DRAFT TECHNICAL GUIDELINES FOR THE DEVELOPMENT OF NEW BASELINE AND MONITORING METHODOLOGIES

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I. GENERAL GUIDANCE ON PROPOSED NEW BASELINE AND MONITORING METHODOLOGIES

A. Forms to be used for submitting new methodologies

1. The new baseline and monitoring methodologies shall be proposed and approved together. The form "Proposed New Baseline and Monitoring Methodologies" (CDM-NM) is to be used to propose a new baseline and monitoring methodology. This form shall fully and completely describe the methodology. The form should be accompanied by a draft project design document (CDM-PDD) with sections A-E completed, including relevant annexes, in order to demonstrate the application of the proposed new methodologies to a proposed project activity. Each proposed new baseline and monitoring methodology should use a separate "CDM-Proposed New Methodology form" (CDM-NM). The CDM-NM form for several new methodologies may be submitted together with the same CDM-PDD for several components of a proposed project.

2. The forms shall be submitted to the Executive Board in accordance with "Procedures for submission and consideration of a proposed new methodology". The most recent versions of these forms and the procedures may be obtained from the UNFCCC CDM web site (http://unfccc.int/cdm) or from the UNFCCC secretariat by e-mail (cdm-info@unfccc.int) or in print via fax (+49-228-815-1999).

3. The CDM-NM and the CDM-PDD shall include in section A the version number and the date of the document. If sections of the CDM-NM and CDM-PDD are not applicable, it shall be explicitly stated that the section is left blank on purpose. Tables and their columns shall not be modified or deleted. Rows may be added, as needed.

4. Project participants shall refrain from providing glossaries or using key terminology not used in the documents of the Conference of the Parties (COP), the COP/MOP, the "Glossary of CDM terms", or the "Definitions relevant to CDM baseline and monitoring methodologies" (Annex 2 of this document), and they shall refrain from rewriting these instructions.

B. General guidance for completing the proposed new baseline and monitoring methodology form (CDM-NM)

1. The "methodology procedure" sections shall:

(a) Be completed in a fashion that can be readily used as an approved methodology. This requires use of appropriate format, tone, and level of specificity. Text shall be clear and succinct, well-written, and logically sequenced. It shall describe the procedures in a manner that is sufficiently explicit to enable the methodology to carried out by a methodology user, applied to projects unambiguously, and reproduced by a third party. It shall be possible for projects following the methodology to be subjected to a validation and/or verification study. Methodology developers should review and be familiar with methodologies approved by the CDM Executive Board (please refer to the section on methodologies in the UNFCCC CDM web site http://cdm.unfccc.int/methodologies/PAmethodologies).

(b) Be generally appropriate for the entire group of project activities that satisfy the specified applicability conditions. A new methodology should, therefore, stand independently from the specific project activity proposed in the draft CDM-PDD with which the new methodology is being submitted. The methodology should not make direct reference to, or depend on characteristics of, the specific project activity being proposed in the draft CDM-PDD. It should not refer to specific project activities or locations, project-specific conditions or project-specific parameters. This project-specific information should be described in the draft CDM-PDD, however, it can be referred to in the explanation/justification section to help describe the methodology.

(c) Present methodology steps as one might present a recipe. It should include all algorithms, formulae, and step-by-step procedures needed to apply the methodology and validate the project activity, i.e. calculating baseline, project, and leakage emissions. The completed form shall provide stand-alone replicable methodologies, and avoid reference to any secondary documents other than EB-approved tools and methodologies.

(d) Indicate precisely what information the project proponent must report in the draft CDM-PDD and/or in monitoring reports.

(e) Support important procedures and concepts with equations and diagrams. Non-essential information should be avoided.

(f) Refer by name, reference number and version number to approved methodologies and tools if they are used – in whole or in part – in this methodology. Relevant sections can be cited specifically, but should not be repeated. Any proposed modifications and/or additions to approved tools and methodologies need to be clearly highlighted.

(g) Provide instructions for making any logical or quantitative assumptions that are not provided in the methodology and must be made by the methodology user.

(h) Include instructions to assist in implementing the methodology in a conservative manner where logical or quantitative assumptions have to be made by the methodology user, particularly in cases of uncertainty.

2. The "explanation and justification" sections shall:

(a) Be used to assist the assessment by the Meth Panel and the Executive Board in reviewing the methodology. If the proposed methodology is approved, these sections are removed from the final version.

(b) Provide the rationale for the procedures presented.

(c) If the procedure draws from an approved methodology or tool, clearly note any changes to them or elaborations of them. Justify why such changes have been made.

(d) Point out the key logical and quantitative assumptions, i.e., those assumptions that the results of the baseline methodology are particularly sensitive to.

(e) Be clear about sources of uncertainty. Clearly point out which logical or quantitative assumptions have significant uncertainty associated with determining them. If the methodology makes a certain assumption in cases where there is uncertainty, explain why this assumption is appropriate.

(f) Explain how the methodology ensures conservativeness. Explain how the procedures and assumptions on which the procedures rely are conservative. In particular, explain how assumptions in the case of uncertainty are conservative.

C. Use of variables in equations

1. Use the nomenclature of variables contained in Annex 1 to these guidelines. Variables not contained in the standard nomenclature should be named with two or three upper case letters that are first letters of each key word describing variable (e.g. stack height = SH).

