CDM: Proposed New Methodology
Meth Panel recommendation to the Executive Board
(version 03)
(To be used by the Meth Panel to make a recommendation to the Board regarding a proposed new methodology)

Date of Meth Panel meeting:	8-9 September, 2003
Related F-CDM-NM document ID number (electronically available to EB members)	F-CDM-NM0016 - rev Graneros plant fuel switching project in Chile
Related F-CDM-NMex document ID number(s) (electronically available to EB members)	F-CDM-NMex0016: Ingo Puhl / Pedro Maldonado
Related F-CDM-NMpu document ID number(s) (electronically available to EB members)	F-CDM-NMpu0016 Öko-Institut Hamburg Institute of International Economics

Note to those completing this form, as applicable: Please provide recommendations on the proposed new baseline and monitoring methodologies based on an assessment of annexes 3 and 4 and of their application in sections A to E of the draft CDM PDD, desk reviews and public input. Please ensure that the form is entirely filled and that arguments and expert judgements are substantiated.

A. Final recommendations by the Meth Panel

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

Title of proposed new baseline methodology:>> Baseline methodology for industrial fuel switching from coal and petroleum fuels to natural gas

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):

>>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. Minor changes:

>>The required changes in the proposed new methodology have mostly been incorporated correctly by the project participants and sent back to the Meth Panel for reconsideration. The following minor changes are still necessary:

1) According to the recommendation by the Meth Panel in the previous F-CDM-NMmp-NM0016 ver 2 regarding the project boundary and leakage, emissions from mining, transportation and gas field exploration have been moved to indirect off-site emissions, since they are not under the control of the project participants. This should be consistent

with the definition of the project boundary. However, under leakage (Annex 3, section 7) it should be stated more clearly that indirect off-site emissions are what constitutes leakage. Moreover as leakage should also be "measurable", the net change in emissions, that results from leakage, should be added in the calculation of the emission reduction in a CDM-PDD submitted for validation. In case the leakage is not measurable, it should be addressed qualitatively in the section of leakage, and then assessed in the section of uncertainty, if significant.

2) A clear test of additionality (lower NPV) is specified, although no formulae are given. The detailed formulae and algorithm (described in section E of draft CDM-PDD) need however to be explicitly described in Annex 3, section 6.

3) Furthermore, to be replicable, the methodology needs to specify that the financial test (NPV) and criteria should be appropriate to the country, sector and project participants. Specifically, the choice of discount rate should be justified and appropriate to the country, sector and project participants. The means of establishing the cost of capital in the proposal NM0005 may be taken into account.

4) A description of trends in both coal and natural gas consumption and their prices in the country/region and sector should be outlined in the methodology, i.e. Annex 3. It should also be included in the CDM-PDD submitted for validation. In the revised submission, only trends in natural gas consumption are to be monitored. Actual fuel consumption for coal and baseline emissions is derived ex-post from the monitored consumption of natural gas and the ratio of efficiency of natural gas equipment to coal equipment.

5) The ratio of the efficiency of natural gas equipment to coal equipment should be calculated ex post using the monitored gas equipment efficiency.

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

☐

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

>>

ii. Required changes:

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(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: >>Industrial fuel switching from coal and petroleum fuels to natural gas

a. To approve this proposed methodology with minor changes

☒

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

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

The methodology is only applicable in conjunction with the baseline methodology described above, e.g. 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. Minor changes:

>>The required changes in the proposed new methodology have mostly been incorporated correctly by the project participants and sent back to the Meth Panel for reconsideration. The following minor changes are still necessary:

1) According to the previous recommendation by the Meth Panel (F-CDM-NMmp-NM0016 ver 2) additional parameters should be monitored at each renewal of the crediting period:

? The price differential between coal and gas in the host country. Prices are monitored, so changes in price differentials can be seen.

