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

Date of Meth Panel meeting:	7 - 8 JULY 2003
Related F-CDM-NM document ID number (already available to EB members)	NM0016 Graneros plant fuel switching project in Chile
Related F-CDM-NMex document ID number(s) (electronically available to EB members)	*Related F-CDM-NMex document ID number(s) (electronically available to EB members)* F-CDM-NMex0016: Ingo Puhl / Pedro Maldonado
Rel4ated F-CDM-NMpu document ID number(s) (electronically available to EB members)	F-CDM-NMpu0016 Öko-Institut / Hamburg Institute of International Economics

Recommendations by the Meth Panel

Recommendations on baseline methodology(ies): Panel selected option (b) below.

a. Methodology approved/Approved with minor changes

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

ii. Minor changes

b. <u>Methodology may be approved, subjected to required changes</u>

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

Applicable to projects involving industrial fuel switching from coal and petroleum fuels to natural gas.

The methodology is only applicable if the use of coal and/or petroleum fuels is less expensive than natural gas per unit of energy in the country and sector.

Since the proposed CDM project activity seeks to switch fuel in an existing facility, the baseline may refer to the characteristics (i.e. emissions) of the existing facility only to the extent that the project activity does not increase the capacity and lifetime of the existing facility. For any increase of capacity and lifetime of the facility which is due to the project activity, a different baseline shall apply.

ii. Required changes

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

- In response to public comment, the methodology has included a wider range of emissions in the calculation of baseline emissions in a revised version of the CDM-PDD (Annex 3, section 6). The project boundary "shall encompass all anthropogenic emissions by sources of greenhouse gases (GHG) under the control of the project participants that are significant and reasonably attributable to the CDM project activity" (CDM-PDD glossary). There is no evidence that emissions from mining, transportation and gas field exploration are under the control of the project participants, and should rather be treated as leakage, if significant. The project participants are invited to reconsider which gases should most appropriately be included in the methodology for calculating baseline emissions (Annex 3, section 6), and which are treated under leakage (Annex 3, section 7). This should be consistent with the definition of the project boundary. The project participants may wish to refer back to the inclusion of gases in these sections in the CDM-PDD originally submitted to the EB (marked May 2003).
- The methodology proposes to test additionality through economic and financial analysis showing that the fuel switch is "not the most economic option from the project sponsor's perspective" (Annex 3, section 6). The spreadsheets mentioned in Annex 3, section 6, have been made available and the methodology described in section 2.2 of Annex 3. The formulas used could be elaborated in section 6.
  - A description of trends in coal and natural gas consumption in the country/region and sector should be included in the methodology, i.e. Annex 3 requires that this is outlined. It should also be included in the CDM-PDD submitted for validation.
  - To be replicable, the methodology should specify that the financial test and criteria should be appropriate to the country and sector.
- The proposed methodology should use only one approach (48 (a)), referring to the calculation of emission reductions. This single approach should be clearly indicated in Annex 3 and applied in the CDM-PDD (see section 2). If a different approach is implicit in the process used for additionality determination, this does not need to be reflected in the selection of approach.
- The method of establishing key parameter should be outlined explicitly in the baseline methodology (Annex 3) (see section 3 below).
  - The efficiency of coal and gas equipment is stated, but it is not apparent how it is derived. Efficiency of equipment should be verifiable, either by sources or calculations. A possible example is provided in Section 3.
  - For fuel consumption, growth rate and future emissions growth rate is below historical growth rate in fuel consumption. The financial analysis is not sensitive to this parameter and the parameter is monitored.
- Many formulae/algorithms and spreadsheets have already been included in the methodology - ensure that all are included in Annexes 3 and 4, not [only] in the CDM-PDD.
- The project participants may wish to consider further detailed suggestions in the text of recommendation below.

Recommendations on monitoring methodology(ies): Panel selected option (b) below.

a. Methodology approved/Approved with minor changes as attached

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

ii. Minor changes

b. **Methodology may be approved, subjected to required changes**

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

Applicable to projects involving industrial fuel switching from coal and petroleum fuels to natural gas.

ii. Required changes

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

Monitoring methodology needs to take into account proposed changes to the baseline methodology.

Additional parameters that should be monitored at each renewal of the crediting period:

- The price differential between coal and gas in the host country.
- The share of imported versus domestic coal, and the actual emission factor characteristic of coal and gas consumed in the host country (here Chile).

c. Methodology not approved

i. Reasons for non approval

(May be resubmitted in accordance with the procedures for submission and consideration of proposed new methodologies of the Executive Board)

Details of the evaluation of the proposed new methodology by the Meth Panel:

New baseline methodology(ies)

Section 2. Description of the methodology:

Title: "Baseline methodology for industrial fuel switching from coal and petroleum fuels to natural gas".

