



DETERMINATION REPORT LCME «ТЕПЛОКОМУНЕНЕРГО»

DETERMINATION OF THE REHABILITATION OF THE DISTRICT HEATING SYSTEM IN LUHANSK CITY

REPORT No. UKRAINE/0048/2009

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BUREAU VERITAS CERTIFICATION

DETERMINATION REPORT

Date of first issue: 18/12/2009	Organizational unit: Bureau Veritas Certification Holding SAS
Client: LCME «Teplocomunenergo»	Client ref.: Mr. Oleksiy Rusakov

Summary:

Bureau Veritas Certification has made the determination of the “Rehabilitation of the District Heating System in Luhansk City” project of LCME «Teplocomunenergo» located in Luhansk 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 Executive Board, 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 Actions 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 the baseline and monitoring methodology developed according the Guidance on *Criteria for Baseline Setting and Monitoring* and meets the relevant UNFCCC requirements for the JI and the relevant host country criteria.

On behalf of the determination team, Flavio Gomes, the Bureau Veritas Certification Holding SAS Global Product Manager for Climate Change, approved the final version of the Determination Report, and it is signed by Ivan Sokolov, the authorized Bureau Veritas Certification Holding SAS Local product manager for Climate Change in Ukraine.

Report No.: UKRAINE/0048/2009	Subject Group: JI	
Project title: “Rehabilitation of the District Heating System in Luhansk City”		
Work carried out by: Nadiya Kaiiun – Climate Change Lead Verifier Oleg Skoblyk – Climate Change Verifier Kateryna Zinevych – Climate Change Verifier		
Work verified by: Ivan Sokolov		
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Indexing terms

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Abbreviations change / add to the list as necessary

CAR	Corrective Action Request
JI	Joint Implementation
ERU	Emission Reduction Unit
CL	Clarification Request
CO ₂	Carbon Dioxide
DOE	Designated Operational Entity
GHG	Green House Gas(es)
I	Interview
IETA	International Emissions Trading Association
LCME	Luhansk City Municipal Enterprise
MoV	Means of Verification
NGO	Non Government Organization
PCF	Prototype Carbon Fund
PDD	Project Design Document
UNFCCC	United Nations Framework Convention for Climate Change



Table of Contents		Page
1	INTRODUCTION	5
1.1	Objective	5
1.2	Scope	5
1.3	GHG Project Description	5
1.4	Determination team	7
2	METHODOLOGY.....	8
2.1	Review of Documents	10
2.2	Follow-up Interviews	11
2.3	Resolution of Clarification and Corrective Action Requests	11
3	DETERMINATION FINDINGS	11
3.1	Project Design	12
3.2	Baseline	12
3.3	Monitoring Plan	17
3.4	Calculation of GHG Emissions	17
3.5	Environmental Impacts	18
3.6	Comments by Local Stakeholders	20
4	COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS.....	20
5	DETERMINATION OPINION	20
6	REFERENCES	21

Appendix A: Determination Protocol

Appendix B: Verifiers CV's



1 INTRODUCTION

LCME «Teplocomunenergo» has commissioned Bureau Veritas Certification to determine its JI project “Rehabilitation of the District Heating System in Luhansk City” (hereafter called “the project”).

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, and Host Country criteria under Track 1.

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 12 of the Kyoto Protocol, the JI rules and modalities and the subsequent decisions by the JI Executive Board, 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 GHG Project Description

The project main goal is fuel consumption reduction, in particular reduction of natural gas (which is imported to Ukraine) and coal consumption, by means of district heating system rehabilitation in Luhansk City, including boiler and distribution network equipment replacement and rehabilitation, installation of combined heat and power production plants and frequency controllers. Such reduction of fuel



DETERMINATION REPORT

consumption will result in decrease of greenhouse gas emissions. The purpose of the project is sustainable development of the region through implementation of energy saving technologies.

Luhansk City Municipal Enterprise (LCME) "Teplocomunenergo" is one of the main enterprises in field of production and distribution of the heat energy in Luhansk City. Its share in district heating system of the city is approximately 92%. It sells heat energy in forms of heat, hot water and steam, to local consumers, namely households, municipal consumers and state-owned organizations. Heat supply market in the region is stable for years.

The project was initiated in 2006 to rehabilitate Luhansk City's district heating system, including boiler and distribution network equipment replacement and rehabilitation, and installation of combined heat and power production plants (CHP) as well as frequency controllers. Project includes 135 boiler-houses with 344 boilers (total connected load 550 Gkal/hour, 2006) and 269 km of heat distributing networks, that are managed by LCME "Teplocomunenergo".

Project provides installation of cogeneration units at the three boiler houses - 11 gas engines, 1064 kW. Gas engines-generators machines "Jenbacher" JGS 320 GS (Austria) are considered as potential candidates for installation.

The project employs the increase in fuel consumption efficiency to reduce greenhouse gas emissions relative to current practice. Over 35.8 million Nm³ of natural gas and 710 ton of coal will be saved annually starting from 2011. Such reduction of fuel consumption is based on increase of the boiler efficiencies, reduction of heat losses in networks and CHP and frequency controllers installation. The following activities will ensure fuel saving:

- Replacement of old boilers by the new highly efficient boilers;
- Switching of load from boiler-houses with obsolete equipment to modern equipped boiler houses;
- Switching of boiler-houses from coal to natural gas;
- Improving of the network organization;
- Application of the pre-insulated pipes;
- Installation of combined heat and power production units;
- Replacement of heat exchangers;
- Installation of heat pump station;
- Installation of frequency controllers at electric drives of draught-blowing equipment and hot water pumps motors.

