

 <p style="text-align: center;"><b>CDM: Proposed New Methodology</b>  <b>Meth Panel recommendation to the Executive Board</b>  <b>(version 06)</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:	04 - 07 April 2006
Related F-CDM-NM document ID number (electronically available to EB members)	F-CDM-NM0082-rev: "Khon Kaen fuel ethanol project"
Related F-CDM-NMex document ID number(s) (electronically available to EB members)	F-CDM-NMex0082-rev: Not applicable
Related F-CDM-NMpu document ID number(s) (electronically available to EB members)	F-CDM-NMpu0082-rev: Not applicable
<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>	
<p><b>(1) History of submission</b> (to be communicated by UNFCCC Secretariat):</p> <p>&gt;&gt; Resubmission of NM0082.</p>	
<b>I. Recommendation on the proposed new baseline methodology:</b> (checkmark the choice made)	
<p>Title of proposed new baseline methodology:&gt;&gt; Baseline methodology for the production of sugar cane based anhydrous bio-ethanol for transportation using LCA</p>	
<p>a. To approve this proposed methodology with minor changes</p> <p><input checked="" 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; The implementation of the project activity will not lead to national production capacity exceeding the maximum potential demand (the lower of 20% of the gasoline demand or any nationally imposed ceiling on bio-ethanol/gasoline mix).</p> <ul style="list-style-type: none"> <li>• There is no enforceable mandate in the host country to produce and use bio-ethanol to replace gasoline in the transport sector</li> <li>• It can be readily verified that the anhydrous bio-ethanol will be used as a transportation fuel within the relevant national market.</li> <li>• The anhydrous bio-ethanol will be blended with gasoline at a maximum level of 20%.</li> <li>• The project activity will not result in other alternative fuel vehicles (such as LPG, LNG, CNG and bio diesel) switching to gasohol.</li> <li>• Investing in capacity to produce another alternative fuel (such as LPG, LNG, CNG or bio diesel) is not a feasible option for the project proponent.</li> <li>• This methodology is only applicable for projects that include the production of the sugar cane used for the anhydrous bio-ethanol used for production of gasohol.</li> </ul>	

<p>ii. Minor changes:</p> <p>&gt;&gt;</p> <ul style="list-style-type: none"> <li>• <b>Double counting:</b> following public comments, input from a consultant, and further discussion in the Meth Panel, it is suggested that it may not always be appropriate to require DNAs to ensure that no double-counting occurs, so this provision has been deleted from the proposed methodology.</li> <li>• <b>Default gasoline life-cycle emission factor.</b> Because gasoline-production may be more energy-intensive in the suggested default countries (Europe) than in potential host countries, the suggested values have been reduced the well-to-tank emission factor for this default component.</li> <li>• The formula for calculating Q in the NMB indicates that the proportion of gasoline in gasohol should be &gt;80%. This should read as <math>\geq 80\%</math> if the associated project activity can use the methodology.</li> </ul>
<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><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>
<p>c. Not to approve the proposed methodology</p> <p><input type="checkbox"/></p> <p>i. Reasons for non-approval:</p> <p>&gt;&gt;</p> <p><i>(A new proposal should be submitted in accordance with the procedures for submission and consideration of proposed new methodologies of the Executive Board.)</i></p>
<p><b>II. Recommendation on the proposed new monitoring methodology: (checkmark the choice made)</b></p>
<p>Title of proposed new monitoring methodology: &gt;&gt; <a href="#">Monitoring methodology for the production of sugar cane based anhydrous bio-ethanol for transportation using LCA.</a></p>
<p>a. To approve this proposed methodology with minor changes</p> <p><input checked="" type="checkbox"/></p> <p>i. Conditions under which methodology is applicable to other potential projects (e.g. project type, region, data availability):</p> <p>&gt;&gt; <a href="#">As above.</a></p> <p>ii. Minor changes:</p> <p>&gt;&gt; <a href="#">None.</a></p>
<p>b. To reconsider this proposed methodology, subjected 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>

*(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



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. General information on submitted proposed new methodology**

### **(1) Title of proposed new baseline methodology:**

>> Baseline methodology for the production of sugar cane based anhydrous bio-ethanol for transportation using LCA

### **(2) One sentence describing the purpose of the methodology.**

>> The proposed methodology is developed for bio-ethanol production for transportation purposes.

