

 <p style="text-align: center;">CDM: Proposed new methodology expert form (version 04) (To be used by methodology experts providing desk review for a proposed new methodology)</p>	
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Related F-CDM-NM document ID number	NM0096
<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>	
A. Evaluation of the proposed new methodologies by desk reviewers:	
I. Evaluation of the proposed new baseline methodology:	
<p>Title of new baseline methodology:>> Energy Efficiency improvements in district heating production and distribution</p>	
<p>i. Conditions under which this methodology is applicable to other potential projects (e.g. project type, region, data availability):</p> <p>>>The proposed new methodology is applicable to the following types of project activities:</p> <ol style="list-style-type: none"> 1. The project activity involves substitution of individual boilers, stoves, and block heat systems by a more efficient method of heat (and hot tap water (HTW)) supply (district heating possibly also involving co-generation); 2. The project activity involves efficiency improvements in heat production and heat distribution in existing district heating systems (improved heat production efficiency and / or reduction of losses from the distribution system); 3. The project activity involves energy efficiency improvements in heat production and heat distribution in introduction of district heating systems to new buildings. <p>The proposed new base line methodology is applicable for project activities which include:</p> <p>1) heat produced by heat only boilers (HOBs) fired by coal or natural gas, and 2) utilisation of surplus heat from existing thermal power plants or industrial power production (cogeneration), fired by coal or natural gas.</p> <p>The proposed new base line methodology is applicable for project activities in which the heat consumption (heating and HTW) is identical in the base line scenario and in the project scenario, i.e. the proposed new base line methodology is not applicable in project activities in which the energy savings (emission reductions) are only related to improved building insulation, reduced energy consumption in buildings (e.g. installation of automatic controls, etc.).</p> <p>The methodology is not applicable to projects in which the baseline changes during the crediting period.</p> <p>ii. Strengths and weaknesses of the methodology:</p> <p>>>Strengths are:</p> <ul style="list-style-type: none"> • The methodology is applicable to various types of project activities. <p>Weaknesses are:</p> <ul style="list-style-type: none"> • In section B under main principles it is stated that the only data to be monitored is the 	

actual heat supplied, while in the monitoring methodology also fuel consumption, electricity supply and caloric value are monitored.

- It is not immediately clear how the monitoring methodology relates to the baseline methodology.
- It is unclear why the monitored data are used to make an update of the emission reduction and are not used directly in the calculations. The methodology starts with the calculation of the heat demand by determining heated floor area, the design thermal rating and the full load hours (formulae 1 and 2). In step 6 the heat demand is monitored in order to 'update' the emission factor. It is not clear why the monitored data are not direct input in the calculations to determine the emission reductions. This would make the methodology much more transparent and simple.
- The method for the allocation of fuel (and subsequently the emissions) for the supply of heat from the cogeneration unit is not conservative (see Section 9 below for explanation)

iii. Any changes needed to improve the methodology:

- a. Minor changes:>>Improve the references to the monitoring methodology.
- b. Major changes:>>(1) Reconsider the allocation of fuel input to the heat supply from the CHP, either by explaining why it is appropriate and conservative to allocate the fuel in the manner applied currently or by revising this section of the methodology. (2) Reconsider the application of formulae 1 and 2 in the methodology.

II. Evaluation of the proposed new monitoring methodology:

Title of new monitoring methodology: >>Monitoring of Energy Efficiency Improvements in District Heating Production and Distribution

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

>> The methodology is applicable to project activities involving improvements in efficiency of heat production and heat distribution. Possible project activities are

- Heat supply from a district heating system that will replace heat supply from dispersed boilers and stoves
- Improved heat production efficiency (co-generation from thermal power plants) is used as heat source for the district heating system.

The monitoring methodology is applicable in situations in which the buildings are supplied from existing boilers, and also in situations in which buildings are planned to be constructed and supplied from planned (new) dispersed boilers. The monitoring methodology can also be applied to projects involving a mixture of the two previous mentioned situations, i.e. when the district heating system is planned to supply both existing and future buildings.

The applicability of the methodology is not restricted to specific regions/countries.

ii. Strengths and weaknesses of the methodology:

>> Strengths: the methodology is transparent and easy to apply.