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

2) Additionality according to the proposed baseline methodology strongly depends on the financial and economic analysis/test based on the prices of the coal, oil and the natural gas. A provision for "additionality" to be monitored and verified should be added at each renewal of the crediting period.

b. To reconsider this proposed methodology, subjected 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.):

>>

ii. Required changes:

>>

(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):* >>Baseline methodology for industrial fuel switching from coal and petroleum fuels to natural gas

(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:

>>Title of the baseline methodology: "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 an 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 the use of coal is less expensive than the use of natural gas and the proposed fuel switching is thus not implemented. Projected baseline emissions are derived from historical fuel consumption for the base year, and thereafter by assumed growth in the consumption. Actual baseline emissions are derived ex-post from the monitored consumption of natural gas and the ratio of efficiency of natural gas equipment to coal equipment. Methane emissions in the coal baseline are calculated similarly, using a GWP of 21.

b) State the approach selected:

>>Approach of "The existing actual or historical emissions, as applicable" as outlined in paragraph 48 (a) of the CDM modalities and procedures, is selected.

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 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;

According the further clarification given by EB 10 meeting, such financial test of additionality does not imply that approach of paragraph 48 (b) is chosen.

(2) Basis for determining the baseline scenario:

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

>>Yes. Given the nature of the project activities (fuel switching from coal and oil to natural gas for the existing industrial facilities - such as boilers) and the financial test for additionality for the natural gas based project activity, the document that explains the baseline scenario of existing actual or historical emissions of the coal fired boilers is chosen.

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

>>The basic underlying rationale is that

1) The heat generation from the industrial facility before and after the fuel switching should meet the same heat demand level, but which could change from year to year depending on sales and market development.

2) Such heat balance equations before and after the fuel switching could be easily established based on the energy conversion efficiency from fuel consumed and the heat generation as shown below.

3) The emission reductions are based on two major factors: the difference of the emission factors between coal and natural gas, and the difference of heat conversion efficiency between the coal fired boiler and the natural gas fired boiler.

4) The heat conversion 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 thus

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

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

$Heat_{coal\ boiler}$ is the heat generated by the coal fired boiler;

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

The data of the parameters on the right hand side of the formulae would be available based on existing actual and or historical data,

5) Therefore the actual baseline emission EMcoal from coal fired boiler can be calculated as

$EM_{coal} = CSMP_{coal}$ (equivalent)$\times FC_{coal}$

$= [Heat_{NG\ boiler} / (LHV_{coal} \times r_{coal} \times ef_{coal})] \times FC_{coal}$

$= [(CSMP_{ng} \times LHV_{ng} \times r_{ng} \times ef_{ng}) / (LHV_{coal} \times r_{coal} \times ef_{coal})] \times FC_{coal}$.

where

$CSMP_{coal}$ (equivalent) is the coal consumption equivalent to generating the same amount heat as generated in the natural gas fired boiler $Heat_{NG\ boiler}$.

$CSMP_{ng}$ is the natural gas consumption in the boiler to meet the heat demand relating to the operation level, which could change from year to year depending on sales and market development.

FC_{ng} and FC_{coal} are the emission factors of NG and coal (IPCC 1996 default value or real in per physical unit of fuel) respectively,

6) Thus the heat conversion efficiency of the coal fired boiler could be ex ante estimated, and the actual baseline emissions from coal fired boiler could be ex post updated based on monitored natural gas consumption.

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 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.

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

>>The methodology is appropriate, and it provides a good method 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).

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

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

>>Generally adequate. The proposed new baseline methodology covered the information required by the Annex 1: Clarifications on issues relating to baseline and monitoring methodologies of the report of the eighth meeting of the Executive Board, i.e. (a) Basis for determining the baseline scenario, (b) Formulae/algorithms, (c) Data sources and assumptions. GHG and sources are also covered adequately.

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

>>The proposed methodology is appropriate for the referred proposed project activity, which involved fuel switching from coal and petroleum fuels to natural gas for industrial boiler, and the referred project context.

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 methodology which is subject to the approach of para. 48 (a) of the CDM modalities and procedure (i.e. existing actual or historical emissions) is applied for the proposed project activity of coal-to-natural gas fuel switching in the existing industrial facilities (like industrial boilers). This results from the baseline scenario of existing CO2 emissions of the industrial boiler before the fuel switching. So it certainly and reasonably represents the CO2 emissions 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):

>>Applicable to other potential project activities involving industrial fuel switching from coal and petroleum fuels to natural gas in the sense that the proposed new methodology is not project-specific.

