g. N_2O/HNO_3) by *ex-post* measurement of real-time data against which such rates can be applied to (e.g. production data of HNO_3). In such case, it needs to be demonstrated that the duration of measurement period (four weeks in this case) is appropriate in terms of addressing fluctuation in the key parameters which might affect N_2O emission (pressure, temperature, catalyst composition and ammonia volume) and are within the normal range of variations. This is necessary to demonstrate that intentional increase in N_2O production does not occur.
- Baseline destruction of N_2O after the reactor, as is being discussed in NM0117, is not taken into consideration.

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, if applicability conditions are redrafted (see below).

Please explain:

>> The applicability conditions need redrafting, to be made suitable for all SCR technologies which reduce N_2O emissions though section B seems to limit its application to secondary destruction of N_2O (with particular reference to BASF AG supplied technology).

- Conditions 1, 2 can be aggregated and made more versatile (e.g. The project activity has/ will not install(ed) any N_2O destruction or abatement facility in the tail gas of the nitric acid plant, including NSCR unit for NO_X destruction.)
- Regarding condition 3 and 4, these may be unnecessary if it the methodology is limited to secondary destruction of N_2O (which parts of CDM-NMB seem to suggest).
- Condition 6 is not necessary since the question of national regulation is addressed in the calculation formula.
- An additional condition should be imposed which limits application only to existing HNO_3 production capacities. This prevents perverse incentives as well as making it unnecessary to take into account improvement in HNO_3 production efficiency.

If these changes are incorporated into the methodology its application 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.

(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):

>> The methodology includes algorithms and generic formulae, which are potentially applicable to a wide range of byproduct N_2O destruction projects (though the extent of application remains unclear).

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

>>Yes, adequate:

Site: N_2O emission (though measured *ex-ante* at stack gas);

National: National regulations (on N_2O control)

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:

>> Methodology states that "Based on the fact that baseline and project emissions are monitored *ex-post* there is no restriction on the vintage of data". Since baseline emission is monitored *ex-ante*, this is an erroneous statement, which should be corrected.

(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 facilities, and N_2O remaining after destruction.

ii) Physical delineation

>> Nitric acid production facility.

b) Indicate whether this project boundary is appropriate:

>> Appropriate.

(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:

>> It appears that the key assumptions are stability of N_2O formulation (i.e. potential decomposition of N_2O after the gauze, while still in high temperature / pressure conditions).

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

>> Not transparent. The methodology makes no mention of this assumption; if this is not an important issue, it should be stated as such.

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

>> Not adequate.

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

>> Most data are site-specific. Exceptions are data used for the purpose of projection, which is taken from IPCC Guidelines (1996) & Good Practice Guidance (2000). No specific sources are indicated regarding national regulations of NO_X and N_2O.

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

>> The data are adequate and consistent, subject to the changes specified above.

f) State possible data gaps:

>>

(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. Key factors of uncertainties are listed in Section F., but not addressed appropriately.

iv) Data:

>>No mention of data uncertainty is made. Further discussion on the uncertainty related to flow measurement techniques would be helpful, along with how quality and conservatism can be ensured.

b) State whether the uncertainties presented are reasonable:

>> See comments above.

(8) Leakage:

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

>> Lekage is not assumed to occur since it is claimed that the secondary catalyst will result in no measurable increase in utility usage in the plant.

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

>> While it may be appropriate for the particular technology (BASF) for which the methodology seems to be intended, it is not clear as to whether the above apply to all secondary destruction methods. Consistency with applicability conditions need to be refined.

(9) Transparency and "conservativeness":

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

>> Yes, it is transparent.

b) State whether the baseline methodology is conservative:

>> Not conservative, since potential baseline destruction downstream of the ammonia reactor is not dealt with. Furthermore, it is not clear whether *ex-ante* monitoring of four weeks prior to catalyst installation is sufficient in terms of conservativeness.

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

>>Strength: simple and straightforward, and most of the information would be easily available

Weakness: does not address the possibility of oversetimating emissions reductions and potentially large uncertainty on baseline N_2O emission due to changes in operating conditions.

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

>>

National and sectoral regulations and policies for control of N_2O will be taken into account:

- Project facility must be in compliance at the start of the project activity;
- N_2O regulation is part of the monitoring and baseline will be adjusted during the crediting period if such regulation is introduced;
- It must be shown that the project activity is not common practice at nitric acid plants in the region.

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

>> The proposed methodology can be applicable to many non-Annex I countries, most of which do not have policies and regulations for N_2O reduction.

The methodology is not applicable across regions for project activities which reduce N_2O emissions at existing nitric acid plants through end-of-pipe treatment of the tail gas ("tertiary approaches" according to CDM- NMB Section B).

The proposed methodology is, in its present form, not applicable to project types which consumes significant amount of energy and/or has the risk of releasing methane as a reducing agent (e.g. NSCR).

The proposed methodology is, in its form, applicable to all regions.

(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.

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:

>> The monitoring methodology focuses on the method of monitoring 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:

>> See above.

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 measured directly on-site.

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

>> Yes.

c) *State possible data gaps:*

>> None.

(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:

>> Generally, 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):

>> Appropriate (though it is believed that the baseline methodology should be improved).

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

>> Compatible (though it is believed that the baseline methodology should be improved).

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

>> Generally, yes.

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

>> The methodology denotes that calibration procedure is to be developed for routine calibration of key parameters. This needs to be more specific, noting the instrument, calibration frequency and applicable

industry standards.

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

>>

Strength:

- Simple and straightforward, and most of the information would be easily available.

Weakness:

- Key parameters on baseline and project N_2O measurement does not have a built-in check and balance mechanism (e.g. such as comparison of purchase record when measuring electricity generation in power projects). Therefore, extra care is needed to ensure the accuracy of data. The methodology in its current form does not offer a convincing view.

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

>> The proposed methodology is, in its form, not applicable to project types which consumes energy and/or has other source of emissions (e.g. use of methane as a reducing agent).

The proposed methodology is, in its form, applicable to all regions.

(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: 24/10/2005 *(Jean-Jacques Becker)*

Signature of Meth Panel Vice-Chair ……..

Date: 24/10/2005 *(José Miguez)*

Information to be completed by the secretariat	
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