CDM: Proposed new methodology expert form
(version 04)
(To be used by methodology experts providing desk review for a proposed new methodology)

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Related F-CDM-NM document ID number	NM0116

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.

A. Evaluation of the proposed new methodologies by desk reviewers:

I. Evaluation of the proposed new baseline methodology:

Title of new baseline methodology:>> Reduction in the use of Ordinary Portland Cement for concrete mix preparation.

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

>> The conditions under which this project activity would be applicable include the following:

1. project activity involves reduction in ordinary portland cement (OPC) use for the preparation of concrete mix in a variety of construction applications, by substituting part of OPC content in concrete mix with alternate materials of less GHG intensity;
2. there are no existing regulations/legislation that encourage or prohibit the reduction in OPC content in concrete mix preparation;
3. the project activity do not directly control baseline emission, project emission or emission reduction in OPC production process; it results in reduction of OPC requirement in concrete mix preparation and hence indirectly results in avoiding the need to produce more OPC in the cement industry, thereby avoiding CO2 emissions from OPC manufacturing processes; and
4. the concrete mix prepared by the project activity should not adversely impact the functionality and is in compliance with applicable standards/guidelines etc., on the functional characteristics of concrete mix.

This baseline methodology is to be used in conjunction with the monitoring methodology. "Reduction in the use of Ordinary Portland Cement for concrete mix preparation."

Strengths and weaknesses of the methodology:

>> The methodology has the following potential strengths and weaknesses:

"**Potential Strengths**

1. The methodology ensures a conservative baseline by considering only carbon dioxide (CO2) emissions during production of the OPC.
2. The methodology is cost effective in its application since the actual project data archived during the planning and execution of a construction project can be used for calculating reduction in OPC usage and consequent emission reductions.

Potential Weakness

1. The methodology cannot distinguish quantum of CO2 emissions from different OPC production processes/ technologies.
2. The methodology cannot provide a check on actual avoidance of OPC production by a quantity (at the margin) equal to its actual reduction.
3. The methodology neither monitors CO2 emissions at individual cement manufacturing units nor directly

causes CO2 emission reduction in cement production process."

The reviewer considers this a well structured methodology that could have wide application.

Any changes needed to improve the methodology:

Minor changes:>> The above weaknesses need to be further explained. Change "IPPC" to "IPCC" in section B. Some language needs to be changes e.g. "the project activity do not control the baseline emission." this should be the "project participant does". A.3.3. "Functional characteristics" of concrete should be defined and then monitored.

Major changes:>> 48b baseline approach is more appropriate. Leakage from the use of admixtures should be dealt with and ignored if necessary.

II. Evaluation of the proposed new monitoring methodology:

Title of new monitoring methodology: >> Reduction in the use of Ordinary Portland Cement for concrete mix preparation.

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

>>The conditions under which this project activity would be applicable include the following:

1. project activity monitors of reduction in ordinary Portland cement (OPC) use for preparation of concrete mix in variety of construction applications;
2. project activity monitors preparation of concrete mix by substituting part of OPC content in concrete mix with alternate materials of less GHG intensity; and
3. project activity considers use of quality assurance and quality control (QA/QC) measures at the stage of concrete preparation and application.

ii. Strengths and weaknesses of the methodology:

>>The project participant offers the following strengths and weaknesses:

"**Potential Strengths**

1. The monitoring methodology is cost effective since actual baseline and project implementation database archived during the planning and execution of a construction project can be used for calculating reduction in OPC usage and resulting CO2 emission avoidance.
2. The monitoring methodology need not consider project emissions due to operation of concrete mix preparation machinery since the activity of concrete mix preparation is of similar scale during project activity and baseline scenarios.

Potential Weakness

1. The methodology does not directly measure quantum of CO2 emissions from OPC production processes.
2. The methodology cannot provide a check on actual avoidance/ reduction of OPC production in the cement industry due to reduction in its requirement/use due to the project activity."

The reviewer considers the strength to be its simplicity and broadness of application. The weakness is that it is incomplete.".

iii. Any changes needed to improve the methodology:

a. Minor changes:>>

b. Major changes:>> There are some gaps in the monitoring. The data gaps are in monitoring of the emissions associated with the admixtures. The properties and performance of the baseline and project activity concrete (and if there are differences in service how these emissions are to be dealt with). The national/international standard concrete mixture ratios. The transportation of additives and admixture needs to be monitored and included in the calculation of leakage.

B. Details of the evaluation of the proposed new methodology by the desk reviewer:

I. Proposed new baseline methodology *(specify title here):* >> Reduction in the use of Ordinary Portland Cement for concrete mix preparation.