2. All variables that are reported or estimated annually should have a *y* subscript for year (e.g. BE_y)

3. Variables should use the *i* subscript to denote multiple pieces of equipment, fuel types, processes, sites or measuring locations (e.g. F_i = flow rate at different measuring points *i*). If two summations are required (e.g. fuel type and equipment piece), the subscripts *i* and *j* should be used.

4. No name should be used more than once for different variables in the same methodology.

5. Where necessary, the subscripts BL and PJ should be used to distinguish between the project and the baseline (e.g. EG_{BL}, EG_{PJ}).

6. Where a variable refers to a gases, the formula of the gas should be indicated as a subscript (e.g. $BE_{CO2,y}$).

II. SUMMARY AND APPLICABILITY OF THE BASELINE AND MONITORING METHODOLOGIES

A. Methodology Title

1. Provide an unambiguous title for the proposed methodology. The title should reflect the project types to which the methodology is applicable. Do not use project-specific titles. Please indicate the following:

(a) The title of the proposed methodology;

(b) The version number of the document;

(c) The date of the document.

2. State whether the proposed methodology is based on a previous submission or an approved methodology and, if so, explain briefly the main deviation(s) and their rationale. Where the methodology references other approved methodologies, the following guidance should be followed:

(a) The new methodology should clarify whether a section of an approved methodology is used verbatim, or rather as the basis for the proposal.

(b) If the section is used verbatim, then no additional text is needed in the methodology proposal other than a reference to the sections and paragraphs of the approved methodology (including version number).

(c) If the original text is modified in the proposal, then the entire text should be repeated.

B. Selected baseline approach from paragraph 48 of the CDM modalities and procedures

1. Developers of a new baseline methodology shall select the approach from paragraph 48 of the CDM modalities and procedures that is most consistent with the context of applicable project types, and most consistent with the underlying algorithms and data sources used in the proposed baseline methodology, and justify the choice on this basis. (EB10, Annex 1, Para B3)

2. Proponents of methodologies have indicated some apparent overlap between approaches (a), (b), and (c) of paragraph 48 of the CDM modalities and procedures. Since paragraph 48 stipulates that only one approach should be chosen, developers are advised to select the one that most closely reflects the process used for calculating baseline emissions or baseline emission rates. The tool used in order to demonstrate additionality does not need to be linked to one of the three approaches of paragraph 48 of the CDM modalities and procedures. (EB10, Annex 1, Para B4)

3. Project participants wishing to select approach 48 (c) of the CDM modalities and procedures shall elaborate in their submission of a proposed new baseline methodology, inter alia, on:

(a) How they determine "similar social, economic, environmental and technological circumstances", and

(b) How they assess the "performance among the top 20 per cent of their category" defined as greenhouse gas emissions performance (in terms of CO_2e emissions per unit of output). (EB08, Annex 1, Para B)

C. Applicability conditions

1. List the category(ies) of project activities to which the methodology may apply. Use the list of categories of project activities and of registered CDM project activities by category available on the UNFCCC CDM web site. If no suitable category(ies) of project activities can be identified, please suggest a new category(ies) descriptor and its definition, being guided by relevant information on the UNFCCC CDM web site.

2. List any conditions which a proposed CDM project activity must satisfy in order for the methodology to be applicable: (e.g. project technology, sectoral circumstances, region). Applicability conditions must pertain to the type of proposed project activity and sector in which it takes place. Conditions should not substitute for steps that are necessary parts of the baseline methodology, such as defining the baseline. In this regard, they should not be conditions on a presumed baseline scenario (e.g., it is not appropriate for an applicability condition to be "The plant would continue to use the same fuel at the same efficiency without the project activity" as this is not a condition on the project activity, but a result of baseline assessment.).

3. In some cases, compliance with an applicability condition, such as "the project activity is a grid-connected wind power facility", is obvious, easily validated, and unlikely to change. In other cases however, compliance with an applicability condition may need to be monitored during the crediting period, and the consequences of non-compliance would need to be indicated in the methodology. For example, if an applicability conditions is "The project should not result in the storage of biomass for more than thirty days", the methodology should explain how the applicability condition can be satisfied (e.g. through monitoring of storage facilities, if present), and how it will be reported.

4. Explain in the "explanations/justifications" section the choice of the project category and applicability conditions. Indicate if an approved methodology exists for the same conditions of application.

D. Summary description of major baseline and monitoring methodological steps

1. For the baseline and monitoring methodology, summarize the key elements of the proposed new methodology, including brief statements on how the proposed methodology:

   (a) chooses the baseline scenario,

   (b) demonstrates additionality,

   (c) calculates baseline emissions,

   (d) calculates project emissions,

   (e) calculates leakage,

   (f) identifies and collects monitoring data,

   (g) calculates emissions reductions.

2. In doing so, if relevant, describe how this methodology builds on, complements, and/or provides an alternative to approved methodologies. Please do not exceed one page. The detailed explanation of the methodology is to be provided in sections II and III of the CDM-NM form.

III. BASELINE METHODOLOGY DESCRIPTION

A. Project boundary

1. Describe and justify the physical delineation of the project boundary and the gases and sources included, bearing in mind that it shall encompass all anthropogenic emissions by sources of greenhouse gases that are significant and reasonably attributable to the project activity:

(a) Explain the physical delineation. Use a figure or flowchart if it would be helpful.