Estimated project annual reductions of GHG emissions, in particular CO₂, are 12.2 thousand tons in 2007, from 25.7 thousand tons to 121.8



thousand tons in 2008-2011 and by about 165 thousand tons per year starting from 2012 comparing to business-as-usual or baseline scenario.

Implementation of the project will provide substantial economic, environmental, and social benefits to the Luhansk city. Social impact of the project is positive since after project implementation the heat supply service will be improved.

Environmental impact of the project is expected to be very positive as emission of the exhaust gases such as CO₂, NO_x, and CO will be reduced. Also due to better after-implementation service, some part of population will cease to use electric heaters thus reducing electricity consumption, which is related to power plants emissions of CO₂, SO_x, NO_x, CO and particulate matter.

LCME "Teplocomunenergo" fulfils annual minimal repairing of the DH system to keep it working. Particularly it executes repairing of network's parts and boilers that might cause accidents. More economically feasible and realistic scenario without carbon credits sales is a baseline scenario with very slow reconstruction activity than to make a major overhaul of the heating system. Minimal annual repairing doesn't lead to drooping of baseline emissions because of degradation of the whole system with efficiency droop at other objects, the overall actual emissions of Supplier would stay on the approximately same level. This scenario is less environmentally favorable for the near future (including first commitment period 2008-2012), since GHGs emissions of Supplier will continue to be kept at the same level or even higher, but economically such scenario is more attractive.

Estimated project risks are limited and minimized. Ukraine has claimed district heating and municipal energy sector as a priority of the national energy-saving development.

1.4 Determination team

The determination team consists of the following personnel:

Nadiya Kaiun

Bureau Veritas Certification, Climate Change Lead Verifier

Oleg Skoblyk

Bureau Veritas Certification, Climate Change Verifier

Kateryna Zinevych

Bureau Veritas Certification, Climate Change Verifier

Igor Kachan

Bureau Veritas Certification, Technical Specialist

Ivan Sokolov

Bureau Veritas Certification, Internal Technical Reviewer



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 Determination and Verification Manual (IETA/PCF). The protocol shows, in a transparent manner, criteria (requirements), means of verification 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 determinator will document how a particular requirement has been determined and the result of the determination.

The determination protocol consists of five tables. The different columns in these tables are described in Figure 1.

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



DETERMINATION REPORT

Determination Protocol Table 1: Mandatory Requirements			
Requirement	Reference	Conclusion	Cross reference
The requirements the project must meet.	Gives reference to the legislation or agreement where the requirement is found.	This is either acceptable based on evidence provided (OK), a Corrective Action Request (CAR) or a Clarification Request (CL) of risk or non-compliance with stated requirements. The CAR's and CL's are numbered and presented to the client in the Determination Report.	Used to refer to the relevant protocol questions in Tables 2, 3 and 4 to show how the specific requirement is determined. This is to ensure a transparent determination process.

Determination Protocol Table 2: Requirements checklist				
Checklist Question	Reference	Means of verification (MoV)	Comment	Draft and/or Final Conclusion
The various requirements in Table 1 are linked to checklist questions the project should meet. The checklist is organized in several sections. Each section is then further subdivided. The lowest level constitutes a checklist question.	Gives reference to documents where the answer to the checklist question or item is found.	Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.	The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.	This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) due to non-compliance with the checklist question. (See below). Clarification Request (CL) is used when the determination team has identified a need for further clarification.

Determination Protocol Table 3: Baseline and Monitoring Methodologies				
Checklist Question	Reference	Means of verification (MoV)	Comment	Draft and/or Final Conclusion
The various requirements of baseline and monitoring methodologies should be met. The checklist is organized in several sections. Each section is then further subdivided. The lowest level constitutes a checklist question.	Gives reference to documents where the answer to the checklist question or item is found.	Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.	The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.	This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) due to non-compliance with the checklist question. (See below). Clarification Request (CL) is used when the determination team has identified a need for further clarification.



DETERMINATION REPORT

Determination Protocol Table 4: Legal requirements				
Checklist Question	Reference	Means of verification (MoV)	Comment	Draft and/or Final Conclusion
The national legal requirements the project must meet.	Gives reference to documents where the answer to the checklist question or item is found.	Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.	The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.	This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) due to non-compliance with the checklist question. (See below). Clarification Request (CL) is used when the determination team has identified a need for further clarification.

Determination Protocol Table 5: Resolution of Corrective Action and Clarification Requests			
Report clarifications and corrective action requests	Ref. to checklist question in tables 2/3	Summary of project owner response	Determination conclusion
If the conclusions from the Determination are either a Corrective Action Request or a Clarification Request, these should be listed in this section.	Reference to the checklist question number in Tables 2, 3 and 4 where the Corrective Action Request or Clarification Request is explained.	The responses given by the Client or other project participants during the communications with the determination team should be summarized in this section.	This section should summarize the determination team's responses and final conclusions. The conclusions should also be included in Tables 2, 3 and 4, under "Final Conclusion".

Figure 1 Determination protocol tables

2.1 Review of Documents

The Project Design Document (PDD) version 06 submitted by LCME «Teplocomunenergo» and additional background documents related to the project design and baseline, i.e. country Law, Guidelines for Completing the Project Design Document (JI-PDD), Approved methodology, Kyoto Protocol, Clarifications on Determination Requirements to be Checked by a Designated Operational Entity were reviewed.

To address Bureau Veritas Certification corrective action and clarification requests LCME «Teplocomunenergo» revised the PDD and resubmitted it on 12/2009.

