

 <p style="text-align: center;"><b>CDM: Proposed New Methodology</b>  <b>Meth Panel recommendation to the Executive Board</b>  <b>(version 04)</b>  <i>(To be used by the Meth Panel to make a recommendation to the Board regarding a proposed new methodology)</i></p>	
Date of Meth Panel meeting:	4 - 8 April 2005
Related F-CDM-NM document ID number (electronically available to EB members)	F-CDM-NM0068: "GHG emission reductions at ALUAR Aluminio Argentino Project"
Related F-CDM-NMex document ID number(s) (electronically available to EB members)	F-CDM-NMex0068: Thomas / Katima
Related F-CDM-NMpu document ID number(s) (electronically available to EB members)	
<p><i>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.</i></p>	
<b>A. Final recommendations by the Meth Panel</b>	
<b>I. Recommendation on the proposed new baseline methodology: (checkmark the choice made)</b>	
Title of proposed new baseline methodology:>> <a href="#">Changes in industrial process, energy efficiency, fuel switching, self cogeneration equipment at an aluminium smelting facility.</a>	
<p>a. To approve this proposed methodology with minor changes</p> <p><input type="checkbox"/></p> <p>i. Conditions under which this proposed methodology is applicable to other potential CDM project activities (e.g. project type, region, data availability):</p> <p>&gt;&gt;</p> <p>ii. Minor changes:</p> <p>&gt;&gt;</p>	
<p>b. To reconsider this proposed methodology, subject to required changes</p> <p><input type="checkbox"/></p> <p>i. Conditions under which the proposed methodology is applicable to other potential projects (e.g. project type, region, data availability):</p> <p>&gt;&gt;</p> <p>ii. Required changes:</p> <p>&gt;&gt;</p> <p><i>(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.)</i></p>	

## c. Not to approve the proposed methodology



## i. Reasons for non-approval:

>> The Methodology has not been presented in a clear, transparent manner. The methodology is lacking in the following areas:

- 1) Need to provide a procedure to identify and select the most plausible baseline scenario candidate. The baseline scenario analysis has not been done in a manner that leads to a clear choice of the project activity. Discussion on alternatives to project activity and their elimination needs to be enhanced.
- 2) Applicability conditions are not clear and some have been mentioned without being discussed or explained in the methodology.
- 3) The methodology needs to be clear on what is/are the project activities. A number of issues are discussed as part of project activity; e.g fuel switch, cogeneration, anode effect reduction.
- 4) There is discrepancy between formula for baseline emissions and data required to determine baseline emissions.
- 5) Monitoring of some relevant project activity parameters is not clear. For example, monitoring of fuels, electricity consumption has not been clearly shown
- 6) Elaboration of the fact that project does not lead into enhanced production of aluminium where as carbon emission reduction per output of aluminium indicated enhanced aluminium production (an increase in aluminium production of about 9.5% over the crediting period).
- 7) Methodology should use latest version of the consolidated tool for demonstration of additionality, rather than the recommends draft consolidated tool that has been recommended.
- 8) The methodology gives a number of options for analysis of baseline emission of PFCs emissions without being clear on a particular approach to be used. Different formulae are presented and it is identified which formulas are appropriate for different project types. Methodology must therefore select the most appropriate formulas according to the technology that will be used.
- 9) The methodology does not clearly explain on how anode CO<sub>2</sub> emission reductions are computed. While it may be easy to understand CO<sub>2</sub> baseline emissions by following the IPCC guidelines, the algorithms/formulas used in the methodology do not give clear and transparent estimation of the anode CO<sub>2</sub> emissions during project implementation. There are no references on the methodology used to show project phase anode CO<sub>2</sub> emissions for a proper review to be made.
- 10) No clear explanation has been given on selection of two-year data vintage. A three-year data period would be recommended, following a pattern in projects involving use of historical data. This would be especially important if approaches that use data for values like Anode Effect Duration (AED) and Anode Effect Frequency (AEF).
- 11) The methodology discusses possible leakage due changes in fuel use pattern whereby there might be increased fugitive emissions associated with increase fuel use at the industrial site. Reasons for increased fuel use have not been adequately discussed.
- 12) The methodology needs to make adequate identification and assessment of assumptions and uncertainties.
- 13) The link between the Baseline methodology and the replacement of fuel/fuel switch is not clear and needs to be explained. The baseline methodology does not discuss fuel switch as part of the project.