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

>>Most data used to determine the baseline are collected on site of the existing plant, other data are

domestic or foreign data subject to the energy sources. Also IPCC default data are used as appropriate. The spatial scope of the data is appropriate.

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:

>>Based on the baseline approach selected, i.e. paragraph 48 (a) of CDM modalities and procedures, the historical fuel consumption data are ex ante considered for three years prior to the possible project implementation date, while the date used for calculation of actual baseline emissions, such as the natural gas consumption and the heat output from the natural gas fired facilities, etc., are ex post collected from the project operation records during the crediting period. The vintage of data is appropriate.

(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

>>In addition to the main GHG CO2 and its sources, CH4 emissions from transport and fugitive emissions from coal mining are well accounted for. CH4 and N2O 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. More generally, given the project type, the methodology should include a means of demonstrating that emissions from non-CO2 gases can be considered negligible so that only the significant gases CO2 for both the project and the baseline are considered.

ii) Physical delineation

>>The project boundary encompasses the physical, geographical site of the industrial plant, schematically as shown in Figure 3.1 of Annex 3 of the PDD. The project boundary covers input energy flows and GHG emissions associated with fuel combustion subject to the fuel switching, which are deemed to be under the control of the project participants and that are significant and attributable to the project activity (or in baseline case). The project boundary is applicable both for the baseline analysis and for monitoring of emissions following project implementation and emissions reductions.

b) Indicate whether this project boundary is appropriate:

>>According to the previous recommendations by the Meth Panel (F-CDM-NMmp-NM0016 ver 2) emissions from mining, transportation and gas field exploration have been moved to indirect off-site emissions, since they are not under the control of the project participants. These changes are consistent with the definition of the project boundary. In addition, the electricity consumption for the boiler operation within the project boundary and its CO2 emissions in the power plants outside the project boundary are not taken into account, because it is not affected by the fuel switching. So together with the statement in a) as above, this project boundary is considered as appropriate.

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

>>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 are verifiable either by citing sources, or own calculations if derived by the project participants.

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

>>

1) The project activity, i.e. fuel switching in an existing facility, does not increase the capacity and lifetime of the existing facility.

2) The heat generation from the industrial facility before and after the fuel switching should meet the same heat demand relating to the operation level, which could change from year to year depending on sales and

market development.
3) The emission reductions result from two factors: one is the fuel switching from coal to natural gas; another is the higher conversion efficiency of a natural gas fired facility than that of a coal fired one.
4) Thus a dynamic baseline is considered: the heat conversion efficiency of the coal fired boiler could be ex ante estimated, and the actual baseline emissions from the coal fired boiler could be ex post updated based on monitored natural gas consumption and the ratio of the efficiency of NG equipment to coal equipment at each renewal of the crediting period.
5) The emission sources in the upstream processes, such as CH4 fugitive emissions from coal mining, natural gas field and transportation, fuel consumption for transport, are treated as leakage, since they are outside the project boundary and not under control of the project participants. Moreover, in case they are not measurable by project participants, the net change of the GHG emissions by the leakage will not be accounted in the emissions reduction calculation.
6) GHG emission factors are country/region/sector specific, depending on the sources and data availability. Otherwise IPCC 1996 default values are chosen.

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

>>The key assumptions are made in a transparent manner.

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

>>According to change requirement given by the 10th EB meeting, revisions made by MGM generalised the assumptions/ parameters description to make the baseline more methodology specific rather than project specific. So the assumptions/parameters are adequate.

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

>>The CO_2, CH_4 and N_2O emission factors from combustion for each fuel are obtained from national GHG emission inventory and the IPCC (1996) value for near fuel type and technology specific, in terms of the lower heating value (LHV) of the fuel throughout.

The LHV of each fuel in consumption are obtained from 1) National GHG inventory, 2) National energy agency, 3) Project specific energy supply company, 4) IPCC estimates for fuel type and country specific.

The fuel (coal) conversion efficiency of existing equipment in the baseline case is based on currently or historically measured data before the fuel switching. The fuel conversion efficiency of equipment using natural gas in the project activities is based on engineering estimates or technology standard.

The useful heat output and the project emissions are therefore determined based on actual natural gas consumption obtained through the monitoring and the project fuel efficiency.

