DETERMINATION REPORT
ME "KHARKIVSKI TEPLOVI MEREZHI"

DETERMINATION OF THE "GREENHOUSE GAS EMISSION REDUCTION DUE TO MODERNIZATION AND TECHNICAL RE-EQUIPMENT OF MUNICIPAL ENTERPRISES OF KHARKIV REGION"

REPORT NO. UKRAINE-DET/0352/2011

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DETERMINATION REPORT

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Client:	**Client ref.:**
ME "Kharkivski teplovi merezhi"	Mr. Sergiy Andreev

Summary:

Bureau Veritas Certification has made the determination of the "Greenhouse gas emission reduction due to modernization and technical re-equipment of municipal enterprises of Kharkiv region" project of ME "Kharkivski teplovi merezhi" located in the Kharkiv Region, Ukraine on the basis of UNFCCC criteria for the JI, as well as criteria given to provide for consistent project operations, monitoring and reporting. UNFCCC criteria refer to Article 6 of the Kyoto Protocol, the JI rules and modalities and the subsequent decisions by the JI Supervisory Committee, as well as the host country criteria.

The determination scope is defined as an independent and objective review of the project design document, the project's baseline study, monitoring plan and other relevant documents, and consisted of the following three phases: i) desk review of the project design and the baseline and monitoring plan; ii) follow-up interviews with project stakeholders; iii) resolution of outstanding issues and the issuance of the final determination report and opinion. The overall determination, from Contract Review to Determination Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

The first output of the determination process is a list of Clarification and Corrective Action Requests (CL and CAR), presented in Appendix A. Taking into account this output, the project proponent revised its project design document.

In summary, it is Bureau Veritas Certification's opinion that the project correctly applies Guidance on criteria for baseline setting and monitoring and meets the relevant UNFCCC requirements for the JI and the relevant host country criteria.

Report No.:	Subject Group:
UKRAINE-DET/0352/2011	JI

Project title:
"Greenhouse gas emission reduction due to modernization and technical re-equipment of municipal enterprises of Kharkiv region"

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1 INTRODUCTION

ME "Kharkivski teplovi merezhi" has commissioned Bureau Veritas Certification to determine its JI project ”Greenhouse gas emission reduction due to modernization and technical re-equipment of municipal enterprises of Kharkiv region” (hereafter called “the project”) at the Kharkiv Region, Ukraine.

This report summarizes the findings of the determination of the project, performed on the basis of UNFCCC criteria, as well as criteria given to provide for consistent project operations, monitoring and reporting.

1.1 Objective

The determination serves as project design verification and is a requirement of all projects. The determination is an independent third party assessment of the project design. In particular, the project's baseline, the monitoring plan (MP), and the project’s compliance with relevant UNFCCC and host country criteria are determined in order to confirm that the project design, as documented, is sound and reasonable, and meets the stated requirements and identified criteria. Determination is a requirement for all JI projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of emission reduction units (ERUs).

UNFCCC criteria refer to Article 6 of the Kyoto Protocol, the JI rules and modalities and the subsequent decisions by the JI Supervisory Committee, as well as the host country criteria.

1.2 Scope

The determination scope is defined as an independent and objective review of the project design document, the project’s baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations.

The determination is not meant to provide any consulting towards the Client. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project design.

1.3 Determination team

The determination team consists of the following personnel:

Oleg Skoblyk
Bureau Veritas Certification, Climate Change Lead Verifier

Rostislav Topchiy
Bureau Veritas Certification, Climate Change Verifier

Vitaliy Minyaylo
Bureau Veritas Certification, Climate Change Verifier

Denis Pishchalov
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This determination report was reviewed by:

Ivan Sokolov

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Bureau Veritas Certification, Technical Expert

2 METHODOLOGY

The overall determination, from Contract Review to Determination Report & Opinion, was conducted using Bureau Veritas Certification internal procedures.

In order to ensure transparency, a determination protocol was customized for the project, according to the version 01 of the Joint Implementation Determination and Verification Manual, issued by the Joint Implementation Supervisory Committee at its 19 meeting on 04/12/2009. The protocol shows, in a transparent manner, criteria (requirements), means of determination and the results from determining the identified criteria. The determination protocol serves the following purposes:

- It organizes, details and clarifies the requirements a JI project is expected to meet;
- It ensures a transparent determination process where the determiner will document how a particular requirement has been determined and the result of the determination.

The completed determination protocol is enclosed in Appendix A to this report.

2.1 Review of Documents

The Project Design Document (PDD) submitted by Institute of Engineering Ecology and additional background documents related to the project design and baseline, i.e. country Law, Guidelines for users of the joint implementation project design document form, Approved CDM methodology and/or Guidance on criteria for baseline setting and

monitoring, Kyoto Protocol, Clarifications on Determination Requirements to be Checked by an Accredited Independent Entity were reviewed.

To address Bureau Veritas Certification corrective action and clarification requests, Institute of Engineering Ecology revised the PDD and resubmitted it on 14/03/2012.

The determination findings presented in this report relate to the project as described in the PDD version 03.

2.2 Follow-up Interviews

On 15-16/09/2011 Bureau Veritas Certification performed on-site interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of Municipal Enterprise "Kharkivski teplovi merezhi", Kharkiv Regional Municipal Enterprise "Dyrektsiya rozvytku infrastruktury terytorii", Izium Heat Supply Networks Municipal Enterprise, Krasnohrad Heat Supply Networks Enterprise, Novovodolaha Heat Supply Networks Enterprise, Pervomais'kyi Municipal Enterprise "Teplomerezhi", Municipal Enterprise of Balakliia District Council "Balakliyski teplovi merezhi", Municipal Enterprise "Teplovi merezhi" of Lozova City Council of Kharkiv Region, "Kotelni likarnyanogo kompleksu" Ltd., Intersectoral Regional Corporation "Teploenergiya", Municipal Enterprise "Chuhuivteplo", Kharkiv District Heat Supply Networks Municipal Enterprise of Kharkiv District State Administration, Borova Heat Supply Networks Municipal Enterprise and Institute of Engineering Ecology were interviewed (see References). The main topics of the interviews are summarized in Table 1.

Table 1 Interview topics

Interviewed organization	Interview topics
Municipal Enterprise "Kharkivski teplovi merezhi" and other project partners	➢ Project history ➢ Project approach ➢ Project boundary ➢ Implementation schedule ➢ Organizational structure ➢ Responsibilities and authorities ➢ Training of personnel ➢ Quality management procedures and technology ➢ Rehabilitation/Implementation of equipment (records) ➢ Metering equipment control ➢ Metering record keeping system, database ➢ Technical documentation ➢ Monitoring plan and procedures

	➢ Permits and licenses ➢ Local stakeholder's response.
CONSULTANT: Institute of Engineering Ecology	➢ Baseline methodology ➢ Monitoring plan ➢ Additionality proofs ➢ Calculation of emission reduction.

2.3 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the determination is to raise the requests for corrective actions and clarification and any other outstanding issues that needed to be clarified for Bureau Veritas Certification positive conclusion on the project design.

If the determination team, in assessing the PDD and supporting documents, identifies issues that need to be corrected, clarified or improved with regard to JI project requirements, it will raise these issues and inform the project participants of these issues in the form of:

(a) Corrective action request (CAR), requesting the project participants to correct a mistake in the published PDD that is not in accordance with the (technical) process used for the project or relevant JI project requirement or that shows any other logical flaw;

(b) Clarification request (CL), requesting the project participants to provide additional information for the determination team to assess compliance with the JI project requirement in question;

(c) Forward action request (FAR), informing the project participants of an issue, relating to project implementation but not project design, that needs to be reviewed during the first verification of the project.

The determination team will make an objective assessment as to whether the actions taken by the project participants, if any, satisfactorily resolve the issues raised, if any, and should conclude its findings of the determination.

To guarantee the transparency of the verification process, the concerns raised are documented in more detail in the determination protocol in Appendix A.

3 PROJECT DESCRIPTION

Project objective is to reduce greenhouse gas emissions due to fuel, in particular natural gas (which is imported to Ukraine), consumption reduction, as well as power consumption reduction, by means of rehabilitation of the district heating systems of Kharkiv region, including boiler-houses and distribution network equipment replacement and rehabilitation. The purpose of the project is sustainable development of the Kharkiv region through implementation of energy saving technologies.

Municipal Enterprise “Kharkivski teplovi merezhi” is the main heat supply organization in Kharkiv City. Other project partners are:

- Kharkiv Regional Municipal Enterprise “Dyrektsiya rozvytku infrastruktury terytorii”;
- Izium Heat Supply Networks Municipal Enterprise;
- Krasnohrad Heat Supply Networks Enterprise;
- Novovodolaha Heat Supply Networks Enterprise;
- Pervomais’kyi Municipal Enterprise “Teplomerezhi”;
- Municipal Enterprise of Balakliia District Council “Balakliyski teplovi merezhi”;
- Municipal Enterprise “Teplovi merezhi” of Lozova City Council of Kharkiv Region;
- “Kotelni likarnyanogo kompleksu” Ltd.;
- Intersectoral Regional Corporation “Teploenergiya”;
- Municipal Enterprise “Chuhuivteplo”;
- Kharkiv District Heat Supply Networks Municipal Enterprise of Kharkiv District State Administration;
- Borova Heat Supply Networks Municipal Enterprise.

Project includes 248 boiler-houses with 703 installed boilers and 278.5 km in the 2-pipe calculation of heat distribution networks.

a) Situation existing prior to the starting date of the project:
The common practice for the district heating enterprises in Ukraine including municipal enterprises that implement the project is to fulfil annual minimal repairing of the DH system to keep it working. In fact, mainly repairing of network’s parts and boilers which might cause accidents are commonly executed.

b) Baseline scenario:

For Baseline scenario, the economically feasible and realistic scenario with very slow rehabilitation activities was chosen. Tariffs for heat do not include the resources for prospective rehabilitation of the district heating system, only the resources for probable necessary repairing after possible accidents. Minimal annual repairing doesn’t lead to reduction of baseline emissions, because along with degradation of the whole system with

efficiency droop at other objects, the overall actual emissions of Supplier would stay at approximately the same level. This scenario is not environmentally favorable for the near future, since GHGs emissions of Supplier will continue to be kept at the same level or even higher, but economically such scenario is attractive.

c) Project scenario

The project employs the increase of fuel and electricity consumption efficiency to reduce greenhouse gas emissions relative to current practice.

The following activities will ensure fuel and electricity saving:

- liquidation of low efficient boiler-houses with:
  - ✓ switching load to high efficient boiler-houses;
  - ✓ construction of modular mini- boiler-houses;
- replacement of obsolete boilers with highly efficient ones;
- modernization of boilers:
  - ✓ replacement of boilers burners;
  - ✓ replacement of boilers heated surfaces;
  - ✓ implementation of control automatics;
- implementation of technology for utilization of the exhaust gases heat;
- optimization of network organization;
- gradual shift of heat distribution networks to preliminary isolated pipes;
- technical re-equipment of heat supply stations with high efficient heat exchangers;
- installation of frequency controllers at electric drives of pumps, blow fans and smoke exhausters;
- replacement of pumps;
- optimization of load allocation;
- implementation of control and monitoring systems;
- implementation of other energy saving measurements.

Estimated project annual reductions of GHG emissions, mainly CO_2, are 112 861 tonnes per year after project complete implementation comparing to business-as-usual or baseline scenario.

Implementation of the project will provide substantial economic, environmental, and social benefits to the Kharkiv Region. Social impact of the project is positive since after project implementation the heat supply service will be improved and tariffs for heat energy will not be raised to cover construction costs.

The identified areas of concern as to Description of the project, project participants response and BV Certification's conclusion are described in Appendix A Table 2 (refer to CAR 01).

4 DETERMINATION CONCLUSIONS

In the following sections, the conclusions of the determination are stated.

The findings from the desk review of the original project design documents and the findings from interviews during the follow up visit are described in the Determination Protocol in Appendix A.

The Clarification and Corrective Action Requests are stated, where applicable, in the following sections and are further documented in the Determination Protocol in Appendix A. The determination of the Project resulted in 08 Corrective Action Requests, 05 Clarification Requests and 01 Forward Action Request.

The number between brackets at the end of each section corresponds to the DVM paragraph.

4.1 Project approvals by Parties involved (19-20)

The project has already received Letter of Endorsement № 3801/23/7 on the JI project “Greenhouse gas emission reduction due to modernization and technical re-equipment of municipal enterprises of Kharkiv region” dated 30/12/2011 issued by State Environmental Investment Agency of Ukraine.

Bureau Veritas Certification received this letter from the project participants and does not doubt its authenticity.

As for the time being no written approvals of the project by Parties involved are available. After receiving Determination Report from the Accredited Independent Entity the project documentation will be submitted to the Ukrainian Designated Focal Point (DFP) which is State Environmental Investment Agency of Ukraine, for receiving a Letter of Approval. The written approval by another Parties involved will be obtained later on.

Bureau Veritas Certification will check the letters against paragraphs 19 - 20 of the DVM.

4.2 Authorization of project participants by Parties involved (21)

The official authorization of each legal entity listed as project participant in the PDD by Parties involved will be provided in the written project approvals (refer to 4.1 above).

4.3 Baseline setting (22-26)

The PDD explicitly indicates that using a methodology for baseline setting and monitoring developed in accordance with appendix B of the JI guidelines (hereinafter referred to as JI specific approach) was the selected approach for identifying the baseline.