Weakness:

The link with the baseline methodology is not clear (see 4c below under monitoring).

iii. Any changes needed to improve the methodology:

- a. Minor changes:>>
- b. Major changes:>>

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

I. Proposed new baseline methodology (specify title here): >> Energy Efficiency improvements in district heating production and distribution

(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 proposed new base line methodology is a general method, applicable for situations where the project activity involves energy efficiency improvements in district heating production and distribution. The principle in the methodology is to calculate how much fuel is needed for heating and hot tap water supply in the base line and the project scenarios and subsequently calculate emission reductions.

b) State the approach selected:

>>Approach 48b: Emissions from a technology that represents an economically attractive course of action, taking into account barriers to investment;

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:

>>According to the proponents "The proposed new base line methodology for estimation of the CO₂ emission in the baseline scenario is considered a feasible, easy and transparent manner to assess the baseline emissions." As main argument for selecting this approach the proponents mention that it is "the most feasible approach as the alternatives (e.g. historical data) and average emissions from similar projects will involve a very onerous task in respect of data collection and compilation of data to make the data applicable for a specific project." This does not seem to be a proper argumentation as data of the current situation may also be required in case of 48b. In fact, the attached PDD does determine the emissions from the current situation by using default data. This could naturally also be applied in case 48a would have been selected. Another argument they use to not apply 48a is that the project may also involve heat supply to new buildings, for which by definition no historic or actual emissions exist. This seems an appropriate argument. Concluding, although the argumentation is poor, 48b seems an 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 methodology supplies a baseline methodology for various situations. This is explained.

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

>>The underlying rationale of formulae is the average 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 establishes project additionality by using the approved "Tool for demonstration and assessment of additionality" developed by the CDM Executive Board.

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

>>Yes

(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 although not all steps in calculating the baseline scenario emission are clear.

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):

>>In principle the proposed methodology is appropriate for the project activity.

c) State whether the application of the methodology could result in a baseline scenario that reasonably represents the anthropogenic emissions by sources of greenhouse gases that would occur in the absence of the proposed project activity.

>>Yes,

Please explain:

>>Various baseline scenarios option are presented and it is clearly described in which situation which baseline applies.

(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 can be applied to various types of projects and is presented as a general methodology for district heating projects.

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

>> Most data used should be collected on a project specific basis are thus local and national data. The default data used for boiler efficiency in the baseline are from a report on a Coal to gas conversion project in Poland. It is not explained whether these data are country specific for Poland are general data which could also be applied in other countries.

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:

>>

(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

>>CO₂ emission from heat only boilers, CHP fired with gas or coal

ii) Physical delineation

>> The physical delineation involves the heat supply in the baseline situation which includes, depending on the project type, the emission of the various small boilers or the district heating system.

b) Indicate whether this project boundary is appropriate:

>>Yes, the project boundary is appropriate for the proposed project types.

(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 key assumption are:

- The relationship between design thermal loads and annual energy consumption as included in Section D.
- The project developer shall, if relevant, include a forecast for development - over time - in respect of construction of new buildings.
- In the proposed new base line methodology, the project developer shall justify assumptions on the

remaining technical life span for the existing boilers, i.e. the pace in which existing boilers will be replaced by new boilers with improved efficiency.

- At page 15, section D7 default values for annual average baseline boiler efficiency for heat only boilers, stoves and furnaces have been used.
- In Section D, assumption are made on applicable efficiencies of the heat supply through a district heating pipe network.
- In the project scenario, the co-generated heat is assumed generated by extraction of thermal energy from a steam turbine, and the estimates of the fuel consumption and subsequent emissions are based on considerations on the marginal efficiency (marginal fuel consumption). In the project scenario, the approach is to calculate the marginal fuel consumption for the steam extraction, assuming that the electric power production is kept at a level so that no useful thermal energy is extracted.
- In the calculation of the CO₂ emission, emission factors for coal combustion and combustion of natural gas are applied according to values published by IPCC.

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

>> The default boiler efficiencies and the assumption for marginal efficiency basis are not arrived at in a transparent manner

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

>> The default boiler efficiencies are based on data from the report: Poland - Coal to Gas Conversion Project, GEF Project Document, Report No: 13054, 1994/10/31 and on expert judgements. No evidence is given that these data are conservative.

It is not clear why the marginal efficiency is applied as basis for fuel consumption for heat production from the cogeneration unit. See also section 9b below. This is not adequate.