### **(3) Summary description of baseline methodology.**

*Short statements on each on how the proposed methodology: chooses the baseline scenario, demonstrates additionality, calculates baseline emissions, calculates project emissions, calculates leakage, calculates emission reductions.*

>> The methodology consists of 5 steps:

1. Determine that the applicability conditions apply. These focus on the current production capacity of anhydrous bio-ethanol being lower than a percentage of “maximum demand” (which is defined).
2. Outline feasible baseline scenarios at the site that will produce the bio-ethanol (i.e. no investment, investment in other transport fuel capacity or investment in bio-ethanol production capacity but not as a CDM project).
3. Use the “Tool for the demonstration and assessment of additionality” to evaluate whether investment in anhydrous bio-ethanol production capacity at the project site is a plausible baseline scenario.
4. Assess the baseline fuel that will be displaced by the anhydrous bio-ethanol produced by the project activity.
5. Determine baseline and project emissions on a life-cycle basis. Baseline emissions are defined as emissions that would result from the production and combustion of the substituted non-renewable fuel.

Since the methodology uses a life-cycle approach, leakage is restricted to emissions related to any land-use change resulting from the project activity.

### **(4) Title of proposed new monitoring methodology:**

>> Monitoring methodology and lifecycle assessment for the production of sugar cane based anhydrous bio-ethanol for transportation use.

**(5) Summary description of the monitoring methodology.**

*Short statements on each on how the proposed methodology monitors the baseline and project scenario and calculates leakage and emission reductions.*

>> The revised monitoring methodology determines ex-post life cycle analysis GHG emissions from the production of bio-ethanol at the project activity. This includes monitoring emissions associated with diesel consumption from agricultural operations, production of synthetic fertiliser, soil N<sub>2</sub>O emissions, non-CO<sub>2</sub> GHG emissions from burning of crop residues, transporting sugar cane from the field to the bio-ethanol factory, fossil fuel consumption in production of bioethanol, electricity consumption for the production of bioethanol.

**(6) Relationship with approved or pending baseline and monitoring methodologies (if applicable).**

*a) Does the proposed new methodology include part of an already-approved methodology or a methodology pending approval (see recent EB reports)? If so, please briefly note the relevant methodology reference numbers (AMXXXX or ACMXXXX), titles, and parts included.*

>> ACM0002 may be used in order to determine the emission factor for electricity used in the production of bio-ethanol.

*b) In particular, is the proposed new methodology largely an amendment or extension of an approved methodology? (i.e. the methodology largely consists of expanding an approved methodology to cover additional project contexts, applicability conditions, etc., and is thus largely comprised of text from an existing methodology) If so, indicate whether the amendments or extensions are appropriate, and explain why.*

>>

*c) Indicate whether, and explain how, any other approved methodology (not noted in response to the previous question) could currently, or with minor modifications, be used to calculate emission reductions from the project activity associated with the proposed new methodology. If so, please indicate the reference number and the parts of the methodology that would need modification.*

>>

*d) Please briefly note any significant differences or inconsistencies (baseline emission calculations, leakage methods, and boundary definitions, etc.) between the proposed new methodology and already-approved methodology of similar scope.*

>>

*e) To avoid potential repetition, feel free to provide one comprehensive answer here that covers questions a through d.*

>> No transport-related methodology has yet been approved. There are some similarities with NM0129 “Sunflower Methyl-Ester Biodiesel Project in Thailand” and NM0142 “Palm Methyl Ester - Biodiesel Fuel (PME-BDF) production and use for transportation in Thailand” (although the applicability conditions are slightly different).

**C. Details of the evaluation of the proposed new methodology by the Meth Panel:**

**I. Proposed new baseline methodology:** >> Baseline methodology for the production of sugar cane based anhydrous bio-ethanol for transportation using LCA.

**(1) Determining the baseline scenario and demonstrating additionality:**

*a) Explain the methodological basis for determining the baseline scenario, and whether this basis is appropriate and adequate.*

>> Determining the baseline scenario is undertaken in two steps.

1) to assess the baseline at the site that will produce the bio-ethanol. The methodology outlines three possible scenarios, and uses the EB-approved additionality tool to assess whether or not these are plausible.