The PDD provides a detailed theoretical description in a complete and transparent manner, as well as justification, that the baseline is established:

(a) By listing and describing the following plausible future scenarios on the basis of conservative assumptions and selecting the most plausible one:

- The first version of Baseline scenario was a business-as-usual scenario with minimum rehabilitation works balanced by overall degradation of DH system. For this Baseline scenario there are no barriers (no investment barrier since this scenario doesn't require the attraction of additional investments, and no technological barrier since the equipment is operated by existing skilled personnel, and additional re-training is not required), and represent the common practice in Ukraine.
- The second version of Baseline scenario was to make rehabilitation works without JI mechanism. In this case there exist both investment barrier since this scenario requires the attraction of large additional investments, and due to very large payback time and high risks it is not attractive for investments, and as well the technological barrier since operation of the new modern equipment will require additional re-training of personnel. Rehabilitation of heat supply equipment in order to improve its efficiency is not a common practice in Ukraine.
- The third version of Baseline scenario was the shortened project activity, without any of the non-key type of activity, for example elimination of frequency controllers installation, etc., from the project. This makes project economically less attractive, with the longer pay back period.
- Thus, the first version was chosen for Baseline scenario.

(b) 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. In this context, the following key factors that affect a baseline are taken into account:

- The project activities including rehabilitation of boiler-houses and heat distribution networks will increase energy efficiency of the district heating (DH) systems of Kharkiv region, thus

enabling them to produce the same amount of heat energy with less fuel and power consumption. Reduced fuel and power consumption will lead to reduction of GHG emissions.

- In the absence of the proposed project, all equipment, including the old low efficient but still workable for a long life period one, will operate in as-usual mode, and any emission reductions will not occur.
- Ukraine has claimed district heating and municipal energy sector as a priority of the national energy-saving development. This is pointed out in the State Program for Reformation and Development of municipal economy for 2004-2010 (Law of Ukraine dated 24.06.2004 № 1869-IV), The Law of Ukraine dated 01.07.1994 № 74/94-VR "On energy saving" and The Law of Ukraine dated 22.12.2005 №3260-IV "On changes in The Law of Ukraine "On energy saving". The law of Ukraine "On heat energy supply" (№ 2633-IV dated 02.06.2005) regulates all relations in the heat supply market. It does not considerably change the previously existing practices in the market, but stimulates the more rigid energy saving and implementation of energy-efficient technologies.

All explanations, descriptions and analyses pertaining to the baseline in the PDD were found adequate and the baseline is identified appropriately.

The identified areas of concern as to Baseline setting, project participants response and BV Certification's conclusion are described in Appendix A Table 2 (refer to CAR 02, CAR 03, CL 01).

4.4 Additionality (27-31)

The most recent version of the "Tool for the demonstration and assessment of additionality" approved by the CDM Executive Board was used. All explanations, descriptions and analyses are made in accordance with the selected tool.

The PDD provides a justification of the applicability of the approach. Due to the fact that there is no approved CDM baseline and monitoring methodology which is applicable to the project type, the Additionality Tool is applied which is considered as a good practice for additionality justification.

Additionality proofs are provided. Three alternative scenarios to the project activity were identified and proven to be in compliance with mandatory legislation and regulations taking into account the enforcement in the region and Ukraine.

The developer is thoroughly following the Tool for the demonstration and assessment of additionality version 6.0.

Among three standard methods of financial analysis offered by the Tool the Developer selected Simple cost analysis. Indeed the Decree of Cabinet of Ministers of Ukraine "On the approval of the calculation of tariffs for generation, transportation, supply of heat energy and district heating services and hot water supply" issued July 10th 2006 No955 does not contain any incentives for implementation of the energy saving projects at corporate level. The tariffs methodology introduced is directly based on the costs. As the result any savings achieved by the municipal operator will not generate any additional profits for the company and will lead to the proportional reduction of the selling tariff imposed by the regulator. Taking into account this fact the use of the simple cost analysis looks reasonable and correct.

Investment barriers
The general situation in District Heating sector in Ukraine may be characterized as quite insufficient. The existing district heating systems suffer from the same, well-known problems as those in other Central and European Countries. Old-fashioned Russian technology, oversized equipment, neglected maintenance and repairs, have resulted in increasing inefficiency. Typically, the overall efficiency of the DH systems (from fuel consumption in boilers to heat supplied to the building entrance) is about 50%. Including the losses within the buildings, it is estimated that only one third of the energy of the fuel is useful heat for the final consumers.

Non cost-covering tariffs can not meet the revenue requirements and subsidy payments are too small to cover all costs and are often delayed. In addition, collection rates are going in line with increasing tariffs. The current regulatory framework and tariff policy makes it difficult to attract private investors to district heating. Yet the main stakeholders, e.g. municipalities and residents, in most cases lack the necessary financing capacity. Yet, the current policy framework does not make district heating attractive for investment, which undermines its sustainability. Barriers to investment and efficiency improvements include (but are not limited to): the current pricing policy; lack of metering; the focus on heat production, not consumption; unclear ownership and management of buildings; and difficult access to financing for interested parties. Moreover, no bank gives credits without the proper guarantees. District heating enterprises that implement the project are communal ownership enterprises, and all theirs main funds belong to territorial population. For this reason the property of enterprises can not be a credit mortgage. Thus, the DH system rehabilitation without additional external investments (grants, subsidy, subvention, etc.) practically isn't possible, and in current situation practically only municipal or state financing might be used for

this purposes. But Ukrainian government does not have enough funds for this, and insufficiency and delay of the budget financing of activity in this sector is the main its problem.

Technological barriers

1. Not all proposed technologies are widely approved already. Qualification of operational personal for implementation of the new technologies may be not sufficient to provide project implementation properly and in time.

Most of communal heating enterprisers in Ukraine fulfill annual minimal repairing of the DH system to keep it working. Particularly they execute repairing of network's parts and boilers that might cause accidents. The most economically feasible and realistic scenario without carbon credits sales is a very slow rehabilitation activity, instead of making a major overhaul of the heating system.

Most of proposed technologies are widely used in Ukraine for the similar JI projects. For example boilers replacement, network replacement with pre-insulated pipes, installation of frequency controllers, etc.

2. Efficiency of installed equipment could be lower than was claimed by producers or equipment may have substantial defects.

3. Available amount of natural gas. Last years Ukraine faced with incomplete delivery of natural gas from Russian Federation. Ukrainian Government realized attempts to decrease dependence from Russian natural gas delivery.

Common practice analysis

The common practice for district heating enterprises in Ukraine without JI is only a necessary repair of the old equipment, mainly in emergency cases, and not the renewal. Only with the JI component it is possible to obtain the necessary additional funds for real rehabilitation of the district heating system.

This is confirmed by the present situation that the real comprehensive rehabilitation of the district heating systems in Ukraine is performed only by the enterprises participating in JI projects. There are at least 9 District Heating Rehabilitation Projects with JI mechanism in Ukraine at advanced stages beside this project: for DH systems in Chernihiv region, Donetsk region, AR Crimea, Kharkiv city, Rivne region, Dnipropetrovsk Region, Luhansk city, Zaporizhzhia City, Sevastopol city. But other JI project activities are not to be included in Common practice analysis.

All District Heating Rehabilitation Projects in Ukraine are being implemented only within the framework of the Kyoto Protocol JI mechanism. In the absence of additional financing (such as grants, other non-commercial finance terms, carbon credits, etc) implementation of these projects would be impossible. Application of the JI mechanism is the only incentive to implement such projects.
Based on the available facts, the following conclusions may be made:

- Activities similar to this Project are not widespread in the housing and utilities sector of the Ukraine.

- These activities are not a result of national policy being pursued in respect to promoting the utilization of gas as a fuel in municipal heat supply systems.

Thus, the Project activities do not fall under the category of common practice. This testifies to the additionality of this Project.

Additionality is demonstrated appropriately as a result of the analysis using the approach chosen.

4.5 Project boundary (32-33)

The project boundary defined in the PDD encompasses all anthropogenic emissions by sources of greenhouse gases (GHGs) that are:

(i) Under the control of the project participants, such as CO_2 emissions from fuel combustion in boilers, CO_2 emissions from fuel combustion in boilers at the boiler houses due to the too large heat losses in the networks, CO_2 emissions from power plant(s) due to electricity production to the grid, that is consumed by boiler houses, reduced CO_2 emissions from fuel combustion in boilers due to increased efficiency and fuel saving, reduced CO_2 emissions from boiler houses due to decreasing of heat losses in the network pipes due to replacement pipes with the pre-insulated ones, implementation of new heat exchangers, re-equipment of HSS, reduced CO_2 emissions from power plant(s) due to reduction of electricity consumption by boiler houses due to implementation of energy saving measurements;

(ii) Reasonably attributable to the project such as CO_2 emissions from fuel extraction and transportation, CO_2 emissions from power plant(s) due to electricity consumption used for heating

by customers of Kharkiv region, reduced CO_2 emissions from fuel extraction and transportation due to fuel saving; and

(iii) Significant, i.e., as a rule of thumb, would by each source account on average per year over the crediting period for more than 1 per cent of the annual average anthropogenic emissions by sources of GHGs, or exceed an amount of 2,000 tonnes of CO_2 equivalent, whichever is lower.

The delineation of the project boundary and the gases and sources included are appropriately described and justified in the PDD.

4.6 Crediting period (34)

The PDD states the starting date of the project as the date on which the implementation or construction or real action of the project began, and the starting date is 29/12/2006, which is after the beginning of 2000.

The PDD states the expected operational lifetime of the project in years and months, which is 26 years and 312 months.

The PDD states the length of the crediting period in years and months, which is 26 years or 312 months and its starting date as 01/01/2007, which is on the date the first emission reductions or enhancements of net removals are generated by the project.

The PDD states that the crediting period for the issuance of ERUs starts only after the beginning of 2008 and does not extend beyond the operational lifetime of the project.

The PDD states that the extension of its crediting period beyond 2012 is subject to the host Party approval, and the estimates of emission reductions or enhancements of net removals are presented separately for those until 2012 and those after 2012 in all relevant sections of the PDD.

4.7 Monitoring plan (35-39)

The PDD, in its monitoring plan section, explicitly indicates that JI specific approach was the selected.

The monitoring plan describes all relevant factors and key characteristics that will be monitored, and the period in which they will be monitored, in particular also all decisive factors for the control and reporting of project performance, such as statistics data; quality control (QC) and quality assurance (QA) procedures; Schemes of monitoring system and data collection for Monitoring Report, Responsibilities for data management the

operational and management structure that will be applied in implementing the monitoring plan.

The monitoring plan specifies the indicators, constants and variables that are reliable (i.e. provide consistent and accurate values), valid (i.e. are clearly connected with the effect to be measured), and that provide a transparent picture of the emission reductions or enhancements of net removals to be monitored such as natural gas consumption at boiler houses, averaged calorific value of natural gas, average outside temperature during the heating period, average inside temperature during the heating period, number of customers for hot water supply service, heated area, heat transfer factor of buildings, heated area of buildings (previously existed in the base year) with the renewed (improved) thermal insulation in the reported year, heated area of newly connected buildings (assumed with the new (improved) thermal insulation) in the reported year, heat transfer factor of new buildings and buildings with new thermal insulation, heating period duration, duration of period of hot water supply service, maximum connected load to a boiler-house required for heating, connected load to a boiler-house required for hot water supply service, standard specific discharge of hot water per personal account, carbon emission factors for natural gas and for electricity consumption, electricity consumption.

The monitoring plan explicitly and clearly distinguishes:

(i) Data and parameters that are not monitored throughout the crediting period, but are determined only once (and thus remain fixed throughout the crediting period), but that are not already available at the stage of determination, which are absent.

(ii) Data and parameters that are not monitored throughout the crediting period, but are determined only once (and thus remain fixed throughout the crediting period), but that are not already available at the stage of determination, which are absent.

(iii) Data and parameters that are monitored throughout the crediting period, such as natural gas consumption at boiler houses, averaged calorific value of natural gas, average outside temperature during the heating period, average inside temperature during the heating period, number of customers for hot water supply service, heated area, heat transfer factor of buildings, heated area of buildings (previously existed in the base year) with the renewed (improved) thermal insulation in the reported year, heated area of newly connected buildings (assumed with the new (improved) thermal insulation) in the reported year, heat transfer factor of new buildings and buildings with new thermal insulation, heating period duration, duration of period of hot water

supply service, maximum connected load to a boiler-house required for heating, connected load to a boiler-house required for hot water supply service, standard specific discharge of hot water per personal account, carbon emission factors for natural gas and for electricity consumption, electricity consumption.

The monitoring plan describes the methods employed for data monitoring (including its frequency) and recording, such as direct measurement with gas and electricity meters; calculations with different recording frequency such as every day or once per year and electronic or paper recording method.

The monitoring plan elaborates all algorithms and formulae used for the estimation/calculation of baseline emissions/removals and project emissions/removals or direct monitoring of emission reductions from the project, leakage, as appropriate.

Baseline emissions

Baseline emissions consist of two types of GHG emissions:

1) GHG emissions from boilers which are operated by the heat supply systems of Kharkiv region;
2) GHG emissions from current electricity consumption from the state grid which will be reduced due to implementation of energy saving measures at boiler-houses and heat supply stations.

