



**CDM: Proposed New Methodology
Meth Panel recommendation to the Executive Board
(version 04)**

*(To be used by the Meth Panel to make a recommendation to the Board
regarding a proposed new methodology)*

Date of Meth Panel meeting:	14-17 June 2005
Related F-CDM-NM document ID number (electronically available to EB members)	F-CDM-NM0103: “Andijan District Heating Project “
Related F-CDM-NMex document ID number(s) (electronically available to EB members)	F-CDM-NMex0103: Geletukha / Harthan
Related F-CDM-NMpu document ID number(s) (electronically available to EB members)	F-CDM-NMpu0103: None received.
<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. Final recommendations by the Meth Panel	
I. Recommendation on the proposed new baseline methodology: (checkmark the choice made)	
Title of proposed new baseline methodology:>> Baseline methodology for district heating rehabilitation, possibly reducing use of in house devices.	
<p>a. To approve this proposed methodology with minor changes</p> <p><input type="checkbox"/></p> <p>i. Conditions under which this proposed methodology is applicable to other potential CDM project activities (e.g. project type, region, data availability):</p> <p>>></p> <p>ii. Minor changes:</p> <p>>></p>	
<p>b. To reconsider this proposed methodology, subject to required changes</p> <p><input type="checkbox"/></p> <p>i. Conditions under which the proposed methodology is applicable to other potential projects (e.g. project type, region, data availability):</p> <p>>></p> <p>ii. Required changes:</p> <p>>></p> <p><i>(Project participants shall make required changes to the proposed new methodology and send it back to the Meth Panel. The proposed new methodology will be reconsidered by the Meth Panel if changes required are made by the project participants. The Executive Board will only consider this proposed new methodology after the revised proposed methodology has been reconsidered by the Meth Panel.)</i></p>	
<p>c. Not to approve the proposed methodology</p> <p><input checked="" type="checkbox"/></p>	

i. Reasons for non-approval:

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- The baseline methodology must determine what would happen in the absence of the CDM project (deterioration of the District heating system (DHS), extent of Individual heating devices (IHD) use) and with the implementation of the project (extent of replacement of IHD, heat consumed by households, etc.). Current methodology doesn't explain monitoring of IHD in the baseline or in the PA. The methodology should explain how to monitor the in-use IHD in the baseline and during the project activity. IHDs are dropped in the project activity. This would require a detailed survey for the baseline and follow-up surveys during the crediting period, monitoring IHDs in use, hours of usage, efficiency of devices, etc or develop a methodology without IHD.
- It is not necessary that the rehabilitation of the existing DHS necessarily leads to a replacement by IHD and should be monitored. Households may choose to use the additional heat provided by the rehabilitated DHS *and* still use the IHD in order to increase convenience (increased temperature, more rooms heated)). It needs to be verified that IHD are switched off as a result of the project. Otherwise, the baseline emission factor is not calculated correctly and project emissions are underestimated. Guidance is required on how to determine IHD that are affected by the rehabilitation of the DHS.
- Guidance is required on how to handle estimations in a conservative manner. Models used should be transparent and their use be limited as these are based on a number of assumptions that are difficult to corroborate. A model is mentioned on page 15 and apparently used with no discussion in the methodology.
- The methodology assumes no increase in capacity of the DHS. This condition is not adequately addressed as with an improvement in efficiency and with DSM measures there is an implicit expansion of the existing DHS capacity.
- The methodology assumes that there is no significant leakage of CO₂ emissions or an increase of non-CO₂ emissions. Leakage effects (e.g. rebound effects: increased heat consumption) may occur and must therefore be addressed. Non-CO₂ emissions must not be ruled out at the outset, either, the PP have to *justify* if the non-CO₂ gases.
- No credits are claimed for DSM. Though it is correct to claim credits for DSM. However, different DSM should be considered as these impact the baseline and PA.