The determination findings presented in this report relate to the project as described in the PDD version 05, dated 07/10/09, and responses in revised PDD version 06 dated 11/12/09.



2.2 Follow-up Interviews

In 07/2009 Bureau Veritas Certification performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of LCME “Teplocomunenergo” were interviewed (see References). The main topics of the interviews are summarized in Table 1.

Table 1 Interview topics

Interviewed organization	Interview topics
LCME “Teplocomunenergo”	<ul style="list-style-type: none"> ➤ 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. ➤ Local stakeholder’s response.
Institute of Engineering Ecology (IEE), Ltd	<ul style="list-style-type: none"> ➤ Baseline methodology. ➤ Monitoring plan. ➤ Monitoring report. ➤ Deviations from PDD.

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.

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

3 DETERMINATION FINDINGS

In the following sections, the findings of the determination are stated. The determination findings for each determination subject are presented as follows:

- 1) The findings from the desk review of the original project design documents and the findings from interviews during the follow up visit are summarized. A more detailed record of these findings can be found in the Determination Protocol in Appendix A.
- 2) Where Bureau Veritas Certification had identified issues that needed clarification or that represented a risk to the fulfillment of the project



objectives, a Clarification or Corrective Action Request, respectively, have been issued. 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 6 Corrective Action Requests and 22 Clarification Requests.

3) The conclusions for determination subject are presented.

3.1 Project Design

Bureau Veritas Certification recognizes that this Project is helping the host country fulfill its goals of promoting sustainable development. The project is expected to be in line with the host-country specific JI requirements.

The Project Scenario is considered additional in comparison to the baseline scenario, and therefore eligible to receive Emissions Reductions Units (ERUs) under the JI, based on an analysis, presented in the PDD, of investment, technological and other barriers, and prevailing practice.

The project design is sound and the geographical and temporal (4 years till 2008, 5 years till 2012 and 11 years till 2026) boundaries of the project are clearly defined.

CAR1 and CLs (CL1 – CL5) and their resolution/conclusion applicable to project design are listed in the APPENDIX A: DETERMINATION PROTOCOL (Table 5) below.

3.2 Baseline and Additionality

The “Rehabilitation of the District Heating System in Luhansk City” project uses the baseline and monitoring approach developed according the Guidance on Criteria for Baseline Setting and Monitoring and meets the relevant UNFCCC requirements for the JI and the relevant host country criteria.

Project participants used approach that is partly similar to approved methodology AM0044. But the AM0044 was not used because it is not applicable to the project “Rehabilitation of the District Heating System in Luhansk City”.

The main cause why the methodology AM0044 can not be used is impossibility of measurement of the thermal energy output, because of thermal energy meters absence on the majority of boiler houses included in the project. Institute of Engineering Ecology invented another approach, that takes into account all measures involved in the project and it’s peculiarities. The methodology is presented in the PDD (monitoring



DETERMINATION REPORT

plan). It was already determined by Bureau Veritas for JI Project for Chernihiv Region and similar JI Projects for Donetsk region, Crimea and Kharkiv city.

For Ukraine is common that monitoring devices for heat and heat-carrier expenditure in the municipal boiler-houses are absent. Only the fuel consumption is registered on a regular basis.

This also concerns the definition of the average historical value of heat power generation per year $EG_{BL, his, i}$ (average historic thermal energy output from the baseline boiler "i") that can be only calculated using the fuel consumption data.

Besides, in section "Scope of Application" it is mentioned, that the scope of application of the Methodology AM0044 is limited only to the increase of boilers' efficiency by means of their replacement or modernization, and it does not apply to the fuel type switch. At the same time the project includes also such kind of modernization as well as some others such as the replacement of burner equipment, etc.

The developed approach is based on the permanent monitoring of fuel consumption and of the account of various other factors, such as connection or disconnection of the consumers, change of fuel heating value, due to change, ratio of the heat consumption for heating and for hot water supply, etc.

The approach has two important advantages in comparison with the methodology AM0044 (at least for Ukrainian conditions):

It takes into account the quality of heat supply (heating and hot water supply). Almost annually for the various reasons (receiving of less amount and high price of the fuel, in particular natural gas which is nearly 95 % of fuel type used in Ukraine for the needs of the municipal heat supply), the consumers receive less than necessary amount of heat, in the result of which the temperature inside the buildings is much lower than normative one, and hot water supply is insufficient or absent. As the purpose of JI projects, including the current project, is the GHG (CO₂) emission reduction under the conditions of not worsening in any circumstances of the social conditions for population, the issue of approaching of the heat supply quality to the normative one is extremely important. Therefore, the amount of the fuel consumption for the after project implementation period is calculated for the conditions of providing the normative parameters of heat supply and at least partially of hot water supply, and in accordance with the monitoring plan, the implementation of continuous control (monitoring) of its quality (measurement of internal temperature in the specific buildings as well as registration of residents' complaints for the poor-quality heat supply) is foreseen. This increases the control for the qualitative heat supply for the consumers and excludes deliberate reduction of heat consumption, and, in such a way, of fuel consumption

DETERMINATION REPORT

with the purpose of increasing of generation of GHG emissions reduction units (ERUs) at the project verification.

Definition of the fuel consumption in base year (baseline) in view of the fact that in Ukraine at the majority of the municipal heat supply enterprises the natural gas is used as a fuel, which consumption is measured constantly by the counters with the high measurement accuracy, seems to be more exact, than definition of the fuel consumption with use of heat power, boiler efficiency and heat value of the fuel. This especially concerns the efficiency, which changes greatly depending on load of boilers, which also changes essentially, and often not automatically but manually, in the heat supply systems within a day and within a year. Averaging of such values without having of the heat account system is fraught with serious discrepancies. Definition of the fuel consumption in the presence of counters requires only data collection and implementation of arithmetic actions.