In turn the baseline emissions are obtained ex post considering the used heat output and the baseline fuel efficiency.

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

>>The fuel consumption is normally recorded to equivalent energy units. Care has been taken to ensure that the heating values are consistent. The preferred data source priorities are given as above, same for all fuels. Dynamic baseline is determined ex post by using data that are updated annually under monitoring process, depending on actual changes in fuel use over time, so they are accurate and reliable.

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:

>>Yes. Baseline emissions are dominated by CO2 emissions from fuel combustion, and these are determined from emissions factors and heating value of fuels, which are known with a high level of accuracy / with few uncertainties.

ii) Algorithms/formulae:

>>Yes. The use of spreadsheet permits a straightforward inclusion of algorithms/ formulae which are adequate and accurate to calculate the actual baseline emissions dynamically through the monitoring process.

iii) Key assumptions:

>>Yes. Uncertainty in the future price differential between coal and gas is assessed and they should be ex post justified in the monitoring plan.

iv) Data:

>>Yes. There are large uncertainties in the emissions factors data of CH4 and N2O in combustion due to less availability of project or country specific values, even in IPCC sources. Thus, data similar to those most relevant for the project and baseline are chosen. However, indeed these emissions may be neglected, since they make up a very small part of total GHG emissions.

In general country specific data for the emissions factor for fugitive methane from coal mining are not available. Where necessary, a lower estimate of emissions should be taken, so that the estimates are conservative.

b) State whether the uncertainties presented are reasonable:

>>Yes.

(8) Leakage:

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

>>The methodology addressed indirect off-site emission sources due to the project activity, such as fugitive emissions from coal mining, transportation and gas field exploration.

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

>>According to the required changes recommended by the Meth panel (F-CDM-NMmp-NM0016 ver 2) regarding the project boundary and leakage, some emission sources have been moved to indirect off-site emissions rather than in the project boundary, since they are not under the control of the project participants. However, it should be stated more clearly that indirect off-site emissions are what constitutes leakage. Moreover since leakage should be "measurable", the net change in emissions, that results from leakage, should be included in the formulae in annex 3 outlining the calculation of the emission reduction. In case the leakage is not measurable, it should be addressed qualitatively in the section of leakage, and then assessed in the section of uncertainty, if significant.

(9) Transparency and "conservativeness":

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

>>Yes. This is consistent with existing guidance on baseline and has been applied in a transparent and conservative manner.

b) State whether the baseline methodology is conservative:

>>Yes, as above.

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

>>**Strengths:**

1) The method is transparent, based on fuel consumption data which are normally collected at the project site.

2) All formulae are explicitly described.

3) The spreadsheet model further simplifies the estimation of baseline emissions.

4) The baseline methodology is completely compatible with monitoring methodology.

5) The spreadsheet model developed for baseline emissions, GHG emission reductions calculation and the associated monitoring plan, with minor modifications, is appropriate to any industrial fuel switching project from coal and petroleum fuels to natural gas in a transparent and conservative manner.

Weakness:

The uncertainty in the future price differential between coal and gas may potentially affect the financial test of the additionality. This weakness could be corrected by simply adding ex post justification in the monitoring plan during the crediting period.

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

>>Instead of stating that national and sectoral policies are not relevant, the methodology should allow for a project to describe how it takes into account national and/or sectoral policies and circumstances.

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

>>See main recommendations above section A. I. (a) (i).

(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):*** **>>**Industrial fuelswitching from coal and petroleum fuels to natural gas

In respect of the proposed new monitoring methodology, evaluate each section of annex 4 to the draft CDM PDD. Please provide your comments section by section:

(1) Brief description of new methodology:

Describe new methodology:

>>Title of the monitoring methodology: Industrial fuel switching from coal and petroleum fuels to natural gas.

1) The monitoring plan records natural gas consumption of the targeted equipment at the industrial plant, on a monthly basis, as well as coal and petroleum fuels.

2) Methane emissions from natural gas pipeline leakage are estimated from natural gas consumption data, combined with standard estimates of emissions factors.

3) The energy efficiency of all major natural gas fired equipment is monitored annually.

4) CO2 emissions from natural gas combustion in the project activities are determined from the above data using appropriate emissions factors.