Other clarifications required/reasons are:

- Applicability conditions need to be defined more precisely.
- Page 8 define what is meant by a conservative estimation and how is this done.
- Page 11, last paragraph, the statement about relative emissions factors for DHS and IHD should be explained.
- Page 12 expansion to footnote 4 should be excluded.
- The CDM-NMB doesn't adequately estimate project ER and there seems to be considerable overestimation. Since IHDs are excluded in the project activity a possibility is to exclude this from the baseline.
- Methodology to determine the energy content of hot water is not specified. For example, what is the base temperature of the water (including if any water is being recycled).
- Insufficient guidance in CDM-NMB how to estimate baseline heat delivered, especially by IHD, fuel consumption etc. On page 4, the CDM-NMB states that "monitored heat demand baseline emissions will be determined" and doesn't say how in the whole methodology. In the draft CDM-PDD there is some judgments (insufficient) about heat demand but in CDM-NMB it is addressed insufficiently.
- Judgments (insufficient) about heat demand but in CDM-NMB it is addressed insufficiently.
- In the process of baseline determination it should be shown how subsidized fuel prices are addressed (it is said on p.5 that prices are distorted), are the future trends assessed and how they

could impact the choice of baseline scenario?

- Section D.1, p.9: Option (b) may also be used for power savings above 15 GWh. As the project activity is not a small-scale project activity it is not clear why the small-scale approach is used.

(A new proposal should be submitted in accordance with the procedures for submission and consideration of proposed new methodologies of the Executive Board.)

II. Recommendation on the proposed new monitoring methodology: (checkmark the choice made)

Title of proposed new monitoring methodology: >> Monitoring methodology for district heating rehabilitation, possibly reducing use of in house devices.

a. To approve this proposed methodology with minor changes

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

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ii. Minor changes:

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b. To reconsider this proposed methodology, subjected to required changes

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

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ii. Required changes:

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(Project participants shall make required changes in the proposed new methodology and send it back to the Meth Panel. The proposed new methodology will be reconsidered by the Meth Panel if changes required are correctly made by the project participants. The Executive Board will only consider this proposed new methodology after required changes proposed have been made and the revised proposed methodology has been reconsidered by the Meth Panel.)

c. Not to approve the proposed methodology

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i. Reasons for non-approval:

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- Vital parameters of the methodology rely on estimations and models and implicit assumptions that are not explained in the CDM-NMB or the CDM-NMM. The methodology should provide guidance on how to conservatively estimate parameters and energy models and implicit assumptions.
- It is assumed that there is no leakage - this is not true and the issue of leakage from the rebound effect (increased heat demand and consumption), DSM etc needs to be addressed.
- How are IHDs affected/not affected by the project activity determined? How is the energy consumption for these determined - both before and after?
- Address monitoring of DSM measures or of upgrading and rehabilitation of the DHS.
- The QA/QC procedures need to be strengthened. It is not stated who and how these are undertaken.
- Monitor IHD for determining the baseline emissions and during the crediting period or exclude IHDs (see baseline methodologies).
- Methodology will require changes in line with the changes in the baseline methodology.

(A new proposal should be submitted in accordance with the procedures for submission and consideration of proposed new methodologies of the Executive Board.)

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

I. Proposed new baseline methodology (specify title here): >> Baseline methodology for district heating rehabilitation, possibly reducing use of in house devices.

(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 determines the baseline scenario, estimates the weighted average emissions per unit of delivered energy (t CO₂/GJ) for space heat and hot water for this scenario and for the project activity. The difference in emissions per unit of energy delivered in the baseline and the project activity multiplied by the actual energy supplied to the same households determines the project ERs. The methodology is developed in the following 7 steps:

- (a) Identification of practical alternatives to the projects technology: This list should include all technical alternatives to the projects heating technology that could be implemented in place of the projects technology taking into account the country's and sector's specific conditions.
- (b) Determination of the baseline technology can be done in two alternative ways:
 - *Option 1:* Barrier analysis or
 - *Option 2:* Economic/financial investment analysis.
- (c) Definition of emission factors for saved fuels: Local data on net calorific value and carbon content available from the fuel suppliers and/or official statistics is preferable. In absence of local data, default values from the IPCC guidelines should be used.
- (d) Definition of emission factors for saved electricity: The present baseline methodology provides two options for the determination of the emission factor for saved electricity, EF_{el} , (in tCO₂/MWh), depending on the amount of saved electricity. (a) For power saving above 15 GWh per annum, and (b) For power savings up to 15 GWh per annum.
- (e) Determination of emission factors for heating technologies (weighted average in case of more than one source of heat supply).
- (f) Emission reductions calculation and projection: The emission reduction ER_y (in tCO₂) by the project activity during a given year y is the difference in the emission factor of the baseline technology EF_{BLS} and of the project technology EF_{PA} , multiplied by the actual energy $HEAT_{PA_BLS-HH,y}$ delivered to the baseline customers by the CDM project in year y .
- (g) Additionality test: Additionality is demonstrated based on the "Tool for the demonstration and assessment of additionality".