$E^b = E1^b + E2^b$

where:
$E1^b$ – emissions from heat production sources operated by the heat supply systems of Kharkiv region, t CO_2e;
$E2^b$ – emissions due to electricity production to the grid that is consumed by boiler houses and heat supply stations, t CO_2e;

1) Emissions from heat generating sources:

$E1^b = \sum (B_{(i)}^b * NCV^b * Cef)$,

where:
$B_{(i)}^b$ – fuel (natural gas) consumption by (i) boiler house in the baseline scenario, ths m^3;
NCV^b – averaged calorific value of a fuel (natural gas), GJ/ths m^3;
Cef – carbon emission factor for a fuel (natural gas), t CO_2/GJ.

2) Emissions due to electricity production to the grid that is consumed by boiler houses and heat supply stations.

$E2^b = \sum (P_{(i)}^b * CEF_c)$,

where:
$P_{(i)}^b$ – electricity consumption by (i) boiler house and heat supply stations related to it in the baseline scenario, MWh;
CEF_c – carbon emission factor for electricity consumption, tCO_2e/MWh.

The sum is taken over all boiler-houses (i) which are included into the project.

Project emissions

There are two kinds of emissions which are included in the project scenario:

1) GHG emissions from boilers which are operated by the heat supply systems of Kharkiv region;
2) GHG emissions from the electricity consumption from the state grid.

$E^r = E1^r + E2^r$,

where:
$E1^r$ – emissions from heat production sources operated by the heat supply systems of Kharkiv region in a reported year, t CO_2e;
$E2^r$ – emissions due to electricity production to the grid, that consumed by boiler houses and heat supply stations in a reported year, t CO_2e.

Project scenario emissions from boiler-houses are a sum of prognostic fuel amounts to be consumed in any reported year multiplied by corresponding conversion factors. Prognostic – means estimated fuel consumption in the project scenario after rehabilitation of boiler equipment, with subtracted fuel saving due to improving of the network efficiency, re-equipment of heat supply stations.

$E1^r = \sum [(B_{(i)}^r - V_{(i)}^r) * NCV^r * Cef]$;

where:
$B_{(i)}^r$ – fuel (natural gas) consumption by (i) boiler house in the project scenario, ths m^3;
$V_{(i)}^r$ – fuel saving due to rehabilitation of network and heat supply stations related to (i) boiler-house, ths m^3;
NCV^r – averaged calorific value of a fuel (natural gas), GJ/ ths m^3;
$Cef_.$ – carbon emission factor for a fuel (natural gas), t CO_2/GJ.

$B_{(i)}^r = (B_{(i)}^b * NCV^b * BBE_{(i)}) / (NCV^r * PBE_{(i)})$,

where:
$BBE_{(i)}$ - Baseline Boilers Efficiency, %;
$PBE_{(i)}$ - Project Boilers Efficiency, %.

$V_{(i)}^{r} = B_{(i)}^{b} - B_{(i)}^{b} * (100 – L1^{b})/(100 – L1^{r})$,

where:
$L1^{b}$ – heat losses in the network in the baseline scenario, %;
$L1^{r}$ – heat losses in the network in the project scenario, %.

$E2^{r} = \sum [(P_{(i)}^{b} – P1_{(i)}^{r} – P2_{(i)}^{r}) * CEF_{c}]$

where:
$P1_{(i)}^{r}$ – calculated electricity saving due to frequency controllers' installation at (i) boiler house and heat supply stations related to it, MWh;
$P2_{(i)}^{r}$ - calculated electricity saving due to replacement of pumps at (i) boiler house and heat supply stations related to it, MWh.
CEF_{c} – carbon emission factor for electricity consumption, tCO_2e/MWh;

$P1^{r} = N^{b} * (1-\psi) * t$

where:
N^{b} – capacity of draw-blowing equipment and/or pumps where frequency controllers are scheduled to be implemented, MW;
ψ – engine loading factor;
t - working period duration, hours per year.

$P2^{r} = (N^{b} - N^{r}) * t$

where:
N^{b} and N^{r} – capacity of pumps that are scheduled to be replaced and of new pumps to be installed, respectively, MW;
t - working period duration, hours per year.

The sum is taken over all boiler-houses (i) which are included into the project.

Emission reductions are calculated using the equation:

$ERs = E^{b} – E^{r}$.

where:
ERs – emission reductions, t CO_2e;
E^{r} – project emissions, t CO_2e;
E^{b} – baseline emissions, t CO_2e.

The monitoring plan presents the quality assurance and control procedures for the monitoring process which are described in the section D.2 and Annex 3 of the PDD. This includes, as appropriate, information on

calibration and on how records on data and/or method validity and accuracy accuracy are kept.

The monitoring plan clearly identifies the responsibilities and the authority regarding the monitoring activities.

Data collection for fuel consumption is provided in the following way:

1. Natural gas consumption is measured by gas flow meter, installed at a boiler-house. All boiler-houses are equipped with gas flow meters.

2. The majority of boiler-houses are equipped with automatic correctors for gas temperature and pressure. Gas consumption is registered automatically. Every day operator of a boiler house makes registration of daily gas consumption in the special paper journal “Journal of registration of boiler-house’s operation parameters”.

3. At the boiler-houses that are not equipped with gas volume correctors, operator of a boiler house every 2 hours registers parameters of natural gas (temperature and pressure) in the paper journal “Journal of registration of boiler-house’s operation parameters”. These parameters are used to bring gas consumption to standard conditions.

4. Every day operators report values of gas consumption by phone to Production-Technical Service (PTS) of district heating enterprises, where they are storing and used for payments to gas suppliers.

5. Every month the account centers transfer data to gas suppliers.

Responsibilities for data management are presented in Table An3-5 of PDD.

On the whole, the monitoring plan reflects good monitoring practices appropriate to the project type.

The monitoring plan provides, in tabular form, a complete compilation of the data that need to be collected for its application, including data that are measured or sampled and data that are collected from other sources (e.g. official statistics, expert judgment, proprietary data, IPCC, commercial and scientific literature etc.) but not including data that are calculated with equations.

The monitoring plan indicates that the data monitored and required for verification are to be kept for two years after the last transfer of ERUs for the project.

The identified areas of concern as to Monitoring plan, project participants response and BV Certification’s conclusion are described in Appendix A

Table 2 (refer to CL 02, CL 03, CL 04, CAR 04, CL 05, CAR 05, CAR 06, CAR 07).

4.8 Leakage (40-41)

No leakage is expected in proposed project activity. Dynamic baseline (based on collected monitoring data) will exclude all possible leakages.

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4.9 Estimation of emission reductions or enhancements of net removals (42-47)

The PDD indicates assessment of emissions or net removals in the baseline scenario and in the project scenario as the approach chosen to estimate the emission reductions generated by the project.

The PDD provides the ex ante estimates of:

(a) Emissions for the project scenario (within the project boundary), which are 333 947 tonnes of CO_2eq for 2007, 1 506 697 tonnes of CO_2eq for 2008-2012 and 5 254 080 tonnes of CO_2eq for 2013-2032;

(b) No leakage is expected.

(c) Emissions for the baseline scenario (within the project boundary), which are 364 565 tonnes of CO_2eq for 2007, 1 877 826 tonnes of CO_2eq for 2008-2012 and 7 511 300 tonnes of CO_2eq for 2013-2032.

(d) Emission reductions adjusted by leakage, which are 30 618 tonnes of CO_2eq for 2007, 371 129 tonnes of CO_2eq for 2008-2012 and 2 257 220 tonnes of CO_2eq for 2013-2032.

The estimates referred to above are given:

(a) On a annual basis;

(b) From 01/01/2007 to 31/12/2032, covering the whole crediting period;

(c) On a source-by-source/sink-by-sink basis;

(d) For each GHG gas, which are CO_2

(e) In tonnes of CO_2 equivalent, using global warming potentials defined by decision 2/CP.3 or as subsequently revised in accordance with Article 5 of the Kyoto Protocol;

The formulas used for calculating the estimates referred above are the same as those used for project monitoring and described in the section 4.7 above. All formulas are consistent throughout the PDD.

For calculating the estimates referred to above, key factors, e.g. fuel and equipment prices and availability, expected market development, etc. influencing the baseline emissions or removals and the activity level of the project and the emissions or net removals as well as risks associated with the project were taken into account, as appropriate.

Data sources used for calculating the estimates referred to above, such as statistic data, actual historical monitored data, IPCC etc. are clearly identified, reliable and transparent.

Emission factors, such as Carbon emission factor for electricity consumption, Carbon emission factor for natural gas were selected by carefully balancing accuracy and reasonableness, and appropriately justified of the choice.

The estimation referred to above is based on conservative assumptions and the most plausible scenarios in a transparent manner.

The estimates referred to above are consistent throughout the PDD.

The annual average of estimated emission reductions or enhancements of net removals over the crediting period is calculated by dividing the total estimated emission reductions or enhancements of net removals over the crediting period by the total months of the crediting period, and multiplying by twelve.

4.10 Environmental impacts (48)

The PDD lists and attaches documentation on the analysis of the environmental impacts of the project, including transboundary impacts, in accordance with procedures as determined by the host Party, such as Law of Ukraine # 1264-XII “On environmental protection”, Law of Ukraine # 2707-XII “On atmospheric air protection”, Norms of limit admissible emissions of pollution agents from stationary sources” – adopted by

Ministry for Environmental Protection of Ukraine, the Law of Ukraine «On ecological expertise», DBN A.2.2-1-2003, Water Code of Ukraine, GOST 17.4.1.02.-83 “Protection of Nature, Soils. Classification of chemical substances for pollution control”, Law on waste products.

The PDD provides conclusion and all references to supporting documentation of an environmental impact assessment undertaken in accordance with the procedures as required by the host Party, if the analysis referred to above indicates that the environmental impacts are considered significant by the project participants or the host Party.

The identified areas of concern as to Environmental impacts, project participants response and BV Certification’s conclusion are described in Appendix A Table 2 (refer to FAR 01).

4.11 Stakeholder consultation (49)

As project activity won’t provide negative influence on environment and negative social effect, special public discussion was not hold. The authorities (city councils that are the representatives of the population) of Kharkiv region have expressed the support for the project.

Project “Greenhouse gas emission reduction due to modernization and technical re-equipment of municipal enterprises of Kharkiv region” was presented at the XVI, XVII, XX and XXI International Conferences “Problems of Ecology and Exploitation of Energy Objects” (Yalta, 2006, 2007, 2010 and 2011), where it was comprehensively discussed with representatives of governmental and district heating organizations.

The identified areas of concern as to Stakeholder consultation, project participants response and BV Certification’s conclusion are described in Appendix A Table 2 (refer to CAR 08).

5 SUMMARY AND REPORT OF HOW DUE ACCOUNT WAS TAKEN OF COMMENTS RECEIVED PURSUANT TO PARAGRAPH 32 OF THE JI GUIDELINES

No comments, pursuant to paragraph 32 of the JI Guidelines, were received.

6 DETERMINATION OPINION

Bureau Veritas Certification has performed a determination of the ”Greenhouse gas emission reduction due to modernization and technical re-equipment of municipal enterprises of Kharkiv region” project in the Kharkiv Region, Ukraine. The determination was performed on the basis

of UNFCCC criteria and host country criteria and also on the criteria given to provide for consistent project operations, monitoring and reporting.

The determination consisted of the following three phases: i) a desk review of the project design and the baseline and monitoring plan; ii) follow-up interviews with project stakeholders; iii) the resolution of outstanding issues and the issuance of the final determination report and opinion.

Project participant/s used the latest tool for demonstration of the additionality. In line with this tool, the PDD provides barrier analysis, investment analysis and common practice analysis, to determine that the project activity itself is not the baseline scenario.

Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity. Given that the project is implemented and maintained as designed, the project is likely to achieve the estimated amount of emission reductions.

The determination revealed two pending issues related to the current determination stage of the project: the issue of the written approval of the project and the authorization of the project participant by the host Party. If the written approval and the authorization by the host Party are awarded, it is our opinion that the project as described in the Project Design Document, Version 03 meets all the relevant UNFCCC requirements for the determination stage and the relevant host Party criteria.

The review of the project design documentation (03) and the subsequent follow-up interviews have provided Bureau Veritas Certification with sufficient evidence to determine the fulfillment of stated criteria. In our opinion, the project correctly applies and meets the relevant UNFCCC requirements for the JI and the relevant host country criteria.

The determination is based on the information made available to us and the engagement conditions detailed in this report.

7 REFERENCES

Category 1 Documents:
Documents provided by Municipal Enterprise “Kharkivski teplovi merezhi” and that relate directly to the GHG components of the project.

/1/ PDD “Greenhouse gas emission reduction due to modernization and technical re-equipment of municipal enterprises of Kharkiv region”, version 01 dated 22/08/2011
/2/ PDD “Greenhouse gas emission reduction due to modernization and technical re-equipment of municipal enterprises of Kharkiv region”, version 02 dated 18/01/2012
/3/ PDD “Greenhouse gas emission reduction due to modernization and technical re-equipment of municipal enterprises of Kharkiv region”, version 03 dated 14/03/2012
/4/ Guidelines for Users of the Join Implementation Project Design Document Form, version 04, JISC
/5/ Joint Implementation Project Design Document Form, version 01
/6/ Glossary of JI terms, version 03, JISC.
/7/ Guidance on Criteria for Baseline Setting and Monitoring, version 02, JISC.
/8/ Tool for the demonstration and assessment of additionality, Version 06
/9/ JISC “Clarification regarding the public availability of documents under the verification procedure under the Joint Implementation Supervisory Committee.” Version 03
/10/ Joint Implementation Determination and Verification Manual. Version 01
/11/ Letter of Endorsement № 3801/23/7 on the JI project “Greenhouse gas emission reduction due to modernization and technical re-equipment of municipal enterprises of Kharkiv region” dated 30/12/2011 issued by State Environmental Investment Agency of Ukraine

Category 2 Documents:
Background documents related to the design and/or methodologies employed in the design or other reference documents.