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

>> The only indication of data used that is mentioned under section E2 is: "Emission factors for fuel are obtained through the values published by IPCC."

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

>> Although more data is used in the methodology, these are not mentioned under section E2. This section is therefore is adequately filled in and the methodology is therefore not transparent concerning data used. The use of emission factors from the IPCC is adequate.

f) State possible data gaps:

>>-

(7) Assessment of uncertainties:

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

i) The basis for determining the baseline scenario:

>> No assessment of uncertainties included.

ii) Algorithms/formulae:

>> No assessment of uncertainties included.

iii) Key assumptions:

>> No assessment of uncertainties included

iv) Data:

>> The only uncertainty mentioned is the uncertainty in applied data on heated floor area and projected annual energy consumption. However, as I mention below under section 10, and also acknowledge by the proponents in this section, heated floor area is not necessary to calculate the emission reduction.

b) State whether the uncertainties presented are reasonable:

>>The uncertainties mentioned are insufficient, for instance uncertainties regarding mmmmm should be presented.

(8) Leakage:

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

>>No leakage is identified.

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

>>This is appropriate.

(9) Transparency and “conservativeness”:

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

>>The methodology is not developed in a transparent way. Several choices in the baseline methodology remain unclear also after repeated reading. For example it is not clear why the estimation of heated floor area is used as the basis for the emission reduction, while in the monitoring report the actual heat supplied is monitored.

b) State whether the baseline methodology is conservative:

>>The baseline is not conservative for the following reasons:

- the default efficiencies for boilers in the baseline situation are rather low (although the proponent states they are rather high) and since no evidence is given that this is indeed conservative, using these default values could use to an overestimation if the emission reductions
- the calculation of emission from heat production from a CHP in the project situation is not performed in a conservative manner, in fact the method used result in very low emissions compared to other calculation method. Various methods exist to allocate fuel input to CHP plant output, i.e. electricity and heat (see Phylipsen et al, 1998, Appendix 1). The most simple method is: Fuel demand for heat = Fuel input (enthalpy) * net electricity production (enthalpy) / net electricity and heat production (enthalpy). This method allocates a proportional amount of fuel (on enthalpy basis) to heat and electricity. Another methods is e.g. on the basis of exergy. Of all possible methods the one applied by the project proponents allocates a small amount of fuel to the heat from the CHP in the project situation. This results in a high emission reduction compared to other allocation options and can thus not be considered conservative.

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

>> Strengths are:

- The methodology is applicable to various types of project activities.

Weaknesses are:

- In section B under main principles it is stated that the only data to be monitored is the actual heat supplied, while in the monitoring methodology also fuel consumption, electricity supply and caloric value are monitored.
- It is not immediately clear how the monitoring methodology relates to the baseline methodology.
- It is unclear why the monitored data are used to make an update of the emission reduction and are not used directly in the calculations. The methodology starts with the calculation of the heat demand by determining heated floor area, the design thermal rating and the full load hours (formulae 1 and 2). In step 6 the heat demand is monitored in order to ‘update’ the emission factor. It is not clear why the monitored data are not direct input in the calculations to determine the emission reductions. This would make the methodology much more transparent and simple.

- The method for the allocation of fuel (and subsequently the emissions) for the supply of heat from the cogeneration unit is not conservative (see Section 9 below for explanation)

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

>> Selection and preparation of the most likely base line scenario is made with due consideration to national and/or sectoral policies. By application of the additionality tests, it will be established if the proposed project activity in fact is the consequential implementation of a project in compliance with the national / sectoral policies, or if the proposed project activity in fact is additional to such national sectoral policies.

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

>> The proposed new methodology is applicable to the following types of project activities:

1. The project activity involves substitution of individual boilers, stoves, and block heat systems by a more efficient method of heat (and hot tap water (HTW)) supply (district heating possibly also involving co-generation);
2. The project activity involves efficiency improvements in heat production and heat distribution in existing district heating systems (improved heat production efficiency and / or reduction of losses from the distribution system);
3. The project activity involves energy efficiency improvements in heat production and heat distribution in introduction of district heating systems to new buildings.

The proposed new base line methodology is applicable for project activities which include: 1) heat produced by heat only boilers (HOBs) fired by coal or natural gas, and 2) utilisation of surplus heat from existing thermal power plants or industrial power production (cogeneration), fired by coal or natural gas.