(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 is based on understanding the emissions from cement in the baseline and Lower Cement Concrete Technology (LCCT) in the project activity scenario. The author of the methodology describes the methodology as follows: 'The baseline methodology has two components:

1. determination of quantum of OPC used to prepare one tonne of concrete mix in the absence of the project activity; and

2. determination of GHG emissions for a tonne of OPC produced in the cement industry.

Using 1 and 2, the GHG emissions in the preparation of one tonne of concrete, attributable to OPC content in concrete mix can be computed."

The methodology suggests the use of "CO_2 emission factor data from National Communications of the host country for emissions due to clinker production process in OPC manufacturing, and use of any authoritative national level sector-wise average for CO_2 emission due to use of fuels in OPC manufacturing process or calculate the same using plant-wise fuel consumption data and IPPC (sic should read IPCC) data on emissions for different fuels, for computation of 2 as mentioned above."

The project activity involves the use of a replacement to the cement in the concrete, which if it is a waste product should be considered to be zero emissions along with the emissions attributing to the balance of clinker, grinding and blending. Transportation of OPC emissions are included as a leakage.

b) State the approach selected:

>> Existing historical or actual emission, as applicable (48a).

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:

>> 48a is selected because the data is available from existing OPC plants. The reason 48b is not used is because of unreliable cost data and not using 48c is because the technology has not been used in many non-annex 1 countries and hence the approach would be "restrictive". Despite the reasons for not using b and c, a is not ideal as the LCCT approach will most likely be more cost effective than using more clinker. Hence 48b is the more appropriate approach.

(2) Basis for determining the baseline scenario:

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

>> The amount of cement in a concrete mix is set by standards or in the absence of that, tender specifications. The amount of cement in a concrete mix can then be used to estimate the quantity of emissions from the preparation of that cement. The document then specifies 'To estimate the CO_2 emissions for manufacturing of one unit of OPC, the methodology proposes to use the average specific emission from four nearest cement plants to the construction site identified in the project boundary. However, as such an estimation is ex-post, an ex-ante calculation using official data from Host Country sources is recommended to arrive at initial (ex-ante) estimates of the baseline."

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

>> The basis is average host country official data on emissions from the production of OPC. However, this is corrected using the average of the closest 4 cement plants to the construction site ex-post.

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 applies the additionality tool, though it is not clear how it has been modified if at all in its summarised presentation in the methodology.

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

>> It is appropriate and adequate.

(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 is adequately described albeit briefly.

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 methodology is appropriate.

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 methodology could result in the identification of a baseline scenario.

Please explain:

>>The methodology simply suggests that if 48a is applied an ex-ante estimation of average emissions of GHG can be made based on the national emissions data for the production of OPC. Whether this or the scenario where less OPC and more additives are used as the baseline scenario is up to the additionality tool to determine.

(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, it includes algorithms and generic formulae.

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

>>The spatial scope is a concrete mixing facility. This is appropriate for the baseline although some data is sourced outside of the project boundary (OPC manufacturing plants - the 4 closest to the concrete plant). Leakage is calculated using the transportation of OPC to the concrete mixing facility.

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:

>> The vintage of data is current as the methodology applies IPCC data for ex ante calculations and then applies emissions data from the 4 closest OPC manufacturing plants to the concrete facility.

(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

>> Includes CO2, N2O and CH4 emitted in the production (fuels and chemical emissions) of OPC and transportation of OPC to the point where concrete is manufactured.

ii) Physical delineation

>>Facilities for the storage of raw materials required for concrete mix preparation and the concrete mix preparation area/s.

b) Indicate whether this project boundary is appropriate:

>> The boundary is appropriate.

(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 include: The parameters and or assumptions are discussed below:

" the CO2 emissions for manufacturing of a unit of OPC includes emissions from calcination and fuel/power consumption for clinker production, grinding and blending operations;

N2O and CH4 emissions are insignificant during production process of OPC;

alternative cementitious material(s) to be used in the project activity for reducing OPC consumption are solid wastes from some industries, and hence GHG intensity of the material(s) would be zero; and

GHG emissions during concrete mix preparation using admixture and alternative cementitious material(s) would be same as in the scenario wherein OPC is used in the place of alternate material.

1. due to savings in OPC consumption/requirement as a result of the project activity, the demand for OPC use increases in other/similar applications, encouraging more OPC production with associated GHG emissions; and

2. due to reduction in OPC content in concrete mix production, the durability (expected life-time) of constructed projects may decrease resulting requirement to use more OPC at a sooner date; such would generate need for producing more OPC, resulting in emission of more GHGs.

Implicit assumptions include: The reduction in OPC through the replacement of "waste" additives and water reducing "admixtures" begs the question why this technology was not applied in the absence of the project activity. Data from other 4 plants in vicinity of project activity is readily available.