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3	License series AB № 345122. Ministry of Housing and Communal Services of Ukraine. Production of thermal energy, transport it by trunk and local (distribution) heating networks, heat supply (except for certain businesses in the area of heating, if the thermal energy is produced by cogeneration plants, cogeneration plants and plants using alternative or renewable energy sources). Izyum Municipal Enterprise of Heat Supply Network
4	License series AB № 331341. Ministry of Housing and Communal Services of Ukraine. Production of thermal energy, transport it by trunk and local (distribution) heating networks, heat supply (except for certain businesses in the area of heating, if the thermal energy produced by cogeneration plants, cogeneration plants and plants using alternative or renewable energy sources). Krasnograd Municipal Enterprise of Heat Supply Network
5	License series AB № 368507. Ministry of Housing and Communal Services of Ukraine. Delivery of thermal energy. Pervomayskyi communal enterprise "Networks"
6	License series AB № 368502. Ministry of Housing and Communal Services of Ukraine. Production of thermal energy (other than certain types of economic activities in heat, if heat energy produced by cogeneration plants, cogeneration plants and plants using alternative or renewable energy sources). Pervomayskyi Municipal Enterprise of Heat Supply Network
7	License series AB № 368503. Ministry of Housing and Communal Services of Ukraine. Transporting heat-distance and local (distribution) networks Pervomayskyi heat utility company "Networks"
8	License series AB № 368505. Ministry of Housing and Communal Services of Ukraine. Production of thermal energy, transport her trunk and local (distribution) heating networks, heat supply (except for certain businesses in the area of heating, if the thermal energy produced by cogeneration plants, cogeneration plants and plants using alternative or renewable energy sources). Municipal Enterprise “Chuguivteplo”
9	License series AB № 345125. Ministry of Housing and Communal Services of Ukraine. Production of thermal energy, transport her trunk and local (distribution) heating networks, heat supply (except for certain businesses in the area of heating, if the thermal energy produced by cogeneration plants, cogeneration plants and plants using alternative or renewable energy sources). Lozova Municipal Enterprise of Heat Supply Network

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14 License series AG № 500128. National Electricity Regulatory Commission of Ukraine (NERC). Delivery of thermal energy. Borova Municipal Enterprise of Heat Supply Network

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27	Order Kharkiv Mayor № 598 dated 08.04.2009. "On the termination of the heating season in Kharkiv"
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29	Order Kharkiv Mayor № 803 dated 14.04.2010. "On the termination of the heating season in Kharkiv"
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126 The contract № 06/09-1687 TE-32 P of supplying natural gas dated 08.10.2009. Affiliated company "Gas of Ukraine" National Joint Stock Company "Naftogaz of Ukraine"

127 The contract № 06/08-1831 TE-32/611786 of supplying natural gas to provide public services for heating and hot water dated 29.09.2008. Affiliated company "Gas of Ukraine" National Joint Stock Company "Naftogaz of Ukraine"

128 The contract № 06/09-1832 BO-32/611787 of supplying natural gas for thermal energy needs, budget institutions and organizations dated 29.09.2008. Affiliated company "Gas of Ukraine" National Joint Stock Company "Naftogaz of Ukraine"

129 The contract № 06/07-1265 TE-32/611111 of supplying natural gas to provide public services for heating and hot water dated 01.10.2007. Affiliated company "Gas of Ukraine" National Joint Stock Company "Naftogaz of Ukraine"

130 The contract № 06/07-1266 BO-32/611112 of supplying natural gas for thermal energy needs, budget institutions and organizations dated 01.10.2007. Affiliated company "Gas of Ukraine" National Joint Stock Company "Naftogaz of Ukraine"

131 The contract № 06/06-1079 TE-32 of supplying natural gas to provide public services for heating and hot water dated 29.12.2006. Affiliated company "Gas of Ukraine" National Joint Stock Company "Naftogaz of Ukraine"

132 The contract № 06/06-1080 BO-32 of supplying natural gas for thermal energy needs, budget institutions and organizations dated 29.12.2006. Affiliated company "Gas of Ukraine" National Joint Stock Company "Naftogaz of Ukraine"

133 The contract № 06/05-2265 TE-31/611148 of supplying natural gas for thermal energy needs, budget institutions and organizations dated 30.12.2005. Affiliated company "Gas of Ukraine" National Joint Stock Company "Naftogaz of Ukraine"

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135 The contract № 16/06-496 R purchase natural gas dated 20.10.2006. Affiliated company "Gas of Ukraine" National Joint Stock Company "Naftogaz of Ukraine"

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140 The contract № 17/04-268/091674 on the provision of natural gas processing and transportation of heat dated 01.10.2004. Subsidiary "Gas-heat"

141 Reference with heating value of natural gas in Kharkov for 2009

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143 Act of the State Commission on the adoption of the completed construction of the facility dated 12.09.2008 № 77. Reconstruction of heat supply Pervomaysky Kharkiv region (Object construction: block, modular boiler: UKTM №3, UKTM №5, UKTM №6)

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145 Act №15 of acceptance of contract work in September 2008. Reconstruction of boiler plant Oktyabrskaya Revolution str.,36

146 Act №15/1 of acceptance of contract work in October 2008. Reconstruction of boiler plant Oktyabrskaya Revolution str.,36

147 Act №15/2 of acceptance of contract work in October 2008. Reconstruction of boiler plant Oktyabrskaya Revolution str.,36

148 Act №15/3 of acceptance of contract work in October 2008. Reconstruction of boiler plant Oktyabrskaya Revolution str.,36, Klochkivska str.,61/63

149 Act №15/8 of acceptance of contract work by November 2008. Reconstruction of boiler plant Oktyabrskaya Revolution str.,36, Klochkivska str.,61/63

150 Act №453 of acceptance of contract work in July 2009. Installation of alarm systems unauthorized access to the object. Boiler on Klochkivska str., 61/63

151 Act №1/250463-07 of acceptance of the works for July 2007. Installation of alarm systems unauthorized access to the object. Boiler on Klochkivska str.,61/63

152 Act №1132 of acceptance of the works dated 20.07.2007. Preparation of technical specifications for the reconstruction of boiler Klochkivska str., 61/63

153 Act №1404 of acceptance of the works dated 30.08.2007. Approval of the project for reconstruction of boiler Klochkivska str.,61/63

154 Commissioning certificate №350 dated 01.03.2010. Alarm systems unauthorized access to the object

155 Commissioning certificate №349 dated 01.03.2010. The cost of finance expertise working for water boiler on the Klochkovska str.,61/63

156 Commissioning certificate №1762 dated 01.08.2010. Laying the cable input. Boiler Lane Classic, 8
157 Act №103 acceptance of the works for April 2010. Boiler Lane Classic, 8
158 Commissioning certificate № 1960 dated 01.09.2010. Piping and valves. Boiler Lane Classic, 8
159 Commissioning certificate №1959 dated 01.09.2010. Thermal camera. Boiler Lane Classic, 8
160 The act of acceptance of construction works №55 in September 2010. Asphalt concrete pavement road. Boiler Lane Classic, 8
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162 The act of acceptance of works №1-20 for August 2010. Examination of the working project "Elimination of ineffective boiler by Lane Classic, 8 connected to the central heating"
163 The act of acceptance of the works dated 05.05.2010 № 1-3. Develop technical requirements for development of ITP for heating house on Lane Classic, 8
164 Commissioning certificate №2774 dated 01.11.2010. The foundation for general purpose equipment. ITP Lane Classic, 8
165 Commissioning certificate №2775 dated 01.11.2010. Pipelines heating, water supply and fittings. ITP Lane Classic, 8
166 Commissioning certificate №2776 dated 01.11.2010. Expansion tank. ITP Lane Classic, 8
167 Commissioning certificate №2777 dated 01.11.2010. Lamellar heat exchanger. ITP Lane Classic, 8
168 Commissioning certificate №2778 dated 01.11.2010. Electrical equipment and lighting. ITP Lane Classic, 8
169 Commissioning certificate №2779 dated 01.11.2010. Mounting systems for pumps WILO TOP-50/15. ITP Lane Classic, 8
170 Commissioning certificate №2780 dated 01.11.2010. Pump KR1 50-A1 Grundkos. Electrical equipment and lighting. ITP Lane Classic, 8
171 Commissioning certificate №2781 dated 01.11.2010. Pump Network WILO TOP-50/15 - 2 pcs. Electrical equipment and lighting. ITP Lane Classic, 8
172 Commissioning certificate №2784 dated 01.11.2010. Accounting Unit of the measuring devices. ITP Lane Classic, 8
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178 The act of acceptance of contract work №1 in October 2007. Reconstruction of heating network in str.Muranova, str.Poltava way str.Skorohoda and connect customers k central heating boiler with the elimination of Skorohoda str., 7/9, Muranova str., 5, Poltava way str., 110, 114, 118

179 The act of acceptance of contract work performed №12-138 of December 2007. Reconstruction of heating network in Muranova str., Poltava way str., Skorohoda str. and connect customers k central heating boiler with the elimination of Skorohoda str., 7/9, Muranova str., 5, Poltava way str., 110, 114, 118. Installation of electrical equipment and KPIs

180 The act of acceptance of contract work performed №12-137 of December 2007. Reconstruction of heating network in Muranova str., Poltava way str., Skorohoda str. and connect customers k central heating boiler with the elimination of Skorohoda str., 7/9, Muranova str., 5, Poltava way str., 110, 114, 118. Installation of electrical equipment and KPIs

181 The act of acceptance of contract work performed № 12-134 of December 2007. Reconstruction of heating network in Muranova str., Poltava way str., Skorohoda str. and connect customers k central heating boiler with the elimination of Skorohoda str., 7/9, Muranova str., 5, Poltava way str., 110, 114, 118

182 The act of acceptance of contract work performed №12-133 of December 2007. Reconstruction of heating network in Muranova str., Poltava way str., Skorohoda str. and connect customers k central heating boiler with the elimination of Skorohoda str., 7/9, Muranova str., 5, Poltava way str., 110, 114, 118

183 The act of acceptance of contract work performed №12-130 of December 2007. Reconstruction of heating network in Muranova str., Poltava way str., Skorohoda str. and connect customers k central heating boiler with the elimination of Skorohoda str., 7/9, Muranova str., 5, Poltava way str., 110, 114, 118. Installation work

184 Commissioning certificate№2009 of 01.11.2008. Equipment KIPiA

185 The act of acceptance of contract work performed №2-4 for February 2008. Reconstruction of heating network in Muranova str., Poltava way str., Skorohoda str., and connect customers k central heating boiler with the elimination of Skorohoda str., 7/9, Muranova str., 5, Poltava way str., 110, 114, 118

186 The act of acceptance of contract work performed №7-75 in July 2007. Revamping of heating networks connecting houses to lane Donbasivskiy, Taganska str., central heating boiler with the elimination of Donbasivskiy lane 3, Taganska str., 14/1. Above

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187 The act of acceptance of contract work performed №7-76 in July 2007. Revamping of heating networks connecting houses to lane Donbasivskiy, Taganska str., central heating boiler with the elimination of Donbasivskiy lane 3, Taganska str., 14/1. ITP

188 The act of acceptance of contract work performed №7-76 in July 2007. Revamping of heating networks connecting houses to lane Donbasivskiy, Taganska str., central heating boiler with the elimination of Donbasivskiy lane 3, Taganska str., 14/1. Construction

189 The act of acceptance of contract work performed №8-82 for August 2007. Revamping of heating networks connecting houses to lane Donbasivskiy, Taganska str., central heating boiler with the elimination of Donbasivskiy lane 3, Taganska str., 14/1. Above ground pipe laying

190 The act of acceptance of contract work number 2 in October 2007. Revamping of heating networks connecting houses to lane Donbasivskomu, Taganska str., k central heating boiler with the elimination of Donbasivskomu lane 3, Taganska str., 14/1. Thermal network

191 The act of acceptance of contract work performed №10-105 in October 2007. Revamping of heating networks connecting houses to lane Donbasivskiy, Taganska str., central heating boiler with the elimination of Donbasivskiy lane 3, Taganska str., 14/1. Laying of pipelines

192 The act of acceptance of contract work №3 in November 2007. Revamping of heating networks connecting houses to lane Donbasivskiy, Taganska str., central heating boiler with the elimination of Donbasivskiy lane 3, Taganska str., 14/1. Thermal network

193 The act of acceptance of contract work performed №11-120 for November 2007. Revamping of heating networks connecting houses to lane Donbasivskiy, Taganska str., central heating boiler with the elimination of Donbasivskiy lane 3, Taganska str., 14/1. ITP in lane Donbasivskiy

194 The act of acceptance of contract work performed №11-119 in October 2007. Revamping of heating networks connecting houses to lane Donbasivskiy, Taganska str., central heating boiler with the elimination of Donbasivskiy lane 3, Taganska str., 14/1. ITP on Taganskiy str., 14/1