5) Non-CO2 emissions from fuel consumption, and methane emissions from coal mining, natural gas production and transportation are accounted based on appropriate data available.

6) The heat conversion efficiency of the coal fired boiler before fuel switching will be ex ante estimated by using the historical fuel consumption and heat output data for three years prior to the project implementation date, while actual baseline emissions are derived ex-post from the monitored consumption of natural gas and the ratio of efficiency of NG equipment to coal equipment during the crediting period.

7) The monitoring plan describes the very straightforward routine procedures for data collection, and auditing required for the project, in order to determine and verify emissions reductions achieved by the project.

8) A spreadsheet model has been designed as an electronic GHG monitoring and emission calculation workbook for industrial fuel switching projects. This monitoring methodology is highly compatible with the proposed baseline methodology.

Proposed data to be monitored:

GHG related data:

Volume (m^3) of natural gas used at the plant. Fuel consumption of main gas fired equipment will be monitored separately.

Energy efficiency of all fuel using equipment will be monitored annually.

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 (auditing) of the technology used at the plant site, including inventory of all fossil fuel using equipment; this survey will be conducted annually;

Production of the plant.

(2) Key assumptions/parameters:

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

>>The key assumptions of the monitoring methodology and its application are strongly linked and compatible with those for the baseline methodology and the development of the baseline scenario for the project.

The assumptions regarding heating value and emission factors of fuels are the same in each case, and are unchanged throughout the project. These factors are country specific and are listed in the draft CDM-PDD.

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

>>The key assumptions are made in a transparent manner.

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

>>Generally yes, the assumptions/parameters are adequate, except for the heat outputs (add a "row D.3.7" for heat outputs) that should also be collected along with the natural gas data in order to verify the natural gas consumption and the energy efficiency of the fuel using equipment.

Similarly for baseline scenario.

(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):

>>The same as above in section B. I. 1. (6) (d).

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

reliable:

>>The same as above in section B. I. 1. (6) (e).

c) *State possible data gaps:*

>>

(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:

>>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 the end 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 actual emission factors of the coal consumed should be used.

The heat outputs (added as a "row D.3.7" in the monitoring table) should also be collected along with the natural gas data in order to verify the natural gas consumption and the energy efficiency of the fuel using equipment. Similarly for baseline scenario.

b) State whether the proposed methodology is appropriate for the referred proposed project activity and the referred project context (described in Sections A-E of the draft CDM-PDD and submitted along with annex 4):

>>It is appropriate for the referred proposed project activity and the referred project context.

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

>>Yes. See section A. II. (a) (i) as above.

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

>>Emissions from mining, transportation and gas field exploration have been moved to indirect off-site emissions, since they are not under the control of the project participants in consistence with the definition of the project boundary. However, it should be stated more clearly that indirect off-site emissions are what constitutes leakage. Moreover as leakage should also be "measurable", the net change in emissions that results from leakage, should be added in the calculation of the emission reduction in a CDM-PDD submitted for validation. In case the leakage is not measurable, it should be addressed qualitatively in the section of leakage, and then assessed in the section of uncertainty, if significant.

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

>>Quality control (QC) and quality assurance (QA) procedures are undertaken for the items monitored. The QA/QC table describes QA/QC procedures for each data variable, together with additional relevant information on each variable.

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

>>**Potential strengths:**

- Simple and easy to use, based on data typically already collected at the project site
- Compatible with calculations of baseline emissions
- Baseline emissions are determined dynamically ex post, based on the project energy consumption data, in the spreadsheet form prepared for the monitoring plan.
- The spreadsheet form generates automatically GHG emission reductions

Monitoring methodology weaknesses: No relevant ones which could be mentioned.

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

>>The proposed methodology can be applied to project types and regions involving industrial fuel switching project from coal and petroleum fuels to natural gas .

(9) Any other comments:

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

>>None.

b) Indicate any further comments:

>>No further comments.

Signature of Meth Panel Chair  ……..

Date: 16/09/2003 *(Jean-Jacques Becker)*

Signature of Meth Panel Vice-Chair

Date: 16/09/2003 *(Franz Capra Tattenbach)*

Information to be completed by the secretariat	
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