*(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: >> [Changes in industrial process, energy efficiency, fuel switching, self cogeneration equipment at an aluminium smelting facility.](#)

- 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

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- 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:

>> [Given the link to the baseline methodology the monitoring methodology can not be approved.](#)

*(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*):** >> Changes in industrial process, energy efficiency, fuel switching, self cogeneration equipment at an aluminium smelting facility.

**(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:*

>> The methodology describes reduction of GHG emissions through the installation of a new algorithm in the Automatic Control System (ACS) in 400 pots (potlines A and B). The intervention results in reduction of over-voltage of the anode effects, which are responsible for PFC {tetrafluoromethane (CF<sub>4</sub>), and hexafluoroethane (C<sub>2</sub>F<sub>6</sub>)} emissions, as well as improvement in energy efficiency. Baseline assumed is a continuation of business as usual where there are neither legal requirements for a change and nor financial gains due to the change without the CDM factor. The carbon emission reductions to be claimed are explained to come from PFC emission reduction and reduced CO<sub>2</sub> emission to improved anode (prebaked carbon) usage.

*b) State the approach selected:*

>> The proposed approach is as per paragraph 48 (a) of the CDM modalities and procedures: “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 project is a retrofit mitigation project.
- The methodology assumes that the baseline scenario is continuation of the existing practices in absence of the project and thus envisages changing the existing/historical emission scenario.

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

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

>> Yes. The baseline scenario is adequately explained by analysing all options available to project participants and considering legal requirements, economic and financial barriers involved in choosing a particular alternative.

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

>> Methodology algorithms and formulae used to calculate the baseline are based on a combination of average and marginal basis.

*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 recommends use of the “Tool for the demonstration and assessment of additionality”.

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

>> The basis for determining the baseline scenario and for assessing additionality is appropriate however additional clarification could improve the methodology. In particular further justification of why the consolidated methodology ACM0002 can be justifiably used for non-renewable energy sources. Currently the description is unclear.

**(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 has been described in an adequate manner.

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):*

>> The proposed methodology is appropriate for the referred proposed project activity 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.*

>> The application of the methodology could result in a baseline scenario that reasonably represents the anthropogenic emissions of greenhouse gases that would occur in the absence of the proposed project activity.

*Please explain:*

>>

- The baseline method and formulae developed can be applied to most improvement projects or retrofits implemented at aluminium plants that use pre-baked anode or other similar technology.
- The emissions from the technology are acknowledged and well documented by different international organisations, including IPCC.
- The baseline equations utilise existing IPCC guidelines and CDM Executive Board approved approaches where possible.

#### **(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 methodology includes algorithms/ formula for estimating the PFC emissions, process related CO<sub>2</sub> emissions, and emissions from fuel consumption and other processes in the smelting process are quite generic. The formulae for PFC emissions can be used only if project specific information related to certain parameters is available. However, the following issues were noted:

- The methodology makes reference to consolidated methodology ACM 0002, which involves renewable energy projects. It is thus questionable whether this method is really applicable to non-renewable energy projects. Further justification and clarification of why this is applicable would increase transparency and strengthen the method.
- The methodology gives a number of options for analysis of baseline emission of PFCs emissions without being clear on a particular approach to be used.
- The methodology does not clearly explain on how anode CO<sub>2</sub> emission reductions are computed. While it may be easy to understand CO<sub>2</sub> baseline emissions by following the IPCC guidelines, the algorithms/formulas used in the methodology do not give clear and transparent estimation of the anode CO<sub>2</sub> emissions during project implementation. There are no references on the methodology used to show project phase anode CO<sub>2</sub> emissions for a proper review to be made.

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

>> There are two spatial scopes described within the methodology, first the entire aluminium manufacturing plant including power plants on site, and the second scope is a sub-part of the aluminium manufacturing plant - in other words a subsection of the first scope.

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:*

>> 2002 and 2003 data of Aluminium production and some anode effect parameters have been given. Ex-post data will be collected using direct measurement techniques. No clear explanation has been given on selection of two-year data framework. A three-year data period would be recommended, following a pattern in projects involving use of historical data. This would be especially important if approaches that use data for values like AED and AEF.

**(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*

>> Major gases: CF<sub>4</sub>, C<sub>2</sub>F<sub>6</sub> and CO<sub>2</sub>. Others SF<sub>6</sub>, CH<sub>4</sub>, N<sub>2</sub>O

Sources: Process emissions - CF<sub>4</sub>, C<sub>2</sub>F<sub>6</sub> and CO<sub>2</sub>; Fuel combustion - CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O

*ii) Physical delineation*

>> Project boundary: Include all operations, activities and physical sites and facilities in that influence AEF. These include the cells, grid electricity purchases, natural gas consumption, and transport fuels.