(b) Explicitly state all sources and gases included. Explain whether any sources related to the baseline or the project activity have been excluded, and if so, justify their exclusion. If possible use the table provided in the CDM-NM.

2. When defining which emission sources should be considered in the project boundary, in the baseline scenario and in the calculation of leakage emissions, project participants should make conservative assumptions, for example the magnitude of emission sources omitted in the calculation of project emissions and leakage effects (if positive) should be equal to or less than the magnitude of emission sources omitted in the calculation of baseline emissions. (EB 22 Annex 2)

B. Procedure for selection of the most plausible baseline scenario

1. General issues

1. The baseline is the scenario that reasonably represents the anthropogenic emissions by sources of greenhouse gases that would occur in the absence of the proposed project activity. Different scenarios may be elaborated as potential evolutions of the situation existing before the proposed CDM project activity. The continuation of a current activity could be one of them; implementing the proposed project activity without registration as CDM project activity may be another; and many others could be envisaged.

2. Provide a systematic, step-by-step procedure for determining the most likely baseline scenario. Explain in the "explanations/justification" section why the proposed procedure for determining the baseline scenario is appropriate for the project type and applicability conditions.

3. This procedure should describe a process for identifying the options to be considered as plausible candidate baseline scenarios. Justify that the range of options to be considered as plausible baseline scenarios is sufficiently comprehensive. The options to be considered should not exclude plausible options that, if included, might result in the determination of a different baseline scenario. Baseline methodologies shall require a narrative description of all reasonable baseline scenarios.

4. Highlight the key logical assumptions and quantitative factors underlying the procedure for determining the baseline scenario. Clearly explain the logical and analytical steps that must be followed in ascertaining the most likely baseline scenario from among the candidate baseline scenarios. State clearly which assumptions and factors have significant uncertainty associated with them, and how such uncertainty is to be addressed.

5. Ensure consistency between baseline scenario derived by this procedure and the procedure and formulae used to calculate the baseline emissions (below). The baseline scenario determination procedure should indicate for which baseline scenarios the overall methodology is applicable. This situation would occur when baseline emissions section (below) does not include algorithms and/or parameters relevant to the baseline scenario identified by the procedure.

2. Consideration of national and/or sectoral policies and circumstances in baseline scenarios (EB16, Annex 3 and EB22, Annex 3)

1. A baseline scenario shall be established taking into account relevant national and/or sectoral policies and circumstances, such as sectoral reform initiatives, local fuel availability, power sector expansion plans, and the economic situation in the project sector.

2. As a general principle, national and/or sectoral policies and circumstances are to be taken into account on the establishment of a baseline scenario, without creating perverse incentives that may impact host Parties' contributions to the ultimate objective of the Convention.

3. The following two types of national and/or sectoral policies are to be taken into account when establishing baseline scenarios:

(a) National and/or sectoral policies or regulations that give comparative advantages to more emissions-intensive technologies or fuels over less emissions-intensive technologies or fuels[1];

(b) National and/or sectoral policies or regulations that give comparative advantages to less emissions-intensive technologies over more emissions-intensive technologies (e.g. public subsidies to promote the diffusion of renewable energy or to finance energy efficiency programs)[2].

4. These two types of policies shall be addressed as follows:

(a) Only national and/or sectoral policies or regulations under paragraph 3 (a) above that have been implemented before adoption of the Kyoto Protocol by the COP (decision 1/CP.3, 11 December 1997) shall be taken into account when developing a baseline scenario. If such national and/or sectoral policies were implemented since the adoption of the Kyoto Protocol, the baseline scenario should refer to a hypothetical situation without the national and/or sectoral policies or regulations being in place.

(b) National and/or sectoral policies or regulations under paragraph 3 (b) above that have been implemented since the adoption by the COP of the CDM M&P (decision 17/CP.7, 11 November 2001) need not be taken into account in developing a baseline scenario (i.e. the baseline scenario could refer to a hypothetical situation without the national and/or sectoral policies or regulations being in place).

C. Additionality

1. General issues

1. Provide a systematic step-by-step procedure for determining whether or not the project activity is, or is part of, the baseline scenario, and thereby determining whether the project activity is additional. The methodology should clearly state what the methodology user must do and what information must be presented in the resulting CDM-PDD in order to make a logical and well-substantiated case for the project's additionality.

2. Examples of tools that may be used to demonstrate that a project activity is additional and therefore not the baseline scenario include, among others: (EB10 Annex1, Para 2&3)

(a) A flow-chart or series of questions that lead to a narrowing of potential baseline options; and/or

(b) A qualitative or quantitative assessment of different potential options and an indication of why the non-project option is more likely; and/or

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[1] So called type E+, policy that increase GHG emissions

[2] So called type E-, policy that decrease GHG emissions

(c) A qualitative or quantitative assessment of one or more barriers facing the proposed project activity (such as those laid out for small-scale CDM projects); and/or

(d) An indication that the project type is not common practice (e.g. occurs in less than [<x%] of similar cases) in the proposed area of implementation, and not required by a Party's legislation/regulations.

3. Present the procedures in each step in as much detail as needed, but avoid repetition that is not needed for reasons of clarity.