195 The act of acceptance of contract work performed №11-117 in October 2007. Revamping of heating networks connecting houses to lane Donbasivskiy, Taganska str., central heating boiler with the elimination of Donbasivskiy lane 3, Taganska str., 14/1. Laying of pipelines

196 The act of acceptance of contract work performed №11-116 for November 2007. Revamping of heating networks connecting

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197 The act of acceptance of contract work performed №11-114 for November 2007. Revamping of heating networks connecting houses to lane Donbasivskiy, Taganska str., central heating boiler with the elimination of Donbasivskiy lane 3, Taganska str., 14/1. ITP on Taganska str., 14/1

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202 Journal of defects and malfunctions boiler Poltava way str., 114

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208 Passport. Rotary gas meter GMS G25 № 054400

209 The certificate №385/118813 of Milshyna A.I boiler operator

210 Passport. Counter electrical active energy CA4-195 № 0060826. Lane Classic, 8

211 Journal of gas boiler Klochkovskaya str. 61/63

212 Journal modes of boiler Klochkovskaya str. 61/63

213 Regime charts boiler Klochkovskaya str.61/63

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216 Certificate of verification of the working measuring devices №1919-V. Rotary gas meter GMS G25 № 073822

217 Certificate of verification of the working measuring instrument №188-B. Rotary gas meter GMS G25 №073822

218 Photo. Rotary gas meter GMS G25 № 073822

219 Photo. Boiler-water-Kolvi Termona "KTH 100 CE" № 10264

220 Photo. Boiler-water-Kolvi Termona "KTH 100 CE" № 10357

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229	Order Lozivska Board of the Kharkiv region №103 dated 13.04.2010 About the end of heating season
230	Order Lozivska Board of the Kharkiv region №300 dated 01.10.2010 About the beginning of heating season
231	Order Lozivska Board of the Kharkiv region №132 dated 19.04.2011 About the end of heating season
232	Protocol №9 dated 20.09.2010 meeting of the commission on testing on the issues of safety
233	Protocol №10 dated 21.09.2010 Commission meeting to review the knowledge on the issues of safety
234	Protocol №11 dated 22.09.2010 Commission meeting to review the knowledge on the issues of safety
235	Protocol №12 dated 22.09.2010 Commission meeting to review the knowledge on the issues of safety
236	Plan localization and liquidation of emergencies and accidents 21.04.2008
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238	Reference with ctual consumption and calorific value of natural gas in boiler houses Municipal Enterprise "Heat Networks" Lozivska board of Kharkiv region by 2010
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240	Journal of boiler control parameters Municipal Enterprise "Heat Networks"
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248 The certificate №3917 of Volkova L.O. boiler operator
249 The certificate №137 of Koval S.A. boiler operator
250 The certificate №5277 of Lachine V.V. boiler operator
251 The certificate №3476 of Makovetska V.S. boiler operator
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258 The contract of procurement of natural gas for public funds № 11/11-38 TE-02 dated 24.12.2010. Affiliated company "Gas of Ukraine" "Naftogaz of Ukraine"
259 The contract of procurement of natural gas for public funds №11/11-175 PR-02 dated 24.12.2010. Affiliated company "Gas of Ukraine" "Naftogaz of Ukraine"
260 The contract of procurement of natural gas for public funds №10/11-43 BU-02 dated 19.10.2010. Affiliated company "Gas of Ukraine" "Naftogaz of Ukraine"
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263 The Contract supplies of natural gas for the provision of public services for heating and hot water №09/10-91 TE-02 dated 06.10.2009. Affiliated company "Gas of Ukraine" "Naftogaz of Ukraine"
264 The Contract supplies of natural gas for thermal energy needs of institutions and organizations financed from the state and local budgets, and other entities №09/10-91 BO-02 dated 06.10.2009. Affiliated company "Gas of Ukraine" "Naftogaz of Ukraine"
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296 The contract for procurement of natural gas for public funds №11/11-64 TE-02 dated 27.12.2010. Affiliated company "Gas of Ukraine" "Naftogaz of Ukraine"
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298 Action Plan for Izyum Municipal Enterprise of Heat Supply Network for training autumn-winter 2011-2012
299 Reference about the load on the boiler heat Izyum Municipal Enterprise of Heat Supply Network
300 Reference with heating area Izyum Municipal Enterprise of Heat Supply Network
301 Reference about the actual consumption of natural gas in boiler houses Izyum Municipal Enterprise of Heat Supply Network by 2010
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304 Declaration of readiness to object to the operation dated 18.08.2011
305 The act of acceptance to the operation of boiler KOLVI 350 №0979.305 in October 2009
306 The act of acceptance to the operation of boiler KOLVI 350 №0980.306 in October 2009
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321 Passport. Steel-water boiler. №0980.306 Kolvi 350. Boiler Nekrasova str., 74

322 Passport. Steel-water boiler. №0984.310 Kolvi 350. Boiler Nekrasova str., 74

323 Passport. Steel-water boiler. №0979.305 Kolvi 350. Boiler Nekrasova str., 74

324 Passport. Steel-water boiler. №0991.317 Kolvi 350. Boiler Nekrasova str., 74

325 Passport. Steel-water boiler. №7 KSVa-1.0G "VK-32." Boiler Kievskaya str., 17 "b"

326 Passport. Steel-water boiler. №8 KSVa-1.0G "VK-32." Boiler Kievskaya str., 17 "b"

327 Passport. Steel-water boiler. №9 KSVa-1.0G "VK-32." Boiler Kievskaya str., 17 "b"

328 Passport. Steel-water boiler. №10 KSVa-1.0G "VK-32." Boiler Kievskaya str., 17 "b"

329 Passport. Steel-water boiler. №07130101 NIISTu-5. Boiler L.Chaykinoyi str., 24

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331 Passport. Steel-water boiler. №07130103 NIISTu-5. Boiler L.Chaykinoyi, 24

332 Passport. Steel-water boiler. №07130104 NIISTu-5. Boiler L.Chaykinoyi str., 24

333 Certificate of verification of the working measuring devices № 1736-V. Rotary gas meter GMS G160-80 №081187 Nekrasova str., 74

334 Passport. Rotary gas meter GMS G160-80 №081187 Nekrasova str., 74

335 Certificate of verification of the working measuring instrument №Ч-47. Rotary gas meter GMS G-250 №111393 Kievskaya str., 17

336 Passport. Rotary gas meter GMS G-250 №111393 Kievskaya str., 17

337 Certificate of verification of the working measuring instrument №Ч-46. Rotary gas meter GMS G-100 №036365 L.Chaykinoyi str., 24

338 Passport. Rotary gas meter GMS G-100 №036365 L.Chaykinoyi str., 24

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344 Photo. Steel-water boiler. №07130101, 07130102, 07130103, 07130104 NIISTu-5. Boiler L.Chaykinoyi str., 24
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346 Report about inventory of pollutant emissions into the atmosphere from stationary sources KRCE "Direction of infrastructure development territory" "Kupyanskoe enterprise of heating networks" USRIEP, Kharkiv, 2008
347 Form № 2-TP (air). Report on protection of atmospheric air by 2010. Branch KRME "Direction of infrastructure development territory" "Kupyanskoe enterprise of heating networks"
348 Form № 2-TP (air). Report on protection of atmospheric air by 2009. Branch KRME "Direction of infrastructure development territory" "Kupyanskoe enterprise of heating networks"
349 Form № 2-TP (air). Report on protection of atmospheric air by 2008. Branch KRME "Direction of infrastructure development territory" "Kupyanskoe enterprise of heating networks"
350 Form № 2-TP (air). Report on air protection in 2007. Branch KRCE "Direction of infrastructure development territory" "Kupyanskoe enterprise of heating networks"
351 Form № 2-TP (air). Report on protection of atmospheric air by 2006. Branch KRME "Direction of infrastructure development territory" "Kupyanskoe enterprise of heating networks"
352 Log pod-1 calculation of stationary pollution sources and their characteristics for 2010 2011
353 Order Kharkiv Regional Municipal enterprise "Direction of infrastructure development area» №35 dated 13.04.2010 on the end of heating season 2009-2010
354 Order of the Kharkiv Regional Municipal enterprise "Direction of infrastructure development area» № 20 dated 01.10.2010 on the beginning of heating season 2010-2011
355 Kharkov Regional Center of Hydrometeorology letter № 436 dated 02.11.2009 On the average temperature in Kupyansk (October)
356 Kharkov Regional Center of Hydrometeorology letter №537 dated 01.12.2009 On the average temperature in Kupyansk (November)
357 Kharkov Regional Center of Hydrometeorology letter №30 dated 04.01.2010 On the average temperature in Kupyansk (December)
358 Kharkov Regional Center of Hydrometeorology letter №90 dated 01.02.2010 On the average temperature in Kupyansk (January)

359 Kharkov Regional Center of Hydrometeorology letter №163 dated 01.03.2010 On the average temperature in Kupyansk (February)
360 Kharkov Regional Center of Hydrometeorology letter №245 dated 01.04.2010 On the average temperature in Kupyansk (March)
361 Kharkov Regional Center of Hydrometeorology letter №276 dated 16.04.2010 On the average temperature in Kupyansk (April)
362 The contract for procurement of natural gas for public funds №06/10-1050 BO-32 dated 14.10.2010. Affiliated company "Gas of Ukraine" "Naftogaz of Ukraine"
363 The contract for procurement of natural gas for public funds №06/1049 TE-32 dated 14.10.2010. Affiliated company "Gas of Ukraine" "Naftogaz of Ukraine"
364 The contract for procurement of natural gas for public funds №06/10-2250 BU-32 dated 20.12.2010. Affiliated company "Gas of Ukraine" "Naftogaz of Ukraine"
365 The contract for procurement of natural gas for public funds № 06/2251 TE-32 dated 20.12.2010. Affiliated company "Gas of Ukraine" "Naftogaz of Ukraine"
366 Schedule of Capital (current) equipment repairs on boiler Zahreblyanska str. in 2010
367 Schedule of Capital (current) equipment repairs on boiler Octyabrskaya in 2010
368 Schedule of Capital (current) equipment repairs on boiler Kovsharivka-1 in 2010
369 The certificate of physical and chemical parameters of natural gas from 01.01.2010 to 31.01.2010
370 The certificate of physical and chemical parameters of natural gas from 01/12/2010 to 31.12.2010
371 The certificate of physical and chemical parameters of natural gas from 01/11/2010 to 30.11.2010
372 The consumer Handbook on "Kupyanskoe enterprise of heating networks" (heated area, heat load) for December 2010
373 Act №1 of acceptance of contract work in October 2008. Reconstruction of boiler Kovsharivka
374 Act №1 of acceptance of contract work in December 2008. Reconstruction of boiler Kovsharivka
375 Act №2 of acceptance of contract work by November 2008. Reconstruction of boiler Kovsharivka
376 Act №2 of acceptance of contract work in December 2008. Reconstruction of boiler Kovsharivka
377 Act №3 of acceptance of contract work by November 2008. Reconstruction of boiler Kovsharivka
378 Act №3 of acceptance of contract work in December 2008. Reconstruction of boiler Kovsharivka
379 Act №4 acceptance of contract work in December 2008. Reconstruction of boiler Kovsharivka
380 Act №4 acceptance of contract work by November 2008.

	Reconstruction of boiler Kovsharivka
381	Act №5 of acceptance of contract work in December 2008. Reconstruction of boiler Kovsharivka
382	Act №6 of acceptance of contract work in December 2008. Reconstruction of boiler Kovsharivka
383	The certificate №6110 of Kitnyuh O.V. boiler operator
384	The certificate №6109 of Kutsenko O.J. boiler operator
385	The certificate №6116 of Maharynska Z.V. boiler operator
386	The certificate №6111 of Ryabchenko J.P. boiler operator
387	Passport. Boiler-water RTQ 3500I № 51408005962
388	Passport. Boiler-water RTQ 3500I № 51408005963
389	Passport. Boiler-water RTQ 3500I № 51408005999
390	Passport. Boiler-water RTQ 3500I № 51408006000
391	Passport. Boiler-water RTQ 3500I № 51408006001
392	Passport. Boiler steel, KSVa-water-2,5 Gs "VK-32» № 239
393	Passport. Boiler steel, KSVa-water-2,5 Gs "VK-32» № 249
394	The act №989 is dated of 16.09.2010 replacement (installation) Electricity №001162
395	The act №0623 is dated of 04.06.2010 replacement (installation) Electricity №717135 Zahreblyanska str.
396	The act №0444 is dated of 03.09.2008 replacement (installation) Electricity №3225983 Oktyabrskoy str.
397	The act №0212 is dated of 08.10.2007 replacement (installation) Electricity №022139 Oktyabrskoy str.
398	The act № 2958 is dated of 19.03.2009 replacement (installation) Electricity №95616369 Kovsharivka str.
399	The act № 2857 is dated of 03.04.2009 replacement (installation) Electricity №95843712 Kovsharivka str.
400	Passport. Corrector gas №03225 Zahreblyanska str.
401	Journal of boiler control settings Zahreblyanska str.
402	Journal of boiler control settings Oktyabrskoy str.
403	Journal of boiler control settings Kovsharivka
404	Photo. Boiler-water RTQ 3500I № 51408005962, 51408005963, 51408005999, 51408006000, 51408006001
405	Letter of the Kharkiv region Council Solution #273-VI dated 27.10.2011
406	The letter from ME “KhTM” #22-4290 dated 10.10.2011

Persons interviewed:
List persons interviewed during the determination or persons that contributed with other information that are not included in the documents listed above.