b) State the approach selected:

>> The approach selected as per paragraph 48 (b) of the CDM modalities and procedures: "Emission 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:

>> The approach is chosen, as the district heating system includes major investments, which makes necessary the consideration of an "economically attractive course of action". Moreover, it is considered that other factors such as fuel availability, technology availability, sector policy, or social acceptability as well as economic distortions and organizational failure play an important role. This is covered by "taking into account barriers to investment" as stipulated in paragraph 48 (b) of the CDM modalities and procedures. The chosen approach is therefore appropriate.

(2) Basis for determining the baseline scenario:

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

>> Yes, the documentation explains how the baseline scenario is to be chosen. A stepwise approach is provided which identifies alternatives, determines the baseline technology using an investment analysis and/or a barriers analysis, as well as defines how baseline and project emissions and the corresponding emissions reductions are calculated. See (1) a) above.

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

>> The underlying rationale consists in calculating a weighted emission factor per unit of heat produced in the baseline and in the project case. The difference of both emission factors multiplied with the heat delivered to consumers delivers the emissions reductions of the project. The emission factor in the baseline is determined by the old DHS system (fuel input for the boilers plus electricity consumption in the network) as well as by fuel and electricity consumption of in house heating devices. The emission factor of the project case is calculated by the fuel and electricity consumption of the rehabilitated DHS. The heat delivered to consumers refers to baseline consumers only, i.e. consumers that were connected to the DHS before the rehabilitation and are still connected to the DHS after the rehabilitation (no increase of coverage).

c) State whether the documentation explains how, through the use of the methodology, it can be demonstrated that a project activity is additional and therefore not the baseline scenario. If so, what are the tools provided by the project participants?

>> Yes, the methodology provides clear guidance on how to determine project additionality. The proposed procedure includes a barriers analysis and/or an investment analysis. The criteria included in the barriers analysis correspond to the additionality tool. For the investment analysis, the methodology proposes an approach which determines the total unit production cost of heat, which is based on the capital recovery cost of the capital investment and on annual costs. The latter are considered to be constant over the lifetime.

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

>> The basis for determining the baseline scenario is adequate assuming that the required information is available. The draft CDM-PDD does not support that such information is easily available. Additionality is addressed adequately in the CDM-NMB.

(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 described in an adequate way but several assumptions are not justified and some are not conservative.

- The methodology assumes that annual costs are constant over the lifetime of the project. This assumption restricts the applicability of this methodology to cases where changes in cost are envisaged. For example, it is not applicable to cases where subsidies to the DHS are likely to be withdrawn in the future. However, this is not mentioned under Section A.3. (Applicability conditions).
- The definition of the emission factor per unit of heat delivered in the baseline depends on estimating the fuel input and the heat provided by in house devices as well as the old DHS. Moreover, only such IHD shall be considered that are affected by the rehabilitation of the DHS. The replacement of IHD by the new DHS is one key factor for the calculation of emissions reductions. However, no guidance is provided on how to determine the amount of IHD affected by the DHS and the corresponding technologies and fuels used.
- For the calculation of the emissions reduction, the heat delivered to baseline customers is used. The definition of baseline customers (who were connected to the old DHS and who are connected to the

new system) is rather straightforward. However, the methodology does not explain how the magnitude of the heat delivery is to be determined. This is of major importance, since the heat delivered by the DHS in the baseline and in the project may not be equivalent. The following issues are not addressed in determining the heat delivery:

- i) What is the consumption pattern to be considered and what is the corresponding heat delivery that is eligible for the calculation of emission reductions? For instance, in the baseline, the average room temperature of connected houses may be 16 °C due to the low availability of heat by the DHS. Some rooms may even not be heated. In the project case, the average room temperature may be higher and more rooms may be heated, since a more convenient heat source (rehabilitated DHS) is available. This would mean that the heat demand has increased due to the project. The methodology does not address this issue.
- ii) Households that are connected to the new DHS (and were connected to the old DHS) may use the heat provided by the new DHS and still not switch off existing IHD. This would mean that no or less IHD than planned are substituted and thus no or less reduction effect due to replacement of IHD takes place. This leakage issue is not addressed by the methodology.
- Demand side measures may occur in the baseline (e.g. the insulation is renewed). The methodology does not explain how this potential decrease of heat consumption in the baseline is reflected in determining the heat delivery which is used for the calculation of emission reductions.