Accordingly, the proposed new methodology is not applicable for project activities involving e.g. additional power production capacity (e.g. green-fired co-generation plants) or heat production based on bio-mass, solid waste incineration or other fuels.

The proposed new base line methodology is applicable for project activities in which the heat consumption (heating and HTW) is identical in the base line scenario and in the project scenario, i.e. the proposed new base line methodology is not applicable in project activities in which the energy savings (emission reductions) are only related to improved building insulation, reduced energy consumption in buildings (e.g. installation of automatic controls, etc.).

The methodology is not applicable to projects in which the baseline changes during the crediting period.

The application of the methodology is not restricted to regions.

(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:

>> G.J.M. Philipsen, K. Blok, E. Worrel, Handbook on International Comparisons of Energy Efficiency in the Manufacturing Industry, Dept. of Science, Technology and Society, Utrecht University, April 1998.

b) Indicate any further comments:

>>-

II. Proposed new monitoring methodology (specify title here): >> Monitoring of Energy Efficiency Improvements in District Heating Production and Distribution

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 is developed for projects in which heat supply from the district heating system (possibly CHP) is replacing less energy efficient heat supply. The emission reductions can be directly calculated based on metered data on supplied energy, fuel consumption, electricity generation and calorific value.

(2) Key assumptions/parameters:

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

>> It is unclear why the text as included in section B6 by the proponents deals with key assumptions.

Implicit assumptions are:

In the application of Formulae 26 a it seems to be assumed that the cogeneration unit used to be a power only plant in order to be able to calculate 26 a. It is unclear how 26a should be calculated in situations where the cogeneration unit has always operated as cogeneration unit and thus no historic data are available.

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

>> No explicit key assumptions are included.

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

>> Assumptions are not adequate as section B6 is not filled in a proper manner.

(3) Data sources and data quality:

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

>> The monitored data will all be monitored during the project by metering, lab test or data records. No fixed data are applied in the methodology.

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

>> Not applicable.

c) State possible data gaps:

>> Not applicable

(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 methodology is in principle described adequately taking into account my comments under 4c.

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

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

>> The methodology is not fully compatible with the proposed baseline methodology since the baseline methodology does not clearly describe where monitored data are applied to perform the calculations. For example in section E1 of the baseline methodology the following is stated: "By applying a methodology in which energy units is used, it is necessary to investigate/calculate actual quantity of coal (ton) or volume of natural gas used and the corresponding calorific values of the coal actually used. Calorific value of natural gas used is not required." However, in the monitoring methodology also the calorific value of gas is calculated.

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

>>No leakage is identified.

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

>> QA/QC procedures are explained in detail and seem appropriate for fuel consumption and power supply. However the procedure for metering of heat seems awkward: *“The energy meters shall be recalibrated according to procedures and at a frequency in compliance with national regulations for meter equipment used for billing. This will typically mean that an energy meter is recalibrated with intervals of 7 years. Check and recalibration of a meter can be requested if a party is questioning the accuracy of the metered data. In case the accuracy is proven to be within the accuracy stipulated in the relevant norms, the party requesting the recalibration will bear the cost for the check. In case the accuracy is found to exceed the accuracy stipulated within the relevant norms, the owner of the meter will bear the cost for the check and recalibration.”* No reference is included to proof that an interval of 7 years is indeed generally accepted. It seems a rather long period.

The QC/QA check for the calorific value does not give enough guidance.

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

>>Strengths: the methodology is transparent and easy to apply.

Weakness:

The link with the baseline methodology is not clear.

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

>> The methodology is applicable to project activities involving improvements in efficiency of heat production and heat distribution. Possible project activities are

- Heat supply from a district heating system that will replace heat supply from dispersed boilers and stoves
- Improved heat production efficiency (co-generation from thermal power plants) is used as heat source for the district heating system.

The monitoring methodology is applicable in situations in which the buildings are supplied from existing boilers, and also in situations in which buildings are planned to be constructed and supplied from planned (new) dispersed boilers. The monitoring methodology can also be applied to projects involving a mixture of the two previous mentioned situations, i.e. when the district heating system is planned to supply both existing and future buildings.

The applicability of the methodology is not restricted to regions.

(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:

>>-

b) Indicate any further comments:

>>-

Signature of desk reviewer

Date: 28/ 04 / 2005

Information to be completed by the secretariat

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