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

>> The project boundary is appropriate in terms of gases covered.

**(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:*

>>

Explicit assumptions (as stated in Document):

- No increased aluminium production as a result of project activity
- Fugitive methane emissions are presumed to be small.
- Emissions from transportation of supplies to the plant are negligible

Implicit assumption:

- The estimation of emission reduction is based on assumption that there is no production change between the baseline and the project scenario. The documentation, however, shows an increase in aluminium production in later years without explaining the reasons for the increase (production increase from 196,300tAl/month 2005 to 215,000tAl/ month 2014).

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

>> Assumptions are adequately discussed

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

>> The assumptions and parameters are in general adequate. It would be useful if the method clarified what should be done in the event that the statistical error measurements for AEF, AEO and AED were high indicating inaccuracy.

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

>>

- Carbon dioxide emission factor per unit energy of fuel - Official statistics in Argentinean National Inventory communications to the UNFCCC or site measurement of carbon content and calorific value of fuels or IPCC default emission factors can be used.
- Methane emission factor per unit of energy of fuel - IPCC default value
- Nitrous oxide emission factor per unit of energy of fuel - IPCC default values
- Baseline Emission Factor for the grid electricity generation - Determined using the method outlined

in ACM 0002, or if the project is a small project following the method in the Simplified Methodology for small scale CDM project activities

- Emission factor of CF<sub>4</sub> - from on site measurements of CF<sub>4</sub>, or calculations of emissions of CF<sub>4</sub> using on site measurements of the anode effect over voltage in mV/cell per day & Number of anode effects per day & Anode effect duration in minutes or IPCC default measurements.
- Over voltage coefficient (kgPFC/tAl)/mV/Cell.day)- on site measurements or IPFCC default emission factors
- Slope (kg PFC/tAl)/AE-Minutes/cell.day)-- on site measurements or IPFCC default emission factors
- Emissions from grid connected electricity generation - calculated in accordance with the methods outlined in the approved consolidated method ACM0002
- Transport - measured or calculated fuel consumption of transport, distance travelled by vehicles and fuel specific emission factors according to IPCC emission factors.

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

>> The data used are adequate, consistent, accurate and reliable. However, methodology needs to be clear on approach to be used in order for adequate analysis of data adequacy to be made.

f) State possible data gaps:

>> This will depend appropriate changes as suggested in (e) above.

#### **(7) Assessment of uncertainties:**

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

i) The basis for determining the baseline scenario:

>> The method reviews uncertainty associated with emission calculations in the baseline.

ii) Algorithms/formulae:

>> Different formulae are presented and it is identified which formulas are appropriate for different project types. Methodology must therefore select the most appropriate formulas according to the technology that will be used.

iii) Key assumptions:

>> Uncertainties regarding key assumptions are not adequately discussed in the relevant section.

iv) Data:

>> No uncertainty assessment: Only a mention that uncertainty level of data is low which is attributed to the presence of a series of internal procedures that ensures data have low uncertainties during monitoring process.

b) State whether the uncertainties presented are reasonable:

>> The uncertainties presented are not adequate.

#### **(8) Leakage:**

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

>> The methodology discusses possible leakage due changes in fuel use pattern whereby there might be increased fugitive emissions associated with increase fuel use at the industrial site.

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

>> Reasons for increased fuel use have not been adequately discussed and it is therefore not clear whether what has been discussed under leakage are proper leakages or project emissions.



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

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

>> The baseline methodology was developed in a transparent way.

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

>> The baseline methodology is conservative.

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

>>

Strengths:

- The method is applicable to a wide variety of aluminium plant retrofits.
- Most computations are derived from internationally recognized organizations like the IPCC.
- Option for data are provided in the event that real data is not available.

Weaknesses:

- The methodology is not clear on specific approach for PFC emission estimation.
- Some of the applicability conditions are not precisely defined and are too generic in nature.
- Additional clarification of why the consolidated methodology ACM0002 can be justifiably used for non-renewable energy sources. Currently the description is unclear.

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

>> The methodology mentions inclusion of discussion on national and/or sectoral policies and circumstances in the consolidated tool for additionality assessment.