Approved Consolidated Methodology ACM0009 “Consolidated baseline methodology for fuel switching from coal or petroleum fuel to natural gas” proposes the dependences for baseline and reporting year emissions quantity definition (see pages 4 and 5), that contain determination of Energy efficiency $\epsilon_{\text{project},i,y}$ and $\epsilon_{\text{baseline},i}$ for equipment. In the chapter “Baseline emissions” on the page 6 there is an explanation that: Efficiencies for the project activity ($\epsilon_{\text{project},i,y}$) should be measured monthly throughout the crediting period, and annual averages should be used for emission calculations. Efficiencies for the baseline scenario ($\epsilon_{\text{baseline},i}$) should be measured monthly during 6 months before project implementation, and the 6 months average should be used for emission calculations. These requirements are confirmed in the PDD by tables for monitoring on the pages 13-15.

However, as it was mentioned before in this PDD, the majority of boiler-houses in Ukraine are not equipped with devices for heat-carrier expenditure measurement or heat meters. There is only one parameter that is regularly and with high precision measured in the boiler houses – fuel consumption.

For this reason, the project specific approach was developed, that is based on the permanent measuring of the fuel consumption and amendments for possible parameters changes in baseline in comparison with reporting year. The variable parameters may be the changes in lower heating value of fuels, quality of heating service, weather changes, etc. Taking into account only equipment efficiency does not eliminate the possibilities of undersupply of heat to customers (deterioration of heat supply service), and possible weather warming in reported year, change in fuel quality, disconnection of some consumers, and other factors, and could lead to artificial overestimation of ERUs amount.

DETERMINATION REPORT

In addition, the position in ACM0009 to take (due to conservatism principle) the baseline efficiency of equipment equal to 100 % is unacceptable in "District Heating" type projects, because not only fuel switch but also increasing of the equipment (boilers) efficiency the measure in these projects. Accepting of such calculated baseline would lead to essential underestimation of results of implemented measures.

As it was already mentioned before, the majority of the heat supply enterprises and heat customers in Ukraine are not equipped with heat meters or devices for heat-carrier output (hot water for heating and hot water service) determination. Just for this reason, the approach was developed that is based on the permanent measuring of the fuel consumption and corrections for possible changes of parameters in reporting year comparing to the baseline. The changeable parameters may be the lower heating value of fuels, quality of heating service (providing of normative temperature value inside apartments), weather features, number of customers, etc. As it was mentioned before, this approach eliminates any possibility of reduction of fuel consumption and correspondingly GHG emission due to incomplete delivery of heat to consumers.

In view of the above mentioned, in contrast to the methodologies AM0044 and ACM0009, the Methodology, developed for "District Heating" projects in Ukrainian conditions and used in JI Projects "Rehabilitation of the District Heating System in Donetsk Region", "Rehabilitation of the District Heating System in Chernihiv Region", "Rehabilitation of the District Heating System in Crimea", "Rehabilitation of the District Heating System in Kharkiv city", is the most appropriate, precise, corresponding to the principle of conservatism, and the most closely reflects the aims, goals and spirit of Kyoto Protocol.

There were three alternatives of Baseline scenario that were discussed in the PDD.

The first version of Baseline scenario was a business-as-usual scenario with minimum reconstruction 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 reconstruction 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.



DETERMINATION REPORT

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.

The additionality of the project activity is demonstrated and assessed below with using the “Tool for the demonstration and assessment of additionality” (Version 5.2). This tool was originally developed for CDM projects but may be applied to JI projects as well. This tool is used for the project in accordance with the guidance on its use provided in the partly similar “Baseline and monitoring methodology AM0044”.

The possible alternative baseline scenarios are the following:

(a) The first alternative is business-as-usual scenario with minimum reconstruction works, approximately balanced by overall degradation of the DH system.

It should be noted that there is no local legislation regarding the time of boilers replacement and maximum lifetime permitted for boilers. It is common practice to exploit boilers which was installed in 70 th. and even 50-60 th. and earlier in Ukraine, if they pass the technical examination pass by the authorized body (“Derzhnagliadohoronpratsi”).

(b) The second alternative is to make reconstruction works without JI mechanism.

(c) The third alternative is the shortened project activity, without any of the non-key type of activity, for example elimination of frequency controllers installation, etc., from the project.

The following aspects give the ability to use chosen approach:

- The proposed project makes the process of heat and power energy generation more effective;
- The proposed project replaces the power energy generated within United Energy System (UES).

The baseline options considered do not include those options that:

- do not comply with legal and regulatory requirements; or
- depend on key resources such as fuels, materials or technology that are not available at the project site.

CAR2 and CLs (CL6 – CL9) and their resolution/conclusion applicable to project design are listed in the APPENDIX A: DETERMINATION PROTOCOL (Table 5) below.



3.3 Monitoring Plan

The Project uses the the baseline and monitoring approach developed according to the Guidance on *Criteria for Baseline Setting and Monitoring* and meets the relevant UNFCCC requirements for the JI and the relevant host country criteria. Refer to section 3.2 above.

CL12 – CL15 and their resolution/conclusion applicable to project design are listed in the APPENDIX A: DETERMINATION PROTOCOL (Table 5) below.