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 issues raised above are of major importance. They concern the following points in the draft CDM-PDD: The results of the investment analysis on p. 20 in the draft CDM-PDD show a very high sensitivity to the fuel prices. Since the current DHS is the most inefficient system of all proposed alternatives in terms of fuel consumption, the assumption of constant fuel prices is not necessarily conservative (especially if fuel prices tend to increase). A sensitivity analysis for increasing fuel costs would show how robust the ranking provided on p. 20 in the draft CDM-PDD is. The methodology should elaborate on the fact which influence state subsidies have on the (non-)profitability of project types. On p. 21 of the draft CDM-PDD it is said that the DHS receive significant subsidies for operation. The consideration of changing (probably decreasing) annual subsidies could change the results of the investment analysis.
- The contribution of the DHS as well as IHD (natural gas, electricity) to the baseline heat supply is estimated in the draft CDM-PDD (the DHS contributes by 22 %, the rest of the gap is covered by natural gas and electrical heaters to equal parts). However, the emission factor per unit of heat is very sensitive depending on the mix of technologies (from 0.06 t CO₂/GJ for natural gas to 0.34 t CO₂/GJ for the old DHS (table 6 on p. 17 of the draft CDM-PDD)). If the fuel consumption cannot be measured as foreseen in equations (4) to (6) of the baseline methodology, the methodology should provide guidance on how to estimate the fuel mix. The estimation in the draft CDM-PDD was carried out without any corresponding guidance in the methodology. The methodology states that IHD that are not affected by the rehabilitation of the DHS shall not be considered. However, the methodology does not give guidance on how to determine which IHD is affected. In the draft CDM-PDD, there is neither an explanation of which IHDs are actually affected by the DHS nor any consideration in calculating the baseline technology emission factor.
- Magnitude of heat delivery: Consumption pattern: on p. 16 of the draft CDM-PDD an average room temperature of 16 °C is estimated as average room temperature during heating season. However, the technology emission factor for the project is calculated using a room temperature of 20 °C and a higher demand of hot water (which increases the total heat demand from 702 MJ/m²*a to 1059 MJ/m²*a according to table 5 in the draft CDM-PDD). This means that the project activity increases the heat consumption. This means that part of the emission reductions calculated do not correspond to real emissions in the baseline (since the heat consumption in the baseline is actually smaller than in the project case). Neither the baseline methodology nor the draft CDM-PDD takes this aspect into account.

- There is no information available in the draft CDM-PDD on whether IHD have really been switched off (or on how this could be determined) and emissions been reduced accordingly.
- No information is available in the draft CDM-PDD on how potential demand-side measures are taken into account (which would reduce baseline emissions).

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.

>> In its current form it is unlikely that the methodology will result in a reasonable representation of the baseline scenario.

Please explain:

>> The baseline methodology may lead to an erroneous calculation of the emission factor per unit of heat delivered in the baseline and is likely to overestimate baseline emissions.

(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 generic formulae are included and are appropriate for the methodology in the CDM-NMB but this requires changes.

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

>> Most data which is used comes from local sources related to the DHS. This is appropriate. Only in some cases (such as heating value, oxidation factor, or emission factor) international data (IPCC) may be used if other data is not available. This is also appropriate. However, many parameters are estimated and based on models. The methodology doesn't clarify how to deal with estimations and models. It is not appropriate to just leave this decision to the project developer. Further guidance is needed on how to carry out a conservative estimation, if measured data is not available.

Model based estimation is not mentioned or elaborated in the CDM-NMB document.

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 data used for the baseline is recorded monthly or annually in the period before project start. However, it is not clear what "period before project start" means. As heat demand and related fuel consumption are very sensitive to the heating periods, more than one heating period in order to account for differences between heating periods of different years should be considered. For example, it would be appropriate to consider 3 years data prior to the start of the CDM project activity to determine the baseline more accurately.