1. Andreev S. - General Manager, ME "KhTM"
2. Repin A. - Chief of Production-Technical Service of ME “KhTM”
3. Sudakevych Z. - Chief of JI project supporting groupe of ME “KhTM”
4. Milshyna A. - Operator of boiler st. Poltava way, 114
5. Gubina O. - Senior engineer of KhRME “Dyrektsiya RIT”
6. Krymova M. - Engineer of Krasnohrad HSNE
7. Kitnyuh O. - Boiler operator
8. Kutsenko A. - Boiler operator
9. Ryabchenko J. - Boiler operator
10. Teslenko I. - Chief of Production-Technical Service of Izium HSNME
11. Roslik P. - Boiler operator
12. Nemtsov N. - Boiler operator
13. Klimenko V. - Boiler operator
14. Ploschadyna I. - Engineer of ME “Teplovi merezhi” of Lozova CC
15. Kalchenko O. - Boiler operator
16. Omelchenko V. - Boiler operator
17. Paderno D. - Deputy director of Institute of Engineering Ecology
18. Korinchuk K. - Scientific researcher of Institute of Engineering Ecology

APPENDIX A: DETERMINATION PROTOCOL
BUREAU VERITAS CERTIFICATION HOLDING SAS

Check list for determination, according JOINT IMPLEMENTATION DETERMINATION AND VERIFICATION MANUAL (Version 01)

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
General description of the project				
Title of the project				
-	Is the title of the project presented?	The title of the project is: "Greenhouse gas emission reduction due to modernization and technical re-equipment of municipal enterprises of Kharkiv region"	OK	OK
-	Is the sectoral scope to which the project pertains presented?	Sectoral scopes: 1. Energy industries (renewable - / non-renewable sources); 2. Energy distribution; 3. Energy demand.	OK	Ok
-	Is the current version number of the document presented?	The current version number of the document is presented. See section A.1.	OK	OK
-	Is the date when the document was completed presented?	The date of completeness of the current version of the project design document is indicated in the PDD section A.1.	OK	OK
Description of the project				
-	Is the purpose of the project included with a concise, summarizing explanation (max. 1-2	a) Situation existing prior to the starting date of the project: The common practice for the district heating enterprises in	OK	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	pages) of the: a) Situation existing prior to the starting date of the project; b) Baseline scenario; and c) Project scenario (expected outcome, including a technical description)?	Ukraine including municipal enterprises that implement the project is to fulfil annual minimal repairing of the DH system to keep it working. In fact, mainly repairing of network's parts and boilers which might cause accidents are commonly executed. b) Baseline scenario: For Baseline scenario, the economically feasible and realistic scenario with very slow rehabilitation activities was chosen. Tariffs for heat do not include the resources for prospective rehabilitation of the district heating system, only the resources for probable necessary repairing after possible accidents. Minimal annual repairing doesn't lead to reduction of baseline emissions, because along with degradation of the whole system with efficiency droop at other objects, the overall actual emissions of Supplier would stay at approximately the same level. This scenario is not environmentally favourable for the near future, since GHGs emissions of Supplier will continue to be kept at the same level or even higher, but economically such scenario is attractive. c) Project scenario The project employs the increase of fuel and electricity consumption efficiency to reduce greenhouse gas emissions relative to current practice. The following activities will ensure fuel and electricity saving: - liquidation of low efficient boiler-houses with: ✓ switching load to high efficient boiler-houses; ✓ construction of modular mini- boiler-houses; - replacement of obsolete boilers with high efficient		

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		ones; - modernization of boilers: ✓ replacement of boilers burners; ✓ replacement of boilers heated surfaces; ✓ implementation of technology for utilization of the exhaust gases heat; ✓ implementation of control automatics; - optimization of network organization; - consecutive transition of heating networks to preliminary isolated pipes; - technical re-equipment of heat supply stations with highly effective heat exchangers; - installation of frequency controllers at electric drives of pumps, blow fans and smoke exhausters; - replacement of pumps; - optimization of load allocation; - implementation of control and monitoring systems; - implementation of other energy saving measurements.		
-	Is the history of the project (incl. its JI component) briefly summarized?	The history of the project (incl. its JI component) is briefly summarized.	OK	OK
Project participants				
-	Are project participants and Party(ies) involved in the project listed?	Project participants and parties involved are listed in the Table in section A.3. of the PDD.	OK	OK
-	Is the data of the project participants presented in tabular format?	The data of the project participants are presented in due tabular format.	OK	OK
-	Is contact information provided in Annex 1 of	Contact information is provided in Annex 1 of the PDD.	CAR 01	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	the PDD?	CAR 01. Please in Annex 1, p.77 add the address of the website ME “KhTM”.		
-	Is it indicated, if it is the case, if the Party involved is a host Party?	Ukraine is indicated as Host Party.	OK	OK
Technical description of the project				
Location of the project				
-	Host Party(ies)	Ukraine	OK	OK
-	Region/State/Province etc.	Kharkiv region	OK	OK
-	City/Town/Community etc.	Cities, towns and villages in Kharkiv region. Districts: Izium, Balakliia, Barvinkove, Blyzniuky, Bohodukhiv, Borova, Valky, Velykyi Burluk, Derhachi, Zachepylivka, Zmiiv, Zolochiv, Krasnohrad, Krasnokutsk, Kupians’k, Lozova, Nova Vodolaha, Pervomais’kyi, Kharkiv, Chuhuiv, Shevchenkove.	OK	OK
-	Detail of the physical location, including information allowing the unique identification of the project. (This section should not exceed one page)	Location of the main office: Kharkiv City, 49° 59' N, 36° 13' E;	OK	OK
Technologies to be employed, or measures, operations or actions to be implemented by the project				
-	Are the technology(ies) to be employed, or measures, operations or actions to be implemented by the project, including all relevant technical data and the implementation schedule described?	PDD Section A.4.2 provides some relevant technical data of main equipment installed and actions to be implemented by the project as well as the project implementation schedule.	OK	OK
Brief explanation of how the anthropogenic emissions of greenhouse gases by sources are to be reduced by the proposed JI project, including why the emission reductions would not occur in the absence of the proposed project, taking into account national and/or sectoral policies and circumstances				
-	Is it stated how anthropogenic GHG emission reductions are to be achieved? (This section	The project activities including rehabilitation of boiler-houses and heat distribution networks will increase energy efficiency	OK	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	should not exceed one page)	of the district heating (DH) systems of Kharkiv region, thus enabling them to produce the same amount of heat energy with less fuel and power consumption. Reduced fuel and power consumption will lead to reduction of GHG emissions.		
-	Is it provided the estimation of emission reductions over the crediting period?	The estimation of emission reductions over the crediting period is provided.	OK	OK
-	Is it provided the estimated annual reduction for the chosen credit period in tCO2e?	The estimated annual reduction for the chosen credit period is provided in tCO_2e.	OK	OK
-	Are the data from questions above presented in tabular format?	The data from questions above are presented in tabular format. Refer to Tables in section A.4.3.1.	OK	OK
Estimated amount of emission reductions over the crediting period				
-	Is the length of the crediting period Indicated?	The length of crediting period is indicated in the PDD section A.4.3.1.	OK	OK
-	Are estimates of total as well as annual and average annual emission reductions in tonnes of CO2 equivalent provided?	Total as well as annual and average annual emission reductions in tonnes of CO_2 equivalent are provided in accordance with the calculated values in the spreadsheet provided to the verifier.	OK	OK
Project approvals by Parties				
19	Have the DFPs of all Parties listed as "Parties involved" in the PDD provided written project approvals?	The project is already approved by local authorities and representative of the Government of Ukraine and the State Environmental Investment Agency of Ukraine (responsible authority for the Kyoto Protocol activity in Ukraine). Ukrainian DFP – the State Environmental Investment Agency of Ukraine has issued the Letter of Endorsement for this project (# 3801/23/7 dated 30/12/2011). According to the adopted procedure, the LoAs by Parties	OK	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		involved will be issued after the project determination.		
19	Does the PDD identify at least the host Party as a "Party involved"?	Host Party involved is the Ukraine.	OK	OK
19	Has the DFP of the host Party issued a written project approval?	According to the adopted procedure, the LoAs by Parties involved will be issued after the project determination.	OK	OK
20	Are all the written project approvals by Parties involved unconditional?	According to the adopted procedure, the LoAs by Parties involved will be issued after the project determination.	OK	OK
Authorization of project participants by Parties involved				
21	Is each of the legal entities listed as project participants in the PDD authorized by a Party involved, which is also listed in the PDD, through: − A written project approval by a Party involved, explicitly indicating the name of the legal entity? or − Any other form of project participant authorization in writing, explicitly indicating the name of the legal entity?	Party involved 1: Ukraine (host Party), legal entities are ME "Kharkivski teplovi merezhi" Party involved 2: The Netherlands, legal entity is "E – energy B.V.".	OK	OK
Baseline setting				
22	Does the PDD explicitly indicate which of the following approaches is used for identifying the baseline? − JI specific approach − Approved CDM methodology approach	The baseline scenario was chosen based on project-specific approach in accordance with paragraph 9(a) of the JISC Guidance on Criteria for Baseline Setting and Monitoring". The specialists of the European Institute for safety, security, insurance and environmental technics "SVT e.V." (Germany) and of the Institute of Engineering Ecology (Ukraine) have developed the project specific approach, which takes into account all activities involved in and the peculiarities of the JI projects on rehabilitation of the district heating systems in	OK	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		Ukraine.		
JI specific approach only				
23	Does the PDD provide a detailed theoretical description in a complete and transparent manner?	The theoretical description is provided in the PDD.	OK	OK
23	Does the PDD provide justification that the baseline is established: (a) By listing and describing plausible future scenarios on the basis of conservative assumptions and selecting the most plausible one? (b) Taking into account relevant national and/or sectoral policies and circumstance? − Are key factors that affect a baseline taken into account? (c) In a transparent manner with regard to the choice of approaches, assumptions, methodologies, parameters, date sources and key factors? (d) Taking into account of uncertainties and using conservative assumptions? (e) In such a way that ERUs cannot be earned for decreases in activity levels outside the project or due to force majeure? (f) By drawing on the list of standard variables contained in appendix B to "Guidance on criteria for baseline setting and monitoring", as appropriate?	The PDD provides justification that the baseline is established by listing and describing plausible future scenarios on the basis of conservative assumption and selecting the most plausible one. CAR 02. The rounding "sum" in Table 7 line "Total" doesn't correct for Baseline Natural Gas consumptions and Baseline electricity consumption. Please make the appropriate corrections. CAR 03. The rounding "sum" in Table 8 line "Total" doesn't correct for Project natural gas consumption. Please make the appropriate corrections. CL 01. Please provide explanation on the absence of baseline and project electricity consumption by Pervomais'kyi ME "Teplomerezhi" (Table 7, 8)	CAR 02 CAR 03 CL 01	OK OK OK
24	If selected elements or combinations of approved CDM methodologies or methodological tools for baseline setting are	N/A	N/A	N/A