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

>> The methodology developed is applicable to aluminium plants using particular technologies. It is applicable to aluminium plants that are either grid connected or have their own generation facilities. It is also applicable across regions, since there are no regional restrictions on use of technology.

**(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:*

>> 1996 IPCC Guidelines for national greenhouse gas inventories.

b) *Indicate any further comments:*

>> No further comments.

**II. Proposed new monitoring methodology (specify title here):** >> Changes in industrial process, energy efficiency, fuel switching, self cogeneration equipment at an aluminium smelting facility.

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

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

*Describe new methodology:*

>> The methodology considers process emissions of all GHGs at the aluminium smelting facility or a specific part of the facility where project activities are implemented, both in the baseline and the project scenarios. Two PFCs, tetrafluoromethane (CF<sub>4</sub>), and hexafluoroethane (C<sub>2</sub>F<sub>6</sub>) are known to be emitted. Monitoring involves GHG emission resulting from changes in industrial process, energy efficiency, fuel switching, cogeneration and self generation equipment at an aluminium smelting facility.



The methodology monitors data for following parameters to estimate project emissions

- Aluminium production
- Aluminium production efficiency
- Anode Effect Over-voltage (AEO)
- Total of specific carbon consumption
- Green carbon tonnage (GWA)
- Baked anode production (BAP)
- Weight of hydrogen from pitch
- Paste consumption
- Quantity of soda consumption
- Fuel consumption
- SF<sub>6</sub> consumption
- Anode effect frequency (AEF)
- Anode effect duration (AED)
- Net electricity supplied to grid in the project (NPES)
- Net electricity purchased from grid in the baseline (NBEP)

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

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

>>

### Explicit assumption:

- There are no significant leakages from the project.

### Implicit assumption:

- Reliability and accuracy of data will be based on QA/QC

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

>> Assumptions are identified and arrived at in a transparent manner.

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

>> The use of QA/QC in checking accuracy of data should be explained (stated as a series of internal procedures that ensures data have low uncertainties)

## **(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):*

>> Most of the data used is either measured or calculated. IPCC default value for slope parameter will be used for estimating project PFC emissions. Data for estimating the CO<sub>2</sub> emissions from purchased electricity will be sourced from public data sources but the specific public data sources to be used are not mentioned.

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

>> The data is adequate.

*c) State possible data gaps:*

>> Estimating anode effect emissions, and using 3-year historical data rather than two. It would also be Useful to include more information regarding quality assurance and quality control procedures.

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

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

>> The method has been described in an adequate manner.

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

>> Yes it is appropriate.

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

>> Yes, it is compatible. However, the link between the baseline methodology and monitoring fuel switch, as stated in defining the monitoring methodology, is not clear and needs to be explained.

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

>> No leakage is associated with reduction in process emissions at an aluminium plant. One possible source of leakage is in changes in fuel use patterns whereby there is increased fugitive emissions associated with increased fuel use at the industrial site and/or where there are increased energy consumption associated with fuel transport.

Since the “leakage” stated above is within the project boundary this should be treated as part of the project emissions rather than leakage.

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

>> The methodology states that ALUAR has a series of internal procedures that ensures data have low uncertainties during monitoring. However, for transparency and easy verification specific provisions for QA/QC relevant to the project need to be presented.

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

>>

Strength:

- The method is easy to follow and builds on existing CDM Executive Board approved good practice.

Weakness:

- The method assumes that aluminium plants will have internal procedures for ensuring that the data will be accurately monitored. It would be useful if possible procedures were outlined in the event that an aluminium plant using this method did not have suitable procedures in place.

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

>> The methodology is applicable to aluminium plants that are either grid connected or have their own generation facilities, for projects that make improvements to smelting where either the prebake technology or Soderberg technology is utilised. It is also applicable across regions since there are no regional restrictions on use of the technology.

**(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:

>> [1996 IPCC Guidelines for National GHG Inventories](#)

b) Indicate any further comments:

>> [No further comments.](#)

Signature of Meth Panel Chair .....

Date: 15/04/2005

(Jean-Jacques Becker)



Signature of Meth Panel Vice-Chair .....

Date: 15/04/2005

(José Miguez)

Information to be completed by the secretariat	
F-CDM-NMmp doc id number	F-CDM-NMmp - NM0068
Date when the form was received at UNFCCC secretariat	15 April 2005
Date of transmission to the EB	15 April 2005
Date of posting in the UNFCCC CDM web site	15 April 2005