The methodology is proposed for project activities that reduce GHG emissions through fuel switching. The project consists of investment to replace the use of the coal and other fossil fuels by natural gas. It applies to a context where coal is currently used to generate steam and process heat. The required conversion would be financed in part by income derived from the sale of carbon credits.

The baseline scenario is one where coal is less expensive than natural gas and the proposed fuel switch is thus not implemented. Baseline emissions are derived from historical fuel consumption for the base year, and thereafter by assumed growth in the consumption. Baseline CO_2 emissions are calculated from base year fuel consumption, multiplied by an emission factor and using a lower heating value. Growth in fuel consumption is assumed at 2.5% ex ante, apparently based on lower bound of historical growth of coal consumption, but actual consumption of natural gas is monitored. Methane emissions in the coal baseline are calculated similarly, using a GWP of 21.

Section 2.1. General approach

Is the approach selected the most appropriate (see paragraph 48 of the CDM M&P)?

The methodology lacks clarity as to which approach is chosen, the one outlined in paragraph 48 (a) or paragraph 48 (b) of the CDM modalities and procedures. Both are ticked in Annex 3 and in the draft CDM-PDD, B.1.

- The calculation of emissions reductions is based on historical fuel consumption and the approach outlined in paragraph 48 (a) is deemed more appropriate in one place in the draft CDM-PDD (section B.2);
- The determination of additionality (Annex 3, section 6) is based on economic and financial criteria, showing that the fuel switching option is not the most economic option;
- The proposed methodology should use only one approach, referring to the calculation of emission reductions. This single approach should be indicated in Annex 3 and applied in the draft CDM-PDD (see section 2). The economic analysis of additionality does not imply that approach of paragraph 48 (b) is chosen.

Section 2.2. Overall description

Adequacy of methodology description

Generally adequate.

Appropriateness of determining the baseline scenario proposed. Does the baseline scenario reasonably represent the anthropogenic emissions by sources of greenhouse gases that would occur in the absence of the proposed project activity? Explain.

The methodology is appropriate, and it provides a good methodology for this project type of demonstrating that the project activity is additional, i.e. it is not part of the baseline scenario. This could be taken further, however, in the basic formulae for determining the reduced fuel costs and the financial test (in this case, an

improvement in NPV) (see section 6).

Section 3. Key parameters/assumptions (including emission factors and activity levels), and data sources considered and used:

Reliability, accuracy and adequacy of data required (e.g. your expert judgement on the emissions factors and activity data used)

Key implicit and explicit assumptions (if any)

a. Identification

b. Acceptability

Transparency

Key parameters include the base year, emission factor, LHV heat value, equipment conversion efficiency for coal and NG respectively, NG consumption, coal and gas prices, heat or steam output, and others. These parameters should be verifiable either by citing sources, or own calculations if derived by the project participants.

The combustion efficiency of the existing coal fired boilers could be better justified by ex ante verification, as follows:

$Heat_{coal\ boiler} = CSMP_{coal} \times LHV_{coal} \times r_{coal} \times ef_{coal}$, and

$ef_{coal} = Heat_{coal\ boiler} / (CSMP_{coal} \times LHV_{coal} \times r_{coal})$.

The data on the right hand side of the formulae would be available based on historical existing data, where, on an annual basis:

$CSMP_{coal}$ is coal consumption;

LHV_{coal} is the lower heating value of coal;

r_{coal} is coal combustion rate in the boiler; and

ef_{coal} is the heat conversion efficiency of the coal fired boiler.

A parameter used to illustrate that the project activity is not economically attractive and therefore not the baseline scenario is the future emissions growth rate. Annex 3 indicates that these are determined principally by coal consumption (section 2.2). In applying the methodology to the project activity, a factor of 2.5% is derived as being "likely to be a lower-bound of the expected emission reductions. (The annual average growth rate of coal consumption at the Graneros plant was 4.4% per year, for the 1998-2002 period.)". However, algorithm to derive the lower bound is not stated, nor is the factor derived in the spreadsheets. It is not possible to replicate this aspect of the methodology. Generalising from this case, a possible methodology would be:

- The future emissions growth rate should be the lower bound of growth rate of coal consumption for the previous 5-year period

However, the methodology limits the risk of inaccuracies in this assumption by providing for updating the *ex ante* estimate based on monitored consumption of natural gas.