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	used, are the selected elements or combinations together with the elements supplementary developed by the project participants in line with 23 above?			
25	If a multi-project emission factor is used, does the PDD provide appropriate justification?	N/A	N/A	N/A
Approved CDM methodology approach only				
26 (a)	Does the PDD provide the title, reference number and version of the approved CDM methodology used?	N/A	N/A	N/A
26 (a)	Is the approved CDM methodology the most recent valid version when the PDD is submitted for publication? If not, is the methodology still within the grace period (was the methodology revised to a newer version in the past two months)?	N/A	N/A	N/A
26 (b)	Does the PDD provide a description of why the approved CDM methodology is applicable to the project?	N/A	N/A	N/A
26 (c)	Are all explanations, descriptions and analyses pertaining to the baseline in the PDD made in accordance with the referenced approved CDM methodology?	N/A	N/A	N/A
26 (d)	Is the baseline identified appropriately as a result?	N/A	N/A	N/A
Additionality				
JI specific approach only				
28	Does the PDD indicate which of the following approaches for demonstrating additionality is used? (a) Provision of traceable and transparent	The developer is thoroughly following the Tool for the demonstration and assessment of additionality version 06. Among three standard methods of financial analysis offered by the Tool the Developer selected Simple cost analysis.	OK	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	information showing the baseline was identified on the basis of conservative assumptions, that the project scenario is not part of the identified baseline scenario and that the project will lead to emission reductions or enhancements of removals; (b) Provision of traceable and transparent information that an AIE has already positively determined that a comparable project (to be) implemented under comparable circumstances has additionality; (c) Application of the most recent version of the "Tool for the demonstration and assessment of additionality. (allowing for a two-month grace period) or any other method for proving additionality approved by the CDM Executive Board".	Indeed the Decree of Cabinet of Ministers of Ukraine "On the approval of the calculation of tariffs for generation, transportation, supply of heat energy and district heating services and hot water supply" issued July 10th 2006 No955 does not contain any incentives for implementation of the energy saving projects at corporate level. The tariffs methodology introduced is directly based on the costs. As the result any savings achieved by the municipal operator will not generate any additional profits for the company and will lead to the proportional reduction of the selling tariff imposed by the regulator. Taking into account this fact the use of the simple cost analysis looks reasonable and correct.		
29 (a)	Does the PDD provide a justification of the applicability of the approach with a clear and transparent description?	See section 22 of this table.	OK	OK
29 (b)	Are additionality proofs provided?	The additionality of the project activity is demonstrated and assessed with using the "Tool for the demonstration and assessment of additionality" (Version 6.0). To demonstrate the additionality the following was applied: - Identification of alternatives to the project activity consistent with current laws and regulations - Investment analysis - Barrier analysis - Common practice analysis. The mentioned approach of JI leads to the conclusion that	OK	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		the project activity is additional.		
29 (c)	Is the additionality demonstrated appropriately as a result?	Yes, the additionality demonstrated appropriately as a result	OK	OK
30	If the approach 28 (c) is chosen, are all explanations, descriptions and analyses made in accordance with the selected tool or method?	Yes. See section B.2 of the PDD.	OK	OK
Approved CDM methodology approach only				
31 (a)	Does the PDD provide the title, reference number and version of the approved CDM methodology used?	N/A	N/A	N/A
31 (b)	Does the PDD provide a description of why and how the referenced approved CDM methodology is applicable to the project?	N/A	N/A	N/A
31 (c)	Are all explanations, descriptions and analyses with regard to additionality made in accordance with the selected methodology?	N/A	N/A	N/A
31 (d)	Are additionality proofs provided?	N/A	N/A	N/A
31 (e)	Is the additionality demonstrated appropriately as a result?	N/A	N/A	N/A
Project boundary (applicable except for JI LULUCF projects				
JI specific approach only				
32 (a)	Does the project boundary defined in the PDD encompass all anthropogenic emissions by sources of GHGs that are: (i) Under the control of the project participants? (ii) Reasonably attributable to the project? (iii) Significant?	The project's spatial boundaries are defined in the PDD. See section B.3.	OK	OK
32 (b)	Is the project boundary defined on the basis of	See section 32 (a) of this table.	OK	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	a case-by-case assessment with regard to the criteria referred to in 32 (a) above?			
32 (c)	Are the delineation of the project boundary and the gases and sources included appropriately described and justified in the PDD by using a figure or flow chart as appropriate?	The delineation of the project boundary and the gases and sources included described in the PDD by using figure.	OK	OK
32 (d)	Are all gases and sources included explicitly stated, and the exclusions of any sources related to the baseline or the project are appropriately justified?	All gases and sources included are explicitly stated; refer to 32 (a) above. All exclusions made are appropriate as a conservative or logic assumption.	OK	OK
Approved CDM methodology approach only				
33	Is the project boundary defined in accordance with the approved CDM methodology?	N/A	N/A	N/A
Crediting period				
34 (a)	Does the PDD state the starting date of the project as the date on which the implementation or construction or real action of the project will begin or began?	The PDD states the starting date of the project as the date on which the implementation or construction or real action of the project will begin or began, and the starting date is 29/12/2006	OK	OK
34 (a)	Is the starting date after the beginning of 2000?	Refer to 34 (a).	OK	OK
34 (b)	Does the PDD state the expected operational lifetime of the project in years and months?	Operational lifetime is defined as 26 years (312 months).	OK	OK
34 (c)	Does the PDD state the length of the crediting period in years and months?	PDD state the length of the crediting period in years and months.	OK	OK
34 (c)	Is the starting date of the crediting period on or after the date of the first emission reductions or enhancements of net removals generated by the project?	Yes. The starting date of the crediting period is after the date of the first emission reductions.	OK	OK
34 (d)	Does the PDD state that the crediting period for issuance of ERUs starts only after the beginning of 2008 and does not extend beyond the operational lifetime of the project?	Yes. According to the PDD the crediting period for issuance of ERUs does not extend beyond operational lifetime of the project.	OK	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
34 (d)	If the crediting period extends beyond 2012, does the PDD state that the extension is subject to the host Party approval? Are the estimates of emission reductions or enhancements of net removals presented separately for those until 2012 and those after 2012?	The estimated emission reductions are provided in the table of the PDD section A.4.3.1.	OK	OK
Monitoring plan				
35	Does the PDD explicitly indicate which of the following approaches is used? − JI specific approach − Approved CDM methodology approach	It is explicitly indicated that a JI specific approach is chosen.	OK	OK
JI specific approach only				
36 (a)	Does the monitoring plan describe: − All relevant factors and key characteristics that will be monitored? − The period in which they will be monitored? − All decisive factors for the control and reporting of project performance?	The monitoring plan describes: - data to be monitored: natural gas consumption at boiler houses, averaged calorific value of natural gas, average outside temperature during the heating period, average inside temperature during the heating period, number of customers for hot water supply service, heated area, heat transfer factor of buildings, heated area of buildings (previously existed in the base year) with the renewed (improved) thermal insulation in the reported year, heated area of newly connected buildings (assumed with the new (improved) thermal insulation) in the reported year, heat transfer factor of new buildings and buildings with new thermal insulation, heating period duration, duration of period of hot water supply service, maximum connected load to a boiler-house required for heating, connected load to a boiler-house required for hot water supply service, standard specific discharge of hot water per personal account, carbon emission factors for natural gas and for electricity	CL 02 CL 03	OK OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
		consumption, electricity consumption. - the period in which they will be monitored: every day or once per year; - all decisive factors for the control and reporting of project performance: statistics forms; quality control (QC) and quality assurance (QA) procedures; the operational and management structure that will be applied in implementing the monitoring plan. CL 02. Please provide explanation on the absence of project coal consumption by Kharkiv District HSNME. CL 03. Please provide explanation on the number of boilerhouses ME “KhTM” (252 or 254).		
36 (b)	Does the monitoring plan specify the indicators, constants and variables used that are reliable, valid and provide transparent picture of the emission reductions or enhancements of net removals to be monitored?	The monitoring plan specifies variables used. It provides transparent picture of the emission reductions.	OK	OK
36 (b)	If default values are used: − Are accuracy and reasonableness carefully balanced in their selection? − Do the default values originate from recognized sources? − Are the default values supported by statistical analyses providing reasonable confidence levels? − Are the default values presented in a transparent manner?	Constants used are the default values of the parameters as carbon emission factor of each fuel. The default values originate from recognized sources and are presented in a transparent manner.	OK	OK
36 (b) (i)	For those values that are to be provided by the	The monitoring plan indicates how the values are to be	OK	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	project participants, does the monitoring plan clearly indicate how the values are to be selected and justified?	selected and justified.		
36 (b) (ii)	For other values, − Does the monitoring plan clearly indicate the precise references from which these values are taken? − Is the conservativeness of the values provided justified?	CL 04. Please provide SNiP 4630-92. CAR 04. GOST 2874-82 is relate to drinking water, not sewage. Please make the appropriate corrections. CL 05. Please provide document confirms the class of the consumer of electricity power.	CL 04 CAR 04 CL 05	OK OK OK
36 (b) (iii)	For all data sources, does the monitoring plan specify the procedures to be followed if expected data are unavailable?	See section D of the PDD.	OK	OK
36 (b) (iv)	Are International System Unit (SI units) used?	SI units are used. Also there are data units used in accordance with the applied JI specific approach.	OK	OK
36 (b) (v)	Does the monitoring plan note any parameters, coefficients, variables, etc. that are used to calculate baseline emissions or net removals but are obtained through monitoring?	See section B.1 of the PDD.	OK	OK
36 (b) (v)	Is the use of parameters, coefficients, variables, etc. consistent between the baseline and monitoring plan?	There is consistency between parameters, coefficients, variables, etc. used in baseline and monitoring plan.	OK	OK
36 (c)	Does the monitoring plan draw on the list of standard variables contained in appendix B of “Guidance on criteria for baseline setting and monitoring”?	The monitoring plan draws on the list of standard variables contained in appendix B of “Guidance on criteria for baseline setting and monitoring”.	OK	OK
36 (d)	Does the monitoring plan explicitly and clearly distinguish: (i) Data and parameters that are not monitored	See the PDD section D.1. The data and parameters that are monitored throughout the crediting period are clearly indicated in the PDD (section D.1.	OK	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	throughout the crediting period, but are determined only once (and thus remain fixed throughout the crediting period), and that are available already at the stage of determination? (ii) Data and parameters that are not monitored throughout the crediting period, but are determined only once (and thus remain fixed throughout the crediting period), but that are not already available at the stage of determination? (iii) Data and parameters that are monitored throughout the crediting period?	and Annex 3).		
36 (e)	Does the monitoring plan describe the methods employed for data monitoring (including its frequency) and recording?	In the table of the PDD section D.1.1 the time of monitoring (frequency) and the source of data to be used are indicated for all the monitored parameters and data.	OK	OK
36 (f)	Does the monitoring plan elaborate all algorithms and formulae used for the estimation/calculation of baseline emissions/removals and project emissions/removals or direct monitoring of emission reductions from the project, leakage, as appropriate?	All algorithms and formulae used for the estimation of baseline and project emissions are indicated and explained in the PDD.	OK	OK
36 (f) (i)	Is the underlying rationale for the algorithms/formulae explained?	The underlying rationale for the algorithms/formulae is explained.	OK	OK
36 (f) (ii)	Are consistent variables, equation formats, subscripts etc. used?	Consistent variables, equation formats, subscripts etc. are used.	OK	OK
36 (f) (iii)	Are all equations numbered?	Yes.	OK	OK
36 (f) (iv)	Are all variables, with units indicated defined?	Yes.	OK	OK
36 (f) (v)	Is the conservativeness of the algorithms/procedures justified?	The conservativeness of the algorithms/procedure is indicated in the PDD.	OK	OK
36 (f) (v)	To the extent possible, are methods to	Uncertainty level of data is indicated in the table of Quality	OK	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	quantitatively account for uncertainty in key parameters included?	control and quality assurance (QA) procedures undertaken for the data monitored (see section D.2 of the PDD).		
36 (f) (vi)	Is consistency between the elaboration of the baseline scenario and the procedure for calculating the emissions or net removals of the baseline ensured?	There is consistency between the elaboration on the baseline scenario and calculating the baseline emission in the monitoring plan and on spreadsheet.	OK	OK
36 (f) (vii)	Are any parts of the algorithms or formulae that are not self-evident explained?	The formulae used in the PDD are sufficiently described.	OK	OK
36 (f) (vii)	Is it justified that the procedure is consistent with standard technical procedures in the relevant sector?	Relevant national and/or sectoral policies and circumstances are taken into account in the project.	OK	OK
36 (f) (vii)	Are references provided as necessary?	CAR 05. Specified in D.1.4, p.59 Annexes 5 and 6 are missing in the PDD. Please make the appropriate corrections. CAR 06. Internet link 23 is not working. Please make the appropriate corrections.	CAR 05 CAR 06	OK OK
36 (f) (vii)	Are implicit and explicit key assumptions explained in a transparent manner?	All key assumptions are explained in a transparent manner if needed.	OK	OK
36 (f) (vii)	Is it clearly stated which assumptions and procedures have significant uncertainty associated with them, and how such uncertainty is to be addressed?	See section 36 (f) (v) of this table.	OK	OK
36 (f) (vii)	Is the uncertainty of key parameters described and, where possible, is an uncertainty range at 95% confidence level for key parameters for the calculation of emission reductions or enhancements of net removals provided?	See section 36 (f) (v) of this table.	OK	OK
36 (g)	Does the monitoring plan identify a national or	Relevant national and/or sectoral policies and circumstances	OK	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	international monitoring standard if such standard has to be and/or is applied to certain aspects of the project? Does the monitoring plan provide a reference as to where a detailed description of the standard can be found?	are taken into account while developing the monitoring plan for this project.		
36 (h)	Does the monitoring plan document statistical techniques, if used for monitoring, and that they are used in a conservative manner?	See section D of the PDD.	OK	OK
36 (i)	Does the monitoring plan present the quality assurance and control procedures for the monitoring process, including, as appropriate, information on calibration and on how records on data and/or method validity and accuracy are kept and made available upon request?	Uncertainty level of data is indicated in the table of Quality control and quality assurance (QA) procedures undertaken for the data monitored. Information on calibration procedures were checked during site-visit and found satisfactory. CAR 07. Please add to PDD details about measuring instruments.	CAR 07	OK
36 (j)	Does the monitoring plan clearly identify the responsibilities and the authority regarding the monitoring activities?	The General Director of ME "Kharkivski teplovi merezhi", Mr. Sergiy Andreev, appointed the responsible person, Mr. Andriy Repin, for the implementation and management of the monitoring process at the ME "Kharkivski teplovi merezhi". Mr. Andriy Repin is responsible for supervising of data collection, measurements, calibration, data recording and storage. Dr. Dmytro Paderno, deputy director of the Institute of Engineering Ecology, is responsible for baseline and monitoring methodology development. Ms. Kateryna Korinchuk, scientific researcher of the Institute of Engineering Ecology, is responsible for data processing.	OK	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
36 (k)	Does the monitoring plan, on the whole, reflect good monitoring practices appropriate to the project type? If it is a JI LULUCF project, is the good practice guidance developed by IPCC applied?	Monitoring techniques are in line with current operation routines at the enterprise.	OK	OK
36 (l)	Does the monitoring plan provide, in tabular form, a complete compilation of the data that need to be collected for its application, including data that are measured or sampled and data that are collected from other sources but not including data that are calculated with equations?	Yes. See section D of PDD	OK	OK
36 (m)	Does the monitoring plan indicate that the data monitored and required for verification are to be kept for two years after the last transfer of ERUs for the project?	Data monitored and required for emission reductions calculation and verification, according to paragraph 37 of the JI guidelines, are to be kept for two years after the last transfer of ERUs for the project.	OK	OK
37	If selected elements or combinations of approved CDM methodologies or methodological tools are used for establishing the monitoring plan, are the selected elements or combination, together with elements supplementary developed by the project participants in line with 36 above?	See section D of the PDD.	OK	OK
Approved CDM methodology approach only				
38 (a)	Does the PDD provide the title, reference number and version of the approved CDM methodology used?	N/A	N/A	N/A
38 (a)	Is the approved CDM methodology the most recent valid version when the PDD is submitted	N/A	N/A	N/A