3.4 Calculation of GHG Emissions

Baseline emissions consist of three types of GHG emissions:

- 1) CO_{2e} emissions from boilers operated by the Supplier.
- 2) CO_{2e} emissions due to electricity production to the grid, that will be replaced after CHP units installation and pump station installation.
- 3) CO_{2e} emissions due to electricity production to the grid, that consumed by boiler houses with energy saving measures (where frequency controllers, new pumps and heat exchangers will be installed).

Project emissions

Project emissions consist of:

$$E_r = E1_r + E2_r + E3_r$$

Where:

E1_r – emissions from boilers operated by the Supplier, t CO_{2e};

E2_r – emissions from new CHP units, t CO_{2e}.

E3_r – emissions due to electricity production to the grid, that consumed by boiler houses, with energy saving measures (where frequency controllers, new pumps and heat exchangers will be installed), t CO_{2e};

Project scenario emissions from boiler-houses are a sum of actual fuel amounts to be used in any report year (starting from 2008) multiplied by corresponding conversion factors

GHG emission reductions from the project are estimated by means of the following formulae:

$$ERUs = E_b - E_r.$$

where:

ERUs – emission reduction units, t CO_{2e};

E_r – project emissions, t CO_{2e}

E_b – baseline emissions, t CO_{2e}

With reference to the proposed approach, project does not lead to any leakage.

The estimated annual average of approximately 80259,5 tCO_{2e} over the crediting period of emission reduction represents a reasonable estimation using the assumptions given by the project.



CAR6 and CLs (CL18 – CL20) and their resolution/conclusion applicable to project design are listed in the APPENDIX A: DETERMINATION PROTOCOL (Table 5) below.

3.5 Environmental Impacts

According to the Ukrainian rules, the design documentation for the new building, reconstruction and technical re-equipment of industrial and civil objects must include the environmental impact assessment, the main requirements for which are listed in the State Building Norms of Ukraine A.2.2-1-2003.

LCME “Teplocomunenergo” has the necessary Environmental Impact Assessment for its activity according to Ukrainian legislation.

Overall, the project “Rehabilitation of the District Heating System in Luhansk City” will have a positive effect on environment. Following points will give detailed information on environmental benefits.

1. Project implementation will allow saving over 35.8 million Nm³ of natural gas and over 710 ton of coal per year starting from 2012. Natural gas and coal are a non-renewable resources and its economy is important.

2. Project implementation will reduce CO₂ emissions in Luhansk city by 165.7 thousand tons per year starting from 2012 due to increased boilers efficiencies, achieved through installation of up-to-date boiler equipment, particularly new boilers, CHP units, heat exchangers and installation of pre-insulated networks pipes instead of existing regular networks pipes.

3. Due to fuel economy and new environmentally friendlier technologies of fuel combustion, project implementation will reduce emissions of SO_x, NO_x, CO and particulate matter (co-products of combustion).

4. It is expected that due to a better service population of Luhansk city will reduce electricity consumption from electric heaters thus reducing power plants emissions of CO₂, SO_x, NO_x, CO and particulate matter.

Requirements for Environmental Impact Assessment are listed in the State Building Norms of Ukraine A.2.2-1-2003.

LCME “Teplocomunenergo” has the appropriately approved Environmental Impact Assessments (EIA) for all capital constructions.

For reconstructed objects that require Environmental Impact Assessment according to Ukrainian legislation PE “Firma Priroda” has developed EIA as a separate section of the project. Calculations of contaminant dispersion to atmosphere were made by the program complex “EOL plus” in accordance with requirements ОНД-86 “Methodology of calculation of concentration in atmosphere contaminant that containing in enterprisers emissions.

There is “Technical report on inventory taking of contaminant emissions sources at the enterprise LCME “Teplocomunenergo” presented in the

DETERMINATION REPORT

Appendix_ 10_ EIA of the PDD version 06. It was developed by PE "Firma Priroda" in 2007.

Impact on the water medium

Impact on the water medium is present. Impact on water resources is will be the same as in baseline scenario. The existing technology of heat energy production exploited at the objects of LCME "Teplocomunenergo" foresees discharging of waste water to the sewage network with obligatory chemical control in accordance to Water Code of Ukraine, GOST 28.74-82 "Hygienic regulations and quality control", SNiP 4630-92 on determining maximum concentration limits for internal water bodies. Discharge of wastewater to the open water bodies will not take place.

Project implementation will have positive environmental effect. It will allow to decrease the water consumption and as a result – to decrease the amount of waste water.

Effects on the ambient air

The project implementation will have positive effect on ambient air:

- 1) Reduction of NO_x, SO_x, CO and PM due to application of cleaner technologies at boiler houses;
- 2) Reduction of electricity consumption results in lower emissions of the same air pollutants;
- 3) Heat stress on the atmosphere (due to lower temperatures of flue gases);
- 4) Lower emissions per unit of fuel at the same load on boiler house.

Effects on land use

Impact on the land medium is not present.

Relevant regulation is the sphere of land use is presented by the Land Code of Ukraine. National technological practice / standard: GOST 17.4.1.02.-83 "Protection of Nature, Soils. Classification of chemical substances for pollution control".

Effects on biodiversity

Impact on biodiversity is not present.

Waste generation, treatment and disposal

Waste generation, treatment and disposal are present. In the process of project implementation the generation of waste will occur after disassembling of physically and morally obsolete equipment, burners, pipes, etc. Also there will occur some construction waste due to destruction of boiler settling, boiler house foundations, etc.

Possible recycling of the old equipment will by definition have a positive effect on the environment.