Section 4. Definition of the project boundary related to the baseline methodology:

Coverage of project boundary (adequate?):

a. *Gases and sources*

b. *Physical delineation*

Methane emissions from transport and fugitive emissions from coal mining are well accounted for. Methane emissions from combustion are included in the methodology, even though in the case of this project activity they are estimated to only account for 0.05% of the total project emissions.

The methodology should include a means of demonstrating that emissions from non-CO_2 gases can be considered negligible. Based on such a demonstration, it seems acceptable to consider only the significant gases (in this project activity, CO_2) for both the project and the baseline.

Section 5. Assessment of uncertainties:

Key implicit and explicit assumptions (if any)

a. Identification

b. Acceptability

Section 6. Description of how the baseline methodology addresses the calculation of baseline emissions and the determination of project additionality:
Please evaluate the proposed new methodology:

"Description of how the anthropogenic emissions of GHG by sources are reduced below those that would have occurred in the absence of the registered CDM project activity *(i.e. explanation of how and why this project is additional and therefore not the baseline scenario)"*

The methodology proposes to test additionality through economic and financial analysis showing that the fuel switch is "not the most economic option from the project sponsor's perspective" (Annex 3.6). Information has been provided by the project participants, making their calculations for additionality transparent.

However, the methodology (Annex 3, section 6) does not include a description of the steps followed.

Section 7. Description of how the baseline methodology addresses any potential leakage of the project activity:

Emissions of CH_4 from exploitation of natural gas fields are not considered.

Formulae for methane emissions from the pipeline should be part of the methodology in Annex 3, not section E of PDD.

Section 8. Criteria used in developing the proposed baseline methodology, including an explanation of how the baseline methodology was developed in a transparent and conservative manner:

Section 9. Assessment of strengths and weaknesses of the baseline methodology:

Section 10. Other considerations, such as a description of how national and/or sectoral policies and circumstances have been taken into account:

The methodology should consider whether there is a change of environmental policy by the company to switch from coal to a cleaner fuel like natural gas.

In addition, please address the following aspects

Applicability of methodology across project types and regions

See main recommendations above (("b") i).

Any other comments

New monitoring methodology(ies)

In respect of new monitoring methodology(ies), evaluate each section of Annex 4. Please provide your comments section by section:

Brief description of new methodology:

Description of new methodology:

Title: Monitoring methodology for industrial fuel switching from coal and petroleum fuels to natural gas.

The monitoring plan records natural gas consumption at the industrial plant, on a monthly basis, as well as coal and petroleum fuels. Methane emissions from natural gas pipeline leakage are estimated from natural gas consumption data, combined with standard estimates of emissions factors.

To verify that the plant is operating under conditions similar to those at validation, the methodology adds an annual survey of equipment that uses fossil fuels at the plant, and a record of plant production data.

Proposed data to be monitored

GHG related data:

- Volume (m^3) of natural gas used at the plant
- Quantities of any other fossil fuels still used in the plant, if any, after fuel switching, e.g. coal, diesel, LPG.
- Estimation of methane emissions from pipeline leakage (internal and external to project site)

Not to be considered for emission reduction calculations:

- Survey of the technology used at the Nestlé Graneros plant, including inventory of all fossil fuel using equipment; this survey will be conducted annually;
- Production of the plant

Non GHG-related data:

- Company's internal health record: the company will monitor occupational health in order to detect if the project has substantially improved the health condition of its employees.
- This program will be based on internal health records; and records of absenteeism due to sickness
- In addition, the company will aim at maintaining its existing internal programmes related to social and environmental quality, which also serve as indicators of the company's commitment to this aspect.

Assessment of whether and why this methodology is appropriate:

Additional parameters that should be monitored:

- At each renewal of the crediting period, the price differential between coal and gas in the host country, and the data sources for those prices, should be cited for renewal of the baseline.
- At each renewal of the crediting period, the share of imported versus domestic coal, in order to verify that the assumed lower heating value of imported coal is still applicable.
- The heat outputs (D.3.8) should also be collected along with the natural gas data in order to verify the natural gas consumption and that of other fossil fuels, if any.

Data:

Where are the data obtained (e.g. official statistics, expert judgement)?

Most of the data are collected routinely by the staff of the proposed project activity.

Leakage:

Adequately deals with leakage from natural gas pipelines.

Assumptions used:

QA/QC procedures:

Potential strengths and weaknesses of the methodology:

Application of methodology elsewhere:

Applicable to projects involving industrial fuel switching from coal and petroleum fuels to natural gas.

Please also address the following

Applicability of methodology across project types and regions

Any other comments

Signature of Meth Panel Chair

Date: 11 July 2003

Signature of Meth Panel Vice-Chair

Date: 11 July 2003

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