4. Justify in the "explanations/justification" section why the proposed procedure is an appropriate procedure for establishing the project's additionality. Highlight the key logical assumptions and quantitative factors underlying the procedure for demonstrating the project activity is additional. State clearly which assumptions and factors have significant uncertainty associated with them, and how such uncertainty is to be addressed. If relevant, explain how national and/or sectoral policies and circumstances are taken into account by the methodology.

2. Use of the "Tool for the demonstration and assessment of additionality"

1. Project participants are encouraged to suggest further details on how to implement this tool to specific project types covered by the proposed methodology. If project participants suggest such further details, in the proposed methodology, they should refer to the tool and reproduce only the section(s) of the additionality tool, they propose to modify, clearly highlighting the proposed changes and/or additions to the tool. (EB 18, Para 20)

3. Relationship between the demonstration of additionality and the selection of the baseline scenario (EB17, Para 16)

1. The use of the "tool to assess and determine additionality" does not replace the need for the baseline methodology to provide for a stepwise approach justifying the selection and determination of the most plausible baseline scenario alternatives.

2. Project participants proposing new baseline methodologies shall ensure consistency between the determination of additionality of a project activity and the determination of a baseline scenario.

D. Project emissions, baseline emissions and leakage effects

1. General guidance

1. Elaborate all algorithms and formulae used to estimate, measure or calculate the project emissions, baseline emissions and leakage effects. Be specific and complete, so that the procedure can be carried out in an unambiguous way, replicated, and subjected to a validation and/or verification study:

(a) Explain the underlying rationale for algorithm/formulae (e.g. marginal vs. average, etc.).

(b) Use consistent variables, equation formats, subscripts, etc.

(c) Number all equations;

(d) Define all variables, with units indicated;

(e) Justify the conservativeness of the algorithms/procedures; to the extent possible, include methods to quantitatively account for uncertainty in key parameters;

2. Elaborate all parameters, coefficients, and variables used in the calculation of baseline emissions, project emissions and leakage effects:

(a) For those values that are provided in the methodology:

(i) Clearly indicate the precise references from which these values are taken (e.g. official statistics, IPCC Guidelines, commercial and scientific literature);

(ii) Justify the conservativeness of the values provided.

(b) For those values that are to be provided by the project participant, clearly indicate how the values are to be selected and justified, for example, by explaining:

(i) What types of sources are suitable (official statistics, expert judgment, proprietary data, IPCC, commercial and scientific literature, etc.);

(ii) The vintage of data that is suitable (relative to the project crediting period);

(iii) What spatial level of data is suitable (local, regional, national, international);

(iv) How conservativeness of the values is to be ensured.

3. For all data sources, specify the procedures to be followed if expected data are unavailable. For instance, the methodology could point to a preferred data source (e.g. national statistics for the past 5 years), and indicate a priority order for use of additional data (e.g. using longer time series) and/or fall back data sources to preferred sources (e.g. private, international statistics, etc.). (EB09, Annex 3, Para 6)

4. Use International System Units (SI units – refer to http://www.bipm.fr/enus/3_SI/si.html). (EB09, Annex 3, Para 6)

5. Note any parameters, coefficients, variables, etc. that are used to calculate baseline emissions but are obtained through monitoring. Ensure consistency between the baseline and monitoring methodologies.

6. If the calculation of the baseline emissions is to be performed ex post, include an illustrative ex ante emissions calculation.

7. Ensure consistency between the elaboration of the baseline scenario (section B.) and the procedure for calculating the emissions of the baseline.

8. Explain in the "explanations/justifications" section any parts of the algorithm or formulae that are not self-evident. Justify that the procedure is consistent with standard technical procedures in the relevant sector. Provide references as necessary. Explain implicit and explicit key assumptions in a transparent manner. State clearly which assumptions and procedures that have significant uncertainty associated with them, and how such uncertainty is to be addressed. Describe the uncertainty of key parameters and, where possible, provide an uncertainty range at 95% confidence level for key parameters for the calculation of emission reductions. Methodology developers are also encouraged to refer to chapter 6 of the IPCC Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories for more Guidance on analysis of uncertainty.

2. Transparency and conservativeness

1. According to paragraph 45 (b) of the modalities and procedures, a baseline shall be established in a "transparent and conservative manner". This means that assumptions are explicitly explained and choices are substantiated. In case of uncertainty regarding values of variables and parameters, the establishment of a baseline is considered conservative if the resulting projection of the baseline does not lead to an overestimation of emission reductions attributable to the CDM project activity (that is, in the case of doubt, values that generate a lower baseline projection shall be used). (EB05, Annex 3)

3. Output-linked baseline values (EB08, Annex 1, Para D8)

1. An output- or product-linked definition of baseline values (i.e. CO_2e per unit of output) shall be applied, unless the project participants can demonstrate why this is not applicable and provide an appropriate alternative.

4. Use of and/or reference to lifecycle analysis (EB22, Annex 2)

1. When referring to and/or making use of lifecycle analysis (LCAs) and/or LCA tools, project participants shall in a transparent manner provide all equations, parameterizations and assumptions used in the LCA and/or LCA tools to calculate baseline and monitoring methodologies. For example, this could be accomplished by highlighting the relevant sections in an attached copy of the referenced LCA and/or tool.