3.6 Comments by Local Stakeholders

As project activity won't provide negative influence on environment and negative social effect, special public discussion was not hold. The authorities of Luhansk city have expressed the support for the project. Project "Rehabilitation of the District Heating System in Luhansk City" was presented at the XVII (Yalta, June 5-9, 2007) and XVIII (Yalta, June 10-14, 2008) International Conferences "Problems of Ecology and Exploitation of Energy Objects", where it was comprehensively discussed with representatives of governmental and district heating organizations.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

According to the modalities for the Determination of JI projects, the DOE shall make publicly available the project design document and receive, within 30 days, comments from Parties, stakeholders and UNFCCC accredited non-governmental organizations and make them publicly available.

Bureau Veritas Certification published the project documents on the website <http://www.bureauveritas.com.ua> on 23/10/2009 and invited comments within 21/11/2009 by Parties, stakeholders and non-governmental organizations.

There are no comments from stakeholders.

5 DETERMINATION OPINION

Bureau Veritas Certification has performed a determination of the "Rehabilitation of the District Heating System in Luhansk City". 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 analysis of investment, technological and other barriers 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.



DETERMINATION REPORT

The review of the project design documentation (version 06) 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.

6 REFERENCES

Category 1 Documents:

Documents provided by Type the name of the company that relate directly to the GHG components of the project.

- /1/ PDD "Rehabilitation of the District Heating System in Luhansk City", version 05, dated 07.10.09
- /2/ PDD "Rehabilitation of the District Heating System in Luhansk City", version 05, dated 11.12.09
- /3/ Decree of Cabinet of Ministers of Ukraine #206, dated 22.02.2006
- /4/ Guidelines for users Joint of the Implementation Project Design Document Form/Version 04, JISC
- /5/ Glossary of JI terms/Version 02, JISC.
- /6/ Guidance on criteria for baseline setting and monitoring. Version 02. JISC.
- /7/ Tool for the demonstration and assessment of additionality. Version 05.2. EB 39, Annex 10.
- /8/ JISC "Clarification regarding the public availability of documents under the verification procedure under the Joint Implementation Supervisory Committee." Version 03.
- /9/ 2006 IPCC Guidelines for National Greenhouse Inventories, v.2, Energy.
- /10/ Letter of Endorsement # 11569/11/10-07 dated 24/10/2007 issued by the Ministry of Environmental Protection of Ukraine.

Category 2 Documents:

Background documents related to the design and/or methodologies employed in the design or other reference documents.

/1/	Photo - Rosemount. Eden Praire, Minnesota, USA.
/2/	Statement on acceptance of completed contract works #07-11-07-CP for November 2007. Statement of defectiveness.
/3/	Statement on acceptance of completed contract works #07-13-04-07 for April 2007. Statement of defectiveness.
/4/	Statement on acceptance of completed contract works #10-04-09 PCI for April 2009. Inv. #26227.



DETERMINATION REPORT

/5/	Statement on acceptance of completed contract works #10-05-09 CP for May 2009. Inv. #24077.
/6/	Statement on acceptance of completed contract works #10-07-07 for July 2007. Statement of defectiveness.
/7/	Statement on acceptance of completed contract works #№1-08-08-PCLQ for August 2007. Statement of defectiveness.
/8/	Statement on acceptance of completed contract works #1-10-7 for October 2007. Statement of defectiveness.
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/10/	Statement on acceptance of completed contract works #12-11-06 for November 2006. Inv. #26175.
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/12/	Statement on acceptance of completed contract works #13-12-06 for December 2007. Inv. #27244.
/13/	Statement on acceptance of completed contract works #15.06.07 for June 2007.
/14/	Statement on acceptance of completed contract works #15-04-08PCLQ for April 2008. Statement of defectiveness.
/15/	Statement on acceptance of completed contract works #15-11-08 for November 2008. Statement of defectiveness.
/16/	Statement on acceptance of completed contract works #16-06-07 for June 2007. Inv. #26226.
/17/	Statement on acceptance of completed contract works #17-06-07 for June 2007. Inv. #26219.
/18/	Statement on acceptance of completed contract works #17-07-06 for July 2006.
/19/	Statement on acceptance of completed contract works #20-02-06 for February 2006.
/20/	Statement on acceptance of completed contract works #20-08-08CP for January 2008.
/21/	Statement on acceptance of completed contract works #20-11-08 for November 2008.
/22/	Statement on acceptance of completed contract works #21-01-06 for January 2005.
/23/	Statement on acceptance of completed contract works #21-03-08 for March 2008.
/24/	Statement on acceptance of completed contract works #21-10-08-CP for October 2008. Statement of defectiveness.
/25/	Statement on acceptance of completed contract works #21-11-08 for November 2008.
/26/	Statement on acceptance of completed contract works #22-08-08-CP for January 2008.
/27/	Statement on acceptance of completed contract works #22-09-07 for September 2007. Statement of defectiveness.