(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

>> Only CO₂ is considered.

ii) Physical delineation

>> The DHS that is rehabilitated, existing consumers of the DHS and sources of alternative heat supply for these consumers. The alternative sources are restricted to those that would be replaced by heat supplied from the rehabilitated DHS (though it is not defined how these are determined).

b) Indicate whether this project boundary is appropriate:

>> The current definition restricts the methodology to heat only systems and not CHP systems (though is not explicitly stated, this is appropriate). Inclusion of IHD is not 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:

>> There are several explicit and implicit assumptions which are problematic.

Explicit assumptions:

- IHD are only taken into account if they are affected by the rehabilitated DHS. This is a valid assumption. However, it is not clear how to define which IHD are actually affected by the rehabilitated DHS. If no clear guidance is given, this assumption may lead to an overestimation of project activity emissions reductions and IHD should be dropped.
- Annual costs are constant: This is a problematic as subsidies for the DHS may decrease making the annual costs variable. This assumption may lead to an erroneous determination of the baseline technology.

Implicit assumptions:

- CHP plants are not included in the DHS. This assumption is valid for the proposed methodology. However, it should be made explicit.
- No rebound effects: The provision of a more convenient heat source (rehabilitated DHS) could lead to an increased heat demand (higher room temperature, more rooms heated, etc.). This assumption therefore leads to an overestimation of emission reductions. This is a problematic assumption.
- No DSM in the baseline: This assumption possibly leads to an overestimation of baseline emission since DSM in the baseline are not taken into account (refurbishment of houses, insulation, etc.)

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

>> The methodology provides little guidance for the determination of the baseline emissions level. As a result, the methodology derives key parameters such as baseline heat demand and fuel mix in a non-transparent way. For example, there is lack of transparency with the determination of IHD affected by the PA.

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

>> Not adequate as discussed above in (a) and (b). See also Section A. I..

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

>> The data used are local data such as from fuel meters, fuel bills, electricity purchasing records, etc. which is adequate. In addition, if some data is unavailable on a local basis (such as oxidation factors, emission factors, etc.), international data (such as IPCC) are used. However, many decisive parameters are estimated and based on models. This refers especially to the heat delivered to consumers by the old DHS as well as to fossil fuels and electricity consumption for heating purposes in households in the baseline. This could result in emission reductions that are not real. The methodology should make clear how to deal with estimations and models.

In the draft CDM-PDD, real data on NG and power consumption by IHD are absent and ER from these devices may not be included in project boundaries. In the BLS approach when 16 C temperature are expected in all apartments and 22% of this heat is supplied from DHS, 39% from IHD on NG and 39% from IHD on power seems voluntary and non conservative. Some critical points to this approach:

- It is mentioned that “apartments near boiler-houses receive enough heat” (p.15, PDD);
- There is no evidence that all apartments have IHDs,
- There is not evidence on shares of provided heat between DHS and IHDs;
- There is not evident that temperature in all apartments is 16 C;
- Heating by power is not so cheap and at least not all residents may allow themselves to have 16 C temperatures by power heating.
- IHD on NG costs 150-250\$ without installation and perhaps not all residents may buy them.

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

>> The parameters and estimates developed by the PP from estimation/samples and from models is not adequate. It is not clear whether such data is accurate and whether samples taken or models are representative and reliable. The lack of guidance on how to obtain such data does not allow for a consistent calculation of emission reductions across different project activities. Data based on estimations and models are therefore not adequate.

See also Section A. I.

f) State possible data gaps:

>> No data is available on whether and to which extent DSM in the baseline may occur.

No data is available to account for rebound effects (increased heat demand due to the project activity).

No data is available on how to determine IHD that are actually affected by the DHS.

In the absence of documented figures on heat delivery efficiency, boiler efficiencies, the estimated data (the estimation method for which has not been elaborated) is fraught with the likelihood of overestimation of emission reductions.

(7) Assessment of uncertainties:

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

i) The basis for determining the baseline scenario:

>> There is no assessment of uncertainties in the determination of the baseline scenario. It is assumed that following the steps in the methodology will result in complete certainty.

ii) Algorithms/formulae:

>> In formulae uncertainty can be reduced by assuming conservative values. However, it is not defined what and how these will be determined.

iii) Key assumptions:

>> Again key assumptions have to be conservative to limit uncertainty and this is not addressed.

iv) Data:

>> This is very uncertain in the methodology - but no assessment of uncertainty other than the statement of using conservative values. The methodology fails to address how these estimates have to be determined in the first place.

b) State whether the uncertainties presented are reasonable:

>> The treatment of uncertainty is not adequate. The methodology does not identify which factors could lead to an overestimation of emission reductions and/or the determination of the wrong baseline scenario.