5. Ex-post calculation of baseline emission rates (EB09, Annex 3, Para 8)

1. The ex post calculation of baseline emission rates may only be used if proper justification is provided. Notwithstanding, the baseline emission rates shall also be calculated ex-ante and reported in the draft CDM-PDD in order to satisfy the requirements for identification of the elements of a baseline methodology agreed by the Executive Board at its eighth meeting.

6. Treatment of the output and lifetime of plants and equipment (EB08 and EB22, Annex 2)

1. If a proposed CDM project activity seeks to retrofit or otherwise modify 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 output or lifetime of the existing facility. For any increase of output or lifetime of the facility which is due to the project activity, a different baseline shall apply. (EB08)

2. Where a project activity involves the replacement or retrofit of existing equipment or facilities, project participants should take into account that the existing equipment could have been replaced, retrofitted or modified in the absence of the project during the crediting periods. In this case, a baseline methodology should provide a methodological approach to assess whether the existing equipment would

in the absence of the CDM be replaced and, if this is the case, to reflect this in the calculation of emission reductions the replacement, retrofit or modification of the equipment in the absence of the CDM.

3. For a number of project types, it is reasonable to assume that after replacement or retrofit of the existing equipment in the absence of the project activity, the emission level would be similar to that of that of the project activity.

4. In this case, emission reductions resulting from a specific equipment replacement shall only be accounted from the date of replacement until the point in time when the existing equipment would have been replaced in the absence of the project activity or the end of crediting period, whatever is earlier.

5. In order to estimate the point in time when the existing equipment would need to be replaced in the absence of the CDM, a new methodology may consider the following approaches:

(a) A sector and/or activity specific method or criteria to determine when the equipment would be replaced or retrofitted in the absence of the CDM;

(b) The typical average technical lifetime of the type equipment may be determined and documented, taking into account common practices in the sector and country, e.g. based on industry surveys, statistics, technical literature, etc.;

(c) The practices of the responsible entity regarding replacement schedules may be evaluated and documented, e.g. based on historical replacement records for similar equipment.

6. The point in time when the existing equipment would need to be replaced in the absence of the project activity should be chosen in conservative manner.

7. In case of project activities that involve several replacements or retrofits, project participants may consider, inter alia, the following generic approaches:

(a) Determination of the technical lifetime on a case by case basis, for each equipment or equipment type that is being replaced. This approach may be appropriate if different types of existing equipment are involved; or

(b) Assuming a conservative default technical lifetime for all equipment involved; or

(c) For projects involving a large number of individual equipment installations, methodologies may use a baseline that reflects the expected improvements in emission characteristics (for the equipment type within the sector or industry in question) as a result of replacements or retrofits of equipment in the absence of the project activity.

7. Use of regression analysis (EB21, Annex 7)

1. Where methodologies propose using multiple regression analysis to estimate baseline emissions or project emissions, safeguards should be used in order to ensure conservativeness and rigor of the fitted regression model. General guidance to achieve such objectives are:

(a) In the process of fitting the regression, assumptions and requirements for regression models should be considered e.g. testing for multi-collinearity;

(b) Independent variables that are likely to influence the dependent variable in question should be accounted for. Technical background information that may support the selection of such variables should be provided with the methodology for the review of the panel;

(c) Testing for statistical significance for all independent variables should be done. Independent variables which are statistically significant at 95% confidence level should be selected in the regression model;

(d) If the time series data is used to fit the regression, autocorrelation should be tested. I n case autocorrelation is found to be statistically significant, time series analysis should be used instead of regression.

8. Negative emission reductions (EB21, para 18)

1. In some cases and for some methodologies, project activities may temporarily result in "negative emission reductions" in a particular year, for example due to poor performance or due to leakage effects outweighing emission reductions. In these cases, proposed new methodologies should stipulate that if a project activity temporarily results in "negative emission reductions", i.e. baseline emissions minus project emissions minus leakage effects are negative, any further CERs will only be issued when the emissions increase has been compensated by subsequent emission reductions by the project activity.

9. Consideration of uncertainties when using sampling (EB22, Annex 2)

1. Methodologies employing sampling to derive parameters in estimating emissions reductions shall quantify these parameter uncertainties at the 95% confidence level. In addition, the choice of the upper or lower bounds to be used in estimating emission reductions shall be conducted in a manner that ensures conservativeness.

10. Consideration of carbon pools in CDM project activity (EB20, Annex 8)

1. The following approaches towards changes in carbon pools[3] due to CDM project activities should be taken into account:

(a) Where a project activity, which does not seek to obtain tCERs or lCERs from afforestation or reforestation project activities, may directly or indirectly results in a net decrease of carbon pools compared to what would occur in the absence of the project activity, such changes should be taken into account in the calculation of emission reductions subtracting the corresponding quantities from emission reductions;

(b) Where a project activity, which does not seek to obtain tCERs or lCERs from afforestation or reforestation project activities, may directly or indirectly results in a net increase of carbon pools compared to what would occur in the absence of the project activity, this increase should not be taken into account in the calculation of emission reductions;

(c) Where a project activity does seek to obtain tCERs or lCERs from afforestation or reforestation project activities, this activity should be treated as a separate project activity and shall fulfill the modalities and procedures for afforestation and reforestation activities under the CDM

[3] Carbon pools referred are those defined in the modalities and procedures for afforestation and reforestation project activities under the CDM contained in the annex to decision 19/CP.9.