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	for publication? If not, is the methodology still within the grace period (was the methodology revised to a newer version in the past two months)?			
38 (b)	Does the PDD provide a description of why the approved CDM methodology is applicable to the project?	N/A	N/A	N/A
38 (c)	Are all explanations, descriptions and analyses pertaining to monitoring in the PDD made in accordance with the referenced approved CDM methodology?	N/A	N/A	N/A
38 (d)	Is the monitoring plan established appropriately as a result?	N/A	N/A	N/A
Applicable to both JI specific approach and approved CDM methodology approach				
39	If the monitoring plan indicates overlapping monitoring periods during the crediting period: (a) Is the underlying project composed of clearly identifiable components for which emission reductions or enhancements of removals can be calculated independently? (b) Can monitoring be performed independently for each of these components (i.e. the data/parameters monitored for one component are not dependent on/effect data/parameters to be monitored for another component)? (c) Does the monitoring plan ensure that monitoring is performed for all components and that in these cases all the requirements of the JI guidelines and further guidance by the JISC regarding monitoring are met? (d) Does the monitoring plan explicitly provide	N/A	N/A	N/A

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	for overlapping monitoring periods of clearly defined project components, justify its need and state how the conditions mentioned in (a)-(c) are met?			
Leakage				
JI specific approach only				
40 (a)	Does the PDD appropriately describe an assessment of the potential leakage of the project and appropriately explain which sources of leakage are to be calculated and which can be neglected?	No leakages are expected.	OK	OK
40 (b)	Does the PDD provide a procedure for an ex ante estimate of leakage?	See the section 40 (a) of this table.	OK	OK
Approved CDM methodology approach only				
41	Are the leakage and the procedure for its estimation defined in accordance with the approved CDM methodology?	N/A	N/A	N/A
Estimation of emission reductions or enhancements of net removals				
42	Does the PDD indicate which of the following approaches it chooses? (a) Assessment of emissions or net removals in the baseline scenario and in the project scenario (b) Direct assessment of emission reductions	Assessment of emissions in the baseline scenario and in the project scenario is chosen.	OK	OK
43	If the approach (a) in 42 is chosen, does the PDD provide ex ante estimates of: (a) Emissions or net removals for the project scenario (within the project boundary)? (b) Leakage, as applicable? (c) Emissions or net removals for the baseline scenario (within the project boundary)?	PDD provides ex ante estimates of: (a) Emissions for the project scenario (Section E.1); (b) No leakages are expected; (c) Emissions for the baseline scenario (Section E.4); (d) Emission reductions adjusted by leakage (Section E).	OK	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	(d) Emission reductions or enhancements of net removals adjusted by leakage?			
44	If the approach (b) in 42 is chosen, does the PDD provide ex ante estimates of: (a) Emission reductions or enhancements of net removals (within the project boundary)? (b) Leakage, as applicable? (c) Emission reductions or enhancements of net removals adjusted by leakage?	N/A	N/A	N/A
45	For both approaches in 42 (a) Are the estimates in 43 or 44 given: (i) On a periodic basis? (ii) At least from the beginning until the end of the crediting period? (iii) On a source-by-source/sink-by-sink basis? (iv) For each GHG? (v) In tones of CO2 equivalent, using global warming potentials defined by decision 2/CP.3 or as subsequently revised in accordance with Article 5 of the Kyoto Protocol? (b) Are the formula used for calculating the estimates in 43 or 44 consistent throughout the PDD? (c) For calculating estimates in 43 or 44, are key factors influencing the baseline emissions or removals and the activity level of the project and the emissions or net removals as well as risks associated with the project taken into account, as appropriate?	(a) Estimates in 43 are given on the periodic basis, from the beginning until the end of the crediting period, in tones of CO2 equivalent, on a source-by-source basis, for each GHG. (b) The formulae used in PDD are consistent. (c) Key factors influencing the baseline emissions and the activity level of the project and the project emissions are taken into account, as appropriate. (d) Data sources used for calculating the estimates are clearly identified, reliable and transparent. (e) Default values are taken from identified sources. (f) Estimation in 43 is based on conservative assumptions and the most plausible scenario in a transparent manner. (g) Estimates in 43 are consistent throughout the PDD. The annual average of estimated emission reductions calculated by dividing the total estimated emission reductions over the crediting period by the total months of the crediting period and multiplying by twelve.	OK	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	(d) Are data sources used for calculating the estimates in 43 or 44 clearly identified, reliable and transparent? (e) Are emission factors (including default emission factors) if used for calculating the estimates in 43 or 44 selected by carefully balancing accuracy and reasonableness, and appropriately justified of the choice? (f) Is the estimation in 43 or 44 based on conservative assumptions and the most plausible scenarios in a transparent manner? (g) Are the estimates in 43 or 44 consistent throughout the PDD? (h) Is the annual average of estimated emission reductions or enhancements of net removals calculated by dividing the total estimated emission reductions or enhancements of net removals over the crediting period by the total months of the crediting period and multiplying by twelve?			
46	If the calculation of the baseline emissions or net removals is to be performed ex post, does the PDD include an illustrative ex ante emissions or net removals calculation?	Illustrative ex-ante estimation of emission reduction is made on the excel spreadsheet.	OK	OK
Approved CDM methodology approach only				
47 (a)	Is the estimation of emission reductions or enhancements of net removals made in accordance with the approved CDM methodology?	N/A	N/A	N/A
47 (b)	Is the estimation of emission reductions or enhancements of net removals presented in	N/A	N/A	N/A

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	the PDD: − On a periodic basis? − At least from the beginning until the end of the crediting period? − On a source-by-source/sink-by-sink basis? − For each GHG? − In tones of CO_2 equivalent, using global warming potentials defined by decision 2/CP.3 or as subsequently revised in accordance with Article 5 of the Kyoto Protocol? − Are the formula used for calculating the estimates consistent throughout the PDD? − Are the estimates consistent throughout the PDD? − Is the annual average of estimated emission reductions or enhancements of net removals calculated by dividing the total estimated emission reductions or enhancements of net removals over the crediting period by the total months of the crediting period and multiplying by twelve?			
Environmental impacts				
48 (a)	Does the PDD list and attach documentation on the analysis of the environmental impacts of the project, including transboundary impacts, in accordance with procedures as determined by the host Party?	Yes. For more detailed information, please, see section F.1 of the PDD.	OK	OK
48 (b)	If the analysis in 48 (a) indicates that the environmental impacts are considered	According to the Ukrainian regulations, the design documentation for the new building, reconstruction and	FAR 01	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	significant by the project participants or the host Party, does the PDD provide conclusion and all references to supporting documentation of an environmental impact assessment undertaken in accordance with the procedures as required by the host Party?	major technical re-equipment of industrial and civil objects must include the environmental impact assessment. The legislative requirements to EIA materials content are enshrined in the Article 36 of the Law of Ukraine «On ecological expertise». Requirements to the structure, composition and content of the EIA sections are enshrined in the state building norms of Ukraine DBN A.2.2-1-2003 "Composition and content of the Environmental Impact Assessment (EIA) materials at designing and construction of enterprises, buildings and premises". Municipal enterprises that implement the project "Greenhouse gas emission reduction due to modernization and technical re-equipment of municipal enterprises of Kharkiv region" make the necessary Environmental Impact Assessment for elements of this activity according to Ukrainian legislation. FAR 01. There is no information about measures to reduce pollutant emissions and greenhouse gases in the air in statements form 2-TP "air" in 2007-2008 for ME "KhTM", in 2007, 2009, 2010 for Izium HSNME, in 2007-2010 for ME "Teplovi merezhi" of Lozova CC, in 2007- 2010 for Branch "Kupyanskoe enterprise of heating networks" of KhRME "Dyrektsiya RIT".		
Stakeholder consultation				
49	If stakeholder consultation was undertaken in accordance with the procedure as required by the host Party, does the PDD provide: (a) A list of stakeholders from whom comments on the projects have been received,	As project activity won't provide negative influence on environment and negative social effect, special public discussion was not hold. The authorities (city councils that are the representatives of the population) of Kharkiv region have expressed the support for the project.	CAR 08	OK

DVM Paragraph	Check Item	Initial finding	Draft Conclusion	Final Conclusion
	if any? (b) The nature of the comments? (c) A description on whether and how the comments have been addressed?	CAR 08. Please provide a support letter for the project of regional authorities.		
Determination regarding small-scale projects (additional elements for assessment)_Paragraphs 50 - 57_Not applicable				
Determination regarding land use, land-use change and forestry projects _Paragraphs 58 – 64(d)_Not applicable				
Determination regarding programmes of activities_Paragraphs 66 – 73_Not applicable				

Table 2 Resolution of Corrective Action and Clarification Requests

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in table 1	Summary of project participant response	Determination team conclusion
CAR 01. Please in Annex 1, p.77 add the address of the website ME "KhTM".	-	The information is added in the PDD version 02.	Due to the amendments made in the PDD, CAR 01 is closed.
CAR 02. The rounding "sum" in Table 7 line "Total" doesn't correct for Baseline Natural Gas consumptions and Baseline electricity consumption. Please make the appropriate corrections.	23	This is corrected in the PDD version 02.	The PDD has been corrected. CAR 02 is closed.
CAR 03. The rounding "sum" in Table 8 line "Total" doesn't correct for Project natural gas consumption. Please make the appropriate corrections.	23	This is corrected in the PDD version 02.	Necessary corrections have been made. The issue is closed.
CL 01. Please provide explanation on the absence of baseline and project electricity consumption by Pervomais'kyi ME "Teplomerezhi" (Table 7, 8)	23	The energy saving measures leading to reducing electricity consumption are not planned on Pervomais'kyi ME "Teplomerezhi", that's why electricity consumption of this enterprise is not included in the baseline and project scenario.	Based on the explanation received, CL 01 is closed.

CL 02. Please provide explanation on the absence of project coal consumption by Kharkiv District HSNME.	36 (a)	Objects, where the project is implemented, under the PDD version 02 consume only natural gas. Therefore, both the basic and project coal consumption are missed.	Based on the explanation received, CL 02 is closed.
CL 03. Please provide explanation on the number of boilerhouses ME “KhTM” (252 or 254).	36 (a)	The enterprise operates 254 objects including 252 boiler-houses, CHP-3 and CHP-4. Corrections are done on p. 7 of the PDD version 02.	The PDD has been corrected. CL 03 is closed.
CL 04. Please provide SNiP 4630-92.	36 (b) (ii)	SanPiN 4630-88 that has been meant is provided.	Based on the document received, CL 04 is closed.
CAR 04. GOST 2874-82 is relate to drinking water, not sewage. Please make the appropriate corrections.	36 (b) (ii)	This is corrected, in the PDD version 02.	Necessary corrections have been made. The issue is closed.
CL 05. Please provide document confirms the class of the consumer of electricity power.	36 (b) (ii)	The letter from ME “KhTM” #22-4290 dated 10.10.2011 is provided.	Based on the document received, CL 05 is closed.
CAR 05. Specified in D.1.4, p.59 Annexes 5 and 6 are missing in the PDD. Please make the appropriate corrections.	36 (f) (vii)	Appendix 5 “Total” and Appendix 5 “Baseline” have been provided as separate sheets in Excel file «Appendix_1_Kharkov_v01» that is additional information to the PDD. In the PDD version 02 the relevant additional file is renamed to «Appendix_1_5_6_Kharkov_v02».	The PDD has been corrected. CAR 05 is closed.

CAR 06. Internet link 23 is not working. Please make the appropriate corrections.	36 (f) (vii)	This is corrected, in the PDD version 02 all internet-links work.	The PDD has been corrected. CAR 06 is closed.
CAR 07. Please add to PDD details about measuring instruments.	36 (i)	The information is added in the Annex 3 (see table An3-2 and An3-3) of the PDD version 02.	Due to the amendments made in the PDD, CAR 07 is closed.
FAR 01. There is no information about measures to reduce pollutant emissions and greenhouse gases in the air in statements form 2-TP "air" in 2007-2008 for ME “KhTM”, in 2007, 2009, 2010 for Izium HSNME, in 2007-2010 for ME “Teplovi merezhi” of Lozova CC, in 2007- 2010 for Branch “Kupyanskoe enterprise of heating networks” of KhRME “Dyrektsiya RIT”.	48 (b)	The letter about ensuring proper reporting documentation management was sent to the managers of the enterprises involved in the project on 07.10.2011.	FAR01 remains open till the next periodic verification.
CAR 08. Please provide a support letter for the project of regional authorities.	49	The information about project approval is provided in Section A.5 on p. 16 of the PDD. Copy of the Kharkiv region Council Solution #273-VI dated 27.10.2011 is provided.	Based on the document received, CAR 08 is closed.