(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:

>> No. In this methodology there is significant potential for leakage, especially related to rebound effects (increased heat consumption due to the project) as well as to whether IHD are actually affected by the DHS. The methodology should include these aspects either by including them in the project boundary or by considering leakage. See earlier discussion.

(9) Transparency and “conservativeness”:

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

>> The methodology lacks transparency in key areas of the methodology, which may have significant impact on the outcome of emission reduction calculations:

- Lack of guidance on how to carry out estimations or on how to use models, in cases when measured data is not available. Models have to be explicitly included in the methodology and approval of the methodology depends on the acceptability of the model in terms of transparency and conservativeness.
- Lack of guidance on how to determine IHD which are affected by the DHS
- Important assumptions are made only implicitly
- Key parameters on baseline heat demand and fuel mix are not transparent.

b) State whether the baseline methodology is conservative:

>> The baseline methodology is not conservative. The methodology leaves major parameters (such as baseline and project heat demand, IHD that are actually replaced, leakage) unaddressed or open for estimations/modelling without clear guidance. This entails major risks of non-conservative results.

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

>>

Strengths:

- The methodology proposes both the investment and barriers analysis to perform the determination of the baseline.
- The methodology makes use of approved methodological elements ("Tool for the demonstration of and assessment of Additionality", ACM0002 "Consolidated methodology for grid-connected electricity generation from renewable sources").

Weaknesses:

- The definition of the applicability conditions is rather vague.
- Leakage is not addressed.
- Important parameters of the methodology rely on estimations, models or implicit assumptions, which could allow overestimation of emission reductions.
- See other limitations discussed above as well.

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

>> National and sectoral policies are taking into account through the combination of the cost analyses and a barrier analysis.

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

>> Once the methodology addresses the issues raised in this desk review, the methodology is applicable to other projects of that type as well as to other regions (considering the revised applicability conditions).

(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:

>> By Desk Reviewers - "Construction norms and regulations. Heat networks", SNiP 2.04.07-86, Moscow, 1988, in Russian; Previous submission of the methodology.

b) Indicate any further comments:

>> Page 9 baseline methodology reads: "if it can be plausibly shown that the calculated emission factor using this option is equal or higher". It must read "equal or lower". Otherwise baseline emissions would be overestimated.

Equation (8): There maybe some merit in capping the energy supply by that of the baseline.

II. Proposed new monitoring methodology (specify title here): >> Monitoring methodology for district heating rehabilitation, possibly reducing use of in house devices.

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:

>> Baseline case: The monitoring methodology consists in measuring or estimating fuel consumption, heating system efficiencies, net calorific values, oxidation factors, and supplied heat for district heating and for individual fossil fuelled heaters.

Project case: The emission factor per unit of heat delivered from a specified project technology is calculated based on monitored fuel use, efficiencies and emission factors.

Emissions from power consumption in the DHS and for electrical individual heaters are calculated from measurements or estimates of electricity consumption and a grid carbon emission factor ("Consolidated methodology for grid-connected electricity generation from renewable sources" (ACM0002) or the simplified methodology for small-scale project activities that are renewable electricity generation for a grid (AMS.I.D)).

The emission reductions are then calculated as the difference of emission factors per unit of heat delivered in the baseline and in the project case, multiplied with the heat delivered to baseline customers. Baseline customers are those connected to the DHS also before the project implementation.

(2) Key assumptions/parameters:

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

>> Assumptions that are problematic are similar to the ones discussed in the baseline methodology.

Explicit assumptions:

- IHD are only taken into account if they are affected by the rehabilitated DHS (item 15). No clear guidance is given on how to monitor this data. This assumption may lead to an inconsistent calculation of emissions reductions for different project activities. Secondly, it is necessary to monitor ex-post whether IHD have actually been replaced by the rehabilitated DHS and to which extent. The monitoring methodology does not include such an item for the monitoring of project emissions. This leads to an underestimation of project emissions (if IHD are not substituted by the DHS, although they were supposed to do so) and to an erroneous calculation of the baseline emission factor (since it includes a share of IHD). It is necessary to include into the monitoring IHD which are actually replaced by the rehabilitated DHS or the methodology should be restricted to the DHS and not IHDs.