11. Specific guidance on leakage

1. Leakage is defined as the net change of emissions occurring outside the project boundary that is attributable to the implementation of the CDM project activity. Identify the sources of leakage. Explain which sources of leakage are to be calculated, and which can be neglected. Even if the calculation of the leakage is to be performed ex post, the procedure should include the calculation of an ex ante estimate.

12. Specific guidance on emissions reductions

1. Elaborate the algorithms and formulae used to estimate, measure or calculate the net emission reduction from the CDM project activity. In most cases, this will be simple equation with three terms: the baseline emissions, the project emissions, and the net leakage.

2. Even if the calculation of the emission reductions is to be performed ex post, the procedure should include the calculation of an ex ante estimate.

3. Ensure that the description of emission reductions is consistent with the proposed new monitoring methodology.

E. Changes required for methodology implementation in 2nd and 3rd crediting periods (EB20, Annex 7)

1. At the start of the second and third crediting period for a project activity, two issues need to be addressed:

   (a) assessing the continued validity of the baseline, and

   (b) updating the baseline.

2. Provide a methodological procedure on how these two issues should be addressed.

Assessing the continued validity of the baseline

3. In assessing the continued validity of the baseline, a change in the relevant national and/or sectoral regulations between two crediting periods has to be examined at the start of the new crediting period. If at the start of the project activity, the project activity was not mandated by regulations, but at the start of the second or third crediting period regulations are in place that enforce the practice or norms or technologies that are used by the project activity, the new regulation (formulated after the registration of the project activity) has to be examined to determine if it applies to existing plants or not. If the new regulation applies to existing CDM project activities, the baseline has to be reviewed and, if the regulation is binding, the baseline for the project activity should take this into account. This assessment will be undertaken by the verifying DOE.

Updating the baseline

4. For updating the baseline at the start of the second and third crediting period, there shall be no change in the methodology for determining the baseline emissions. However, new data available will be used to revise the baseline emissions. For example, if the "average of 3 most recent years data" was used to determine the baseline emissions for the first crediting period, the baseline shall be updated using the average for the 3 most recent years prior to the start of the subsequent crediting period.

5. In the case of baselines where emission factors are determined ex ante (and not updated during a crediting period), the baseline emissions factor shall be updated for the subsequent crediting period. This shall not be necessary for baselines which are constantly updated. In both cases, the CDM project activities are not included in the revised estimation of the baseline emissions.

6. Project participants shall assess and incorporate the impact of new regulations on baseline emissions.

F. Data and parameters not monitored

1. This section should include a compilation of all data needed to calculate project emissions, baseline emissions and leakage emissions that is not monitored and thus remains fixed throughout the crediting period. This includes data that is measured or sampled and data that is collected from other sources (e.g. official statistics, expert judgment, proprietary data, IPCC, commercial and scientific literature, etc.). Data that is calculated with equations provided in the methodology or default values specified in the methodology should not be included in the compilation.

2. Use the table provided in the CDM-NM to provide the following information for each data (EB09, Annex 3, Para 6):

(a) Under "data / parameter", the variable used in equations in the baseline methodology.

(b) The International System Unit (SI units – refer to http://www.bipm.fr/enus/3_SI/si.html).

(c) A clear and unambiguous description of the parameter;

(d) A description of data sources that should be used to determine this parameter. Clearly indicate how the values are to be selected and justified, for example, by explaining:

(i) What types of sources are suitable (official statistics, expert judgment, proprietary data, IPCC, commercial and scientific literature, etc.);

(ii) The vintage of data that is suitable (relative to the project crediting period);

(iii) What spatial level of data is suitable (local, regional, national, international);

(iv) How conservativeness of the values is to be ensured.

(v) The procedures to be followed if expected data are unavailable. For instance, the methodology could point to a preferred data source (e.g. national statistics for the past 5 years), and indicate a priority order for use of additional data (e.g. using longer time series) and/or fall back data sources to preferred sources (e.g. private, international statistics, etc.).

(e) A description of the measurement procedures or reference to appropriate standards;

3. The following table provides an example for a simple parameter.

Data / Parameter:	**EG_{3y}**
Data unit:	MWh
Description:	Quantity of electricity generated by the project plant prior to the project implementation during the three most recent historical years
Source of data:	On-site measurements and electricity sales receipts
Measurement procedures (if any):	On-site electricity meter
Any comment:	

4. The actual choice of data and, where necessary, justifications for the choice should be documented in the CDM-PDD.

IV. MONITORING METHODOLOGY DESCRIPTION

A. Monitoring procedures

1. The monitoring methodology needs to provide detailed information on how to establish the monitoring plan related to the collection and archiving of all relevant data needed to:

(a) Estimate or measure emissions occurring within the project boundary,

(b) Determine the baseline emissions, and

(c) Identify increased emissions outside the project boundary.

2. The monitoring methodology should reflect good monitoring practice appropriate to the type of project activity.

3. Explain how the monitoring plan should be implemented, the responsibilities of various parties, and the management and operational structure supporting monitoring by the project participant.

B. Data and parameters monitored

4. The monitoring methodology should provide a complete compilation of the data that needs to be collected for the application of the methodology. This includes data that is measured or sampled and data that is collected from other sources (e.g. official statistics, expert judgment, proprietary data, IPCC, commercial and scientific literature, etc.). Data that is calculated with equations provided in the methodology should not be included in the compilation.