2) to assess the baseline fuel displaced by bio-ethanol. This is done via a cost-benefit analysis of the alternative fuels that are available in the national market.

b) Explain 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 (both for the fuel production component and the fuel use component of the methodology).

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?

>> Yes, the methodology indicates that the EB-approved additionality tool is to be used, and also provides an indication of how this tool can be tailored to the specific project type for either the investment analysis or barrier analysis part of this tool.

d) Explain whether the basis for assessing additionality is appropriate and adequate:

>> Yes.

## **(2) Methodological basis for calculating baseline emissions and emission reductions**

a) Explain how the methodology calculates baseline emissions and whether the basis for calculating baseline emissions is appropriate and adequate:

>> Baseline emissions are calculated through life-cycle analysis of gasoline production and combustion.

b) Explain how the methodology calculates project emissions and whether the basis for calculating project emissions is appropriate and adequate.

>> The methodology calculates project emissions as the lifecycle emissions associated with producing and blending bio-ethanol. This includes:

- Diesel consumption during agricultural operations;
- Emissions associated with fertiliser production and use;
- Emissions associated with field burning of crop residues;
- Emissions associated with transport of cane to the sugar/bio-ethanol factory;
- Emissions from the industrial production of bio-ethanol;
- Emissions associated with the transport of bioethanol to the place of blending/distribution.

## **(3) 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

>> Life-cycle emissions (CO<sub>2</sub>, CH<sub>4</sub>, N<sub>2</sub>O) associated with production and combustion of gasoline, and with production and combustion of bio-ethanol fuel and its transportation to the blend/distribution location. Emissions associated with the cultivation and growth of sugar cane are also included. (Potential emissions associated with land clearing for sugar cane production are accounted for under leakage.)

ii) Physical delineation

>> Life-cycle emissions.

b) Indicate whether this project boundary is appropriate:

>> The project boundary is appropriate. However, it should be clarified that the boundary for baseline fuel emissions is national, i.e. only emissions are counted which occur in the project-site country.

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

>> Yes, with appropriate changes. However, the formula for calculating Q in the CDM-NMB indicates that the proportion of gasoline in gasohol should be >80%. This should read as  $\geq 80\%$  if the associated project activity can use the methodology.

**(5) Key assumptions/parameters (including emission factors and activity levels), rationale, data sources and uncertainties:**

a) List the implicit and explicit key assumptions, and rationale for the methodology. Identify

those, if any, which are problematic and explain:

>>

Implicit assumptions:

- Life-cycle emissions of gasoline are constant over time.

Explicit assumptions:

- Bio-ethanol will not necessarily replace gasoline on a one-to-one (volume) basis (transparent, OK).
- The host country DNA will be “willing and able to ensure that no fuel switch projects are approved that use the same anhydrous bio-ethanol produced by the project activity”. (Following several different inputs/discussions on double-counting, this provision has been deleted).
- Data for the leakage calculation is available.

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

>> Yes.

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

>> Ex ante life cycle emission factors are obtained from one literature study (but compared to a second, less conservative, one). IPCC default emission factors are used for CO<sub>2</sub> emission factors for transport fuels and for default emission factors for to calculate direct and indirect N<sub>2</sub>O emissions. Manufacturers’ data are used for the fuel efficiency of haulage vehicles. Project-specific data is used for transport haulage distance, volume of biofuel produced and sold for transportation, ex post LCA analyses of sugar-cane based bioethanol.

d) Explain the vintage of data recommended (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:

>> Gasoline lifecycle emissions factor, 2002 (appropriate for the proposed project, but would need to be revised periodically, e.g. at crediting period).

Sugar-cane based bioethanol lifecycle emissions coefficient: 2004 study. Appropriate.

CO<sub>2</sub> emission factor for transportation vehicle fuel: from revised IPCC guidelines. Appropriate.

Vintage for other components not specified.

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

>> Yes.

f) State possible data gaps:

>> None identified.

**(6) Assessment of uncertainties:**

a) Provide an assessment of uncertainties given (e.g. in determining baseline scenario, data sources, key assumptions)

>> The methodology highlights that the life-cycle emission factor of gasoline is a key variable, and a potential area for uncertainty. This methodology indicates that the value suggested is the lower of two values found in the literature. To take into account that refineries may be more energy-intensive in the countries used to develop the default factor (Europe) than in potential project-site countries, the part of the life-cycle emissions factor dealing with recycling has been further reduced.