DETERMINATION REPORT

/28/	Statement on acceptance of completed contract works #22-11-08 for November 2008.
/29/	Statement on acceptance of completed contract works #24-05-07 for May 2007.
/30/	Statement on acceptance of completed contract works #2-4-6 for April 2007.
/31/	Statement on acceptance of completed contract works #25-04-08-CP for April 2008.
/32/	Statement on acceptance of completed contract works #25-05-07 for May 2007.
/33/	Statement on acceptance of completed contract works #25-05-08-CP for May 2008.
/34/	Statement on acceptance of completed contract works #25-08-08-CP for August 2008.
/35/	Statement on acceptance of completed contract works #28-11-08-CP for November 2008.
/36/	Statement on acceptance of completed contract works #30-09-08-CP for September 2008. Statement of defectiveness.
/37/	Statement on acceptance of completed contract works #31071 for July 2009.
/38/	Statement on acceptance of completed contract works #31-09-08-CP for September 2008. Statement of defectiveness.
/39/	Statement on acceptance of completed contract works #3-2-8 for February 2008. Statement of defectiveness.
/40/	Statement on acceptance of completed contract works #38-04-08-CP for April 2008.
/41/	Statement on acceptance of completed contract works #38-08-08-CP for August 2008.
/42/	Statement on acceptance of completed contract works #340-04-08-CP for April 2008.
/43/	Statement on acceptance of completed contract works #4-1-8PCLJ for January 2008. Statement of defectiveness.
/44/	Statement on acceptance of completed contract works #6-03-09 for March 2009. Statement of defectiveness.
/45/	Statement on acceptance of completed contract works #61-05-09-CP for May 2009. Statement of defectiveness.
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/47/	Statement on acceptance of completed contract works #62-05-09-CP for May 2009.
/48/	Statement on acceptance of completed contract works #6-2-8 for February 2008. Statement of defectiveness.
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DETERMINATION REPORT

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/52/	Statement on acceptance of completed contract works #7-03-09 for March 2009. Inv. #27245.
/53/	Statement on acceptance of completed contract works #7-06-07 for June 2007.
/54/	Statement on acceptance of completed contract works #7-09-08 for September 2008. Statement of defectiveness.
/55/	Statement on acceptance of completed contract works #7-1-7 for January 2007. Inv. #Y27244.
/56/	Statement on acceptance of completed contract works #9-03-09 for March 2009. Inv. #26201.
/57/	Statement on acceptance of completed contract works #9-08-07 for August 2007. Statement of defectiveness.
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/62/	Certificate AA#230516 of the unified state register of of enterprises and organizations in Ukraine.
/63/	Contract #17/05-465/2 On provision of services for processing natural gas and transportation of heat energy from 01.10.2005.
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/66/	Contract of work and labour #81-П/33-2009 from 02.03.2009..
/67/	Permission #90303 for pollutant emissions into the atmosphere by the stationary sources from 15.12.2005.
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/69/	Permission #90303 for pollutant emissions into the atmosphere by the stationary sources from 27.12.2007.
/70/	Permission #90303 for pollutant emissions into the atmosphere by the stationary sources from 29.09.2006.
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DETERMINATION REPORT

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/99/	List of measuring devices which are in operation and subject to verification in 2009 #92 from 30.01.2009.
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DETERMINATION REPORT

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/102/	Certificate #753-8 from 19.12.2008.
/103/	Regulations of services for central heating, supplying hot and cold water and water removal from 21.07.2005. #613.
/104/	Draft regulations of maximum permissible emission (MPE) of pollution agents into the atmosphere by stationary sources of PUC "Teplokommunenergo" from 12.05.2000.
/105/	Draft regulations of maximum permissible emission (MPE) of harmful agents into the atmosphere by stationary sources. Luhansk PUC "Teplokommunenergo" from 12.05.2000.
/106/	Technical guidelines for operators serving boilers, ДКБП-6,5/13 (steam), installed at the boiler shop of the company "Odiag", 2006.
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/108/	Water consumption for the year 2008.
/109/	Water consumption for June 2008.
/110/	Water consumption LCSC "Teplokommunenergo" for August 2006.
/111/	Water consumption LCSC "Teplokommunenergo" for August 2007.
/112/	Water consumption LCSC "Teplokommunenergo" for August 2008 (OKП company "Luhanskvoda").
/113/	Water consumption LCSC "Teplokommunenergo" for August 2008 (LLC company "Luhanskvoda").
/114/	Water consumption LCSC "Teplokommunenergo" for April 2006.
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DETERMINATION REPORT

/128/	Water consumption LCSC "Teplokommunenergo" for March 2008.
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/142/	Gas consumption for the year 2006.
/143/	Gas consumption for the year 2007.
/144/	Gas consumption for the year 2008.
/145/	Consumption of electric power at the ЛГКП "Teplocomunenergo" for Desember 2006.
/146/	Consumption of electric power at the ЛГКП "Teplocomunenergo" for Desember 2007.
/147/	Consumption of electric power at the ЛГКП "Teplocomunenergo" for Desember 2008.
/148/	Consumption of electric power for 2006.
/149/	Consumption of electric power for 2007.
/150/	Consumption of electric power for 2008.
/151/	Calculation of heat power by the boiler shop of "Odezhda" company for January 2006.
/152/	List of gas consumption for August 2006. ЛГКП "Teplocomunenergo".
/153/	List of gas consumption for August 2007. ЛГКП "Teplocomunenergo".
/154/	List of gas consumption for April 2006. ЛГКП "Teplocomunenergo".
/155/	List of gas consumption for April 2007. ЛГКП "Teplocomunenergo".
/156/	List of gas consumption for April 2008. ЛГКП "Teplocomunenergo".