5. Use the tables provided in the CDM-NM to provide the following information for each data (EB09, Annex 3, Para 6):

(a) Under "data / parameter", the variable used in equations in the baseline methodology.

(b) The International System Unit (SI units – refer to http://www.bipm.fr/enus/3_SI/si.html).

(c) A clear and unambiguous description of the parameter;

(d) A description which data sources should be used to determine this parameter. Clearly indicate how the values are to be selected and justified, for example, by explaining:

(i) What types of sources are suitable (official statistics, expert judgement, proprietary data, IPCC, commercial and scientific literature, etc.);

(ii) The vintage of data that is suitable (relative to the project crediting period);

(iii) What spatial level of data is suitable (local, regional, national, international);

(iv) How conservativeness of the values is to be ensured.

(v) The procedures to be followed if expected data are unavailable. For instance, the methodology could point to a preferred data source (e.g. national statistics for the past 5 years), and indicate a priority order for use of additional data (e.g. using longer time series) and/or fall back data sources to preferred sources (e.g. private, international statistics, etc.).

(e) A description of the measurement procedures or reference to appropriate standards;

(f) A description of the frequency of monitoring (e.g. continuously, annually, etc);

(g) A description of QA/AC procedures.

6. The following table provides an example for a simple parameter.

Data / Parameter:	**$EG_{PJ,y}$**
Data unit:	MWh
Description:	Quantity of electricity generated by the project plant during the year y
Source of data:	On-site measurements and electricity sales receipts
Measurement procedures (if any):	On-site electricity meter
Monitoring frequency:	Continuously
QA/QC procedures:	Meter should be calibrated regularly according to manufacturer's guidelines. Measurement results should be cross-checked with the quantity of invoices from the grid operator.
Any comment:	

Annex 1. List of standard variables

V. THIS ANNEX CONTAINS STANDARD VARIABLE NAMES DRAWN FROM APPROVED METHODOLOGIES AND IPCC GUIDELINES THAT SHOULD BE USED FOR ALL NEW BASELINE AND MONITORING METHODOLOGIES. FOR EASE OF EVALUATION AND USE OF METHODOLOGIES, THESE NAMES SHOULD BE USED WHEREVER POSSIBLE, UNLESS THERE ARE SPECIFIC REASONS THAT A DIFFERENT DESIGNATION IS REQUIRED. ISO OR OTHER STANDARDS COULD ALSO BE A REFERENCE, WHERE APPROPRIATE.

Emissions, emission factors and global warming potentials

Variable	Symbol	Units	Comment
Baseline emissions (total)	BE_y	tCO_2e	
Component of baseline emissions	$BE_{XX,y}$	tCO_2e	XX should be 2-3 letters or a word signifying the source of emissions (e.g. BE_{LW},y = baseline emission from land-filled waste)
Component and specific gas of baseline emissions	$BE_{GHG,XX,y}$	tCO_2e	GHG should be gas name; XX should be 2-3 letters or a word signifying the source of emissions
Project emissions	PE_y	tCO_2e	
Component of project emissions	$PE_{XX,y}$	tCO_2e	XX should be 2-3 letters or a word signifying the source of emissions
Component and specific gas of project emissions	$PE_{GHG,XX,y}$	tCO_2e	GHG should be gas name; XX should be 2-3 letters or a word signifying the source of emissions
Leakage emissions	LE_y	tCO_2e	
Component of leakage emissions	$LE_{XX,y}$	tCO_2e	XX should be 2-3 letters or a word signifying the source of emissions (e.g. $LE_{VH.y}$ = leakage emissions from vehicles)
Component and specific gas of leakage emissions	$LE_{GHG,XX,y}$	tCO_2e	GHG should be gas name; XX should be 2-3 letters or a word signifying the source of emissions
Carbon dioxide emission factor	$EF_{CO2,XX}$	tCO_2/TJ	XX should refer to fuel type, and could be i to signify several possible fuel types (e.g. $EF_{CO2,i}$ or $EF_{CO2,coal}$, $EF_{CO2,NG}$, $EF_{CO2,oil}$)
Methane emission factor	$EF_{CH4,XX}$	tCH_4/TJ	XX should refer to fuel type or process
Nitrous oxide emission factor	$EF_{N2O,XX}$	tN_2O/TJ	XX should refer to fuel type or process
Carbon dioxide equivalent emission factor	$EF_{CO2e,XX}$	tCO_2e/TJ	XX should refer to fuel type or process
CO_2 emission factor for electricity	$EF_{CO2,ELEC,y}$	tCO_2/MWh	
Global warming potential	GWP_{XX}	tCO_2e/t gas	XX should denote the gas (CH_4, N_2O)
Other emission factors	$EF_{XX,YY}$	tGHG/unit of output	XX should specify the gas (where necessary), YY is product output or service (e.g. $EF_{CO2,clinker}$: emissions factor

			for clinker in tCO_2/t clinker; $EF_{N2O,NA}$: emissions factor for nitric acid in tN_2O/t nitric acid)

Note that standard IPCC emissions factors refer to emissions per unit of *energy*. If the methodology also uses emission per unit of mass, then different variable names should be used for this, or the equation should include the net calorific value to convert to energy units. If the methodology refers to emissions per unit of production or service, this should be indicated as described above under "Other emission factors".