**(7) Leakage:**

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

>> The methodology first establishes if the project activity leads to land clearance and deforestation by assessing whether the project activity results in an increase in the area of sugar cane planted, and if so, whether deforestation has occurred in the host country. If yes, then it is (conservatively) assumed that the increase in sugar cane area has lead to an equivalent area deforested and that there are associated one-time emissions with this activity. The project would only receive credits when cumulative emission reductions exceed the one-off emissions.

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

>> The treatment of leakage from potential land-use effects seems appropriate. Requiring that the bio-ethanol is blended with gasoline will reduce potential leakage from using bio-ethanol for non-transportation purposes.

**(8) Transparency, “conservativeness” and consistency**

*a) Indicate whether the baseline methodology is presented in a transparent way, and if not, what changes are suggested:*

>> Yes.

*b) Explain whether the baseline methodology is conservative, and if so, how:*

>> The methodology indicates that it is conservative by using the lower of two LCA assessments for well-to-wheel emission factors. This is further lowered to take into account potentially lower refining-related energy use in host countries.

*c) Explain whether the baseline methodology is internally consistent, and if not, highlight which sections are inconsistent:*

>> Yes, it is internally consistent.

**(9) If relevant, state whether the proposed changes required for the methodology implementation on 2<sup>nd</sup> and 3<sup>rd</sup> crediting periods are appropriate.**

>> Not applicable.

**(10) State the baseline approach selected, indicate whether this is appropriate, and why.**

>> The approach selected as per paragraph 48 (a) , existing or historical emission levels. This is appropriate.

**(11) Any other comments:**

*a) State which other source(s) of information (i.e. other than documentation on this proposed methodology available on the UNFCCC CDM web site) have been used by you in evaluating this methodology. Please provide specific references:*

>> None.

*b) Indicate any further comments:*

>> No further comments.

**II. Detailed recommendations on the proposed new monitoring methodology**

Evaluate each section of CDM-NMM. Please provide your comments section by section:

**(1) Indicate if this proposed monitoring methodology is compatible with the proposed baseline methodology described in CDM-NMB of the draft CDM-PDD, and if not, why.**

>> Yes.

**(2) Assessment of key assumptions/parameters:**

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

>> The key assumption is the use of externally-sourced lifecycle emissions data for gasoline and sugar-cane based bioethanol.



<p><i>b) State whether the key assumptions are adequate, and whether they have been arrived at in a transparent manner:</i></p> <p>&gt;&gt; Yes.</p>
<p><b>(3) Data sources and data quality:</b></p> <p><i>a) Give your expert judgement on whether the data sources and data quality used are adequate, consistent, accurate and reliable. If not, please explain.</i></p> <p>&gt;&gt; Distance of bio-ethanol distribution (measured), fuel efficiency (manufacturers' data), carbon emission factor (IPCC), volume of bio-ethanol used in transportation (from factory and purchaser records), relative fuel efficiency of anhydrous bio-ethanol and gasoline (derived from local studies).</p> <p><i>b) State possible data gaps:</i></p> <p>&gt;&gt; None identified.</p>
<p><b>(4) Leakage</b> <i>(please elaborate, if appropriate):</i></p> <p>&gt;&gt; The treatment of leakage has been expanded, as per the proposed new baseline methodology.</p>
<p><b>(5) Quality assurance and control procedures</b> <i>(please explain):</i></p> <p>&gt;&gt; Only measurement and monitoring quality assurances are needed, and they are adequately addressed by the proposed monitoring methodology.</p>
<p><b>(6) Assessment of the description of the proposed methodology:</b></p> <p><i>a) State whether the proposed methodology has been described in an adequate manner:</i></p> <p>&gt;&gt; Yes.</p> <p><i>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):</i></p> <p>&gt;&gt; Yes.</p>
<p><b>(7) Any other comments:</b></p> <p><i>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:</i></p> <p>&gt;&gt; None.</p> <p><i>b) Indicate any further comments:</i></p> <p>&gt;&gt; No further comments.</p>





Signature of Meth Panel Chair .....  
 Date: 13/04/2006 (Rajesh Kumar Sethi)



Signature of Meth Panel Vice-Chair .....  
 Date: 13/04/2006 (Jean-Jacques Becker)

**Information to be completed by the secretariat**

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