Implicit assumptions:

- CHP plants are not included in the DHS (see also comments in other parts of this document). If CHP plants are to be considered, a more complex monitoring would be required since the fuel input for these

plants must be assigned to heat *and* electricity.

- No rebound effects: As explained extensively in previous sections (for the baseline methodology), the provision of a more convenient heat source (rehabilitated DHS) probably leads to an increased heat demand (higher room temperature, more rooms heated, etc.). However, no monitoring of the evolution of the heat demand in the project case is included in the methodology. This assumption therefore possibly leads to an overestimation of emission reductions, which is very problematic.
- No DSM in the baseline: This assumption possibly leads to an overestimation of baseline emissions since DSM in the baseline are not taken into account (monitoring of this aspect is not included in the methodology). This is a problematic assumption.

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

>> The assumptions are not transparent and often not stated. For example, how is the energy content of hot water supplied determined - what is the base temperature of the water? This is required to determine the energy content of supplied to consumers. It is assumed that gas or electricity supplied to consumers is solely for the purpose of heating and has no other end-use.

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

>> The assumptions are not adequate for reasons discussed. It is further assumed that only the efficiency of IHD needs to be determined - no monitoring of usage is required.

(3) Data sources and data quality:

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

>> Most of the data relies on the project operator and assumptions and model estimates, that are not detailed, ad hoc and are unexplained in the methodology. The range for a single variable varies from 100% monitoring to "representative sampling" - this is not a very precise specification of a methodology.

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

>> The data and the methodology may not result in consistent, reliable and conservative estimates of key parameters and consequently of ERs.

c) State possible data gaps:

>> There are several - e.g. the methodology must be updated to adequately monitor supplied heat to apartments in BLS and the PA.

(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 description of the monitoring methodology corresponds to the description of baseline methodology. All aspects mentioned for the review of the baseline methodology also apply here with respect to the adequacy of the description.

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):

>> It may be appropriate for the proposed project activity - but the project activity description and methodology is found lacking.

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

>> The monitoring methodology suffers from the associated shortcomings of the baseline methodology and of the draft CDM-PDD.

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

>> Leakage is not considered in the monitoring methodology. However, since leakage should be included in the baseline methodology, corresponding changes are required in the monitoring methodology.

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

>> QA/QC procedures are required for all measured variables (ID 1-19), which is appropriate. It is however not explained what the QA/QC procedures should include and who will be responsible QA/QC. This leaves too much room for interpretation and does not guarantee a proper QA/QC procedure. For estimated and modeled parameters and key variables stringent QA/QC procedures will be required (first the modeling methodology has to be included and has to be acceptable). With respect to parameters which are based on estimations and models, a mere documentation is not enough as QA/QC (as proposed in the methodology). These parameters are the most important and the most sensitive parameters for the outcome of the emission reduction calculation. For this reason, estimations and models should comprise more QA/QC measures such as cross-checks with other data (statistics, price lists, literature, etc.) or other model results, or a sensitivity analysis.

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

>> Weaknesses:

- Important parameters of the methodology rely on estimations, models or implicit assumptions, which allows for gaming and overestimation of emission reductions.
- Leakage is not addressed.
- QA/QC measures are not appropriate for estimations and models.

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

>> Once the methodology addresses the issues raised, the methodology would be applicable to other similar projects in all other 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:

>> No.

b) Indicate any further comments:

>> On p. 11 the methodology reads: "In case that data on the use of IHD cannot be measured, the methodology recommends estimating the overall heat demand of a typical consumer's apartment". More guidance should be given on how to conservatively carry out such estimation in a consistent manner.



Signature of Meth Panel Chair

Date: 22/06/2005 *Jean-Jacques Becker*

Signature of Meth Panel Vice-Chair

Date: 22/06/2005 (name)

Information to be completed by the secretariat	
F-CDM-NMmp doc id number	F-CDM-NMmp-NM0103
Date when the form was received at UNFCCC secretariat	22 June 2005
Date of transmission to the EB	22 June 2005
Date of posting in the UNFCCC CDM web site	22 June 2005