General

Variable	Symbol	Units	Comment
Production output (project or baseline)	$P_{xx,zz,y}$	tonnes or m^3	XX indicates the product, y is year. ZZ represents baseline and project production of same product, if needed, use subscripts BL and PJ for baseline and project respectively (e.g. $P_{NH3,PJ,y}$ = production of ammonia in the project activity)
Density	ρ_x	t/m^3	e.g. ρ_{CH4} = density of methane
weight fraction or weight concentration	$w_{GHG,XX}$	volume or mass %	GHG is the gas; XX indicates where concentration sample is taken and/or substance measured (e.g. $w_{CH4,PJ}$ = concentration of methane in project gas stream)
Flow rate	$FR_{XX,YY}$	m^3/time	XX should denote the gas, YY the type of flow stream (e.g. $FR_{CH4,flare}$)
Days	d	days	
Hour, year	h, y		

Energy

Variable	Symbol	Units	Comment
Energy efficiency	η_{XX}	%	useful energy output/total energy input, also used for power plants and all boilers (e.g. η_{BL} = energy efficiency of piece of equipment in the baseline)
Electricity generation	EG_y	MWh	Project and baseline generation should include subscripts (e.g. $EG_{PJ,y}$)
Heat production	HG_y	GJ	Project and baseline generation should include subscripts (e.g. $HG_{BL,y}$)
Electricity consumption	EC_y	MWh	
Heat consumption	HC_y	GJ	
Net calorific value	NCV_{XX}	GJ/t	XX is the fuel or oxidized substance; XX could be i if there are many alternatives; standardised to lower heating value (e.g. NCV_{NG} = net calorific value of natural gas)
Fuel quantity combusted	FC_{XX}	t or m^3	XX is the fuel type (e.g. $FC_{Biomass}$ = quantity biomass combusted, FC_{NG}

			= quantity natural gas combusted)
Oxidation factor for fuel combustion	$OXID_{XX}$	%	XX is the fuel type, e.g. $OXID_{NG}$ = oxidation factor for natural gas
Specific energy consumption	SEC_{XX}	GJ/tonne production	e.g. $SEC_{clinker}$ = energy consumption per tonne of clinker produced
Specific fuel consumption	SFC_{XX}	tonne fuel/tonne production	e.g. SFC_{OPC} = fuel consumption per tonne of ordinary Portland cement production
Specific energy consumption in transport	$SEC_{YY,XX}$	GJ/t-km or passenger-km	YY is transport mode and XX is fuel
Weighting of operating margin	w_{OM}	-	
Weighting of build margin	w_{BM}	-	
Electricity generated by plant i on grid	$EG_{GRID,i,y}$	MWh	i is plant, y is year
Load factor	LF_x	%	x is plant identification
Operating hours	T_x	hours	annual operating hours for plant/equipment x
Enthalpy	h	kJ/kg	used in particular for steam

Financial/economic

Variable	Symbol	Units	Comment
Internal Rate of Return	IRR	%	
Discount rate	dr	%	
Net Present Value	NPV	$ or LCU	

Agriculture, waste and fugitive methane emissions

Variable	Symbol	Units	Comment
Methane gas destroyed in baseline	$GD_{CH4,BL,y}$	tCH_4	
Methane gas destroyed in project scenario	$GD_{CH4,PJ,y}$	tCH_4	
Flare efficiency	$\eta_{flare,t}$	%	this may have a time or period component *t*, if efficiency is measured and varies over time
Fraction of methane destroyed in baseline	$FD_{CH4,BL,y}$	%	Used if the baseline specifies a percentage rather than absolute baseline estimate
Methane Conversion Factor	MCF	%	for landfill site or wastewater treatment plant
Chemical oxygen demand	COD_y	t COD	for effluent stream
Biological oxygen demand	$BOD_{i,y}$	t BOD	i is stage of treatment
Maximum methane production capacity	B_0	tCH_4/t input	"input" could be COD, or mass of waste stream (e.g. manure)
Degradable Organic Carbon	DOC_j	Fraction	j is part of waste stream (e.g. slow vs fast degrading materials)
Fraction of DOC dissimilated	DOC_F	Fraction	
Methane conversion factor for treatment of manure	$MCF_{manure,i}$	%	i is stage of treatment
Volatile solid excretion rate	VS_p	kg dry matter/animal-	p is the population targeted

		day	

Industrial production

Variable	Symbol	Units	Comment
Weight fraction of CaO or MgO	$w_{CaO,x}$/ $w_{MgO,x}$	fraction	x can indicate clinker or raw material

Annex 2 – Definitions relevant to CDM baseline and monitoring methodologies

Biomass (EB20 Annex 8):

When referring to biomass in relevant baseline and monitoring methodologies:

1. Biomass means non-fossilized and biodegradable organic material originating from plants, animals and micro-organisms. This shall also include products, by-products, residues and waste from agriculture, forestry and related industries as well as the non-fossilized and biodegradable organic fractions of industrial and municipal wastes. Biomass also includes gases and liquids recovered from the decomposition of non-fossilized and biodegradable organic material.

5. Biomass residues means biomass by-products, residues and waste streams from agriculture, forestry and related industries.

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