DETERMINATION REPORT

/157/	List of gas consumption for Desember 2006. ЛГКП "Теплокомуненерго".
/158/	List of gas consumption for Desember 2007. ЛГКП "Теплокомуненерго".
/159/	List of gas consumption for Desember 2008. ЛГКП "Теплокомуненерго".
/160/	List of gas consumption for July 2006. ЛГКП "Теплокомуненерго".
/161/	List of gas consumption for July 2007. ЛГКП "Теплокомуненерго".
/162/	List of gas consumption for July 2008. ЛГКП "Теплокомуненерго".
/163/	List of gas consumption for June 2007. ЛГКП "Теплокомуненерго".
/164/	List of gas consumption for June 2008. ЛГКП "Теплокомуненерго".
/165/	List of gas consumption for May 2006. ЛГКП "Теплокомуненерго".
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/170/	List of gas consumption for March 2008. ЛГКП "Теплокомуненерго".
/171/	List of gas consumption for November 2006. ЛГКП "Теплокомуненерго".
/172/	List of gas consumption for November 2007. ЛГКП "Теплокомуненерго".
/173/	List of gas consumption for November 2008. ЛГКП "Теплокомуненерго".
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/181/	List of gas consumption for February 2008. ЛГКП "Теплокомуненерго".
/182/	List of gas consumption for January 2006. ЛГКП "Теплокомуненерго".
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/185/	Regime map of heat water boiler #1 type НИИСТУ-5.
/186/	Regime map of heat water boiler #1 work type АОГВ-100 dated March 2006.
/187/	Regime map of heat water boiler #1 work type ДКВР-10/13 dated February 2006.



DETERMINATION REPORT

/188/	Regime map of heat water boiler #1 work type КСВа-3Г dated 12/12/2006.
/189/	Regime map of heat water boiler #1 work type КСВа-3Г dated Desember 2006.
/190/	Regime map of heat water boiler #1 work type КСВа-3Г dated 2008.
/191/	Regime map of heat water boiler #1 work type НИИСТУ-5.
/192/	Regime map of heat water boiler #1 work type ТВГ-8М dated January 2006.
/193/	Regime map of heat water boiler #2 work type АОГВ-100 dated March 2006.
/194/	Regime map of heat water boiler #2 work type ДКВР-10/13 dated February 2006.
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/200/	Regime map of heat water boiler #3 work type ТВГ-8М dated Desember 2006.
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/202/	Regime map of heat water boiler #5 work type ТВГ-8М dated 10/03/2006.
/203/	Regime map of heat water boiler #6 work type ТВГ-8М dated Desember 2006.
/204/	Regime map of heat water boiler #7 work type ТВГ-8М dated November 2006.
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/206/	Regime map of the boiler #1 work type НИИСТУ-5 dated March 2006.
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/210/	Regime map of the steam boiler #1 work type ДКВР-6,5/13 dated 20/01/2006.
/211/	Regime map of the steam boiler #2 work type ДКВР-6,5/13.
/212/	Regime map of the steam boiler #2 work type ДКВР-6,5/13 dated 10/03/2006..
/213/	Regime map of the steam boiler #3 work type ДКВР-6,5/13.
/214/	Regime map of the steam boiler #4 work type ДКВР-6,5/13 dated March 2006.



DETERMINATION REPORT

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/220/	Certificate #47/207 of the verification of measurement working device. Valid to 01/10/2010.
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/222/	Information on costs of completed control work.
/223/	Daily statement of boiler shop #CШ27 work from 01/11/2006 to 02/11/06.
/224/	Daily statement of boiler shop #CШ27 work from 26/10/2006 to 27/10/06.
/225/	Daily statement of boiler shop #CШ27 work from 28/10/2006 to 29/10/06.
/226/	Daily statement of boiler shop #CШ27 work from 30/10/2006 to 31/10/06.
/227/	Daily statement (operation factors). Boiler shop "Santehdetal" from 25/10/2008.
/228/	Daily statement of the boiler operator of "Osypenko-Raskovoi" boiler shop.
/229/	Daily statement Boiler shop "Santehdetal" from 17/10/09 to 18/10/09.
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/232/	Daily statement. Vatutina 676 boiler shop. Date: from 01/11/2006 to 02/11/2006.
/233/	Daily statement. Vatutina 676 boiler shop. Date: from 21/10/2006 to 22/10/2006.
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/236/	Daily journal of the registration of energy resources consumption for January 2006.
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/238/	Daily journal of the registration of energy resources consumption for January 2008.
/239/	Scheme of heat boiler shop of the "Odiag" company ЛГКП "Teplocomunenergo".
/240/	Scheme of "Osypenko-Raskovoi" boiler shop pipelines.



/241/	Scheme of AO3T "Santehdetal" Luhansk plant boiler shop pipelines.
/242/	Active energy meter type CA4Y-И672 #952.
/243/	Technical report of the inventory of pollutant emission sources at the enterprise ЛГКП "Теплокомуненерго".
/244/	Gas registration at ЛГКП "Теплокомуненерго" boiler shops.
/245/	Consumption gas registration at the boilers of "Odiag" company for February 2006.
/246/	Photo - Rosemount ser. #0242732
/247/	Photo - Rosemount ser.#3242794
/248/	Photo - SL7000 #53026432
/249/	Photo - SL7000 #53026601
/250/	Photo - SMART Commercial & Industrial meter #63026432
/251/	Photo - SMART Commercial & Industrial meter #63026611
/252/	Photo - SMART Commercial & Industrial meter #53026420
/253/	Photo - Block of uninterrupted power supply БП-1к
/254/	Photo - Evaluator of capacity flow and gas capacity ОЕ-22ДМ serial #0345
/255/	Photo - Evaluator of capacity flow and gas capacity ОЕ-22ДМ serial #0346
/256/	Photo - Boiler #7 ТБГ-8м reg. #6750; inv. #27811
/257/	Photo - ЛМКП "ТКЕ" DN100
/258/	Photo - CH #8 SL 7000 #53026432
/259/	Photo - CH #9 SL 7000 #53026420
/260/	Photo - Meter #045307
/261/	Photo - Meter #222618
/262/	Photo - Active energy meter #3134
/263/	Photo - Active energy meter #6863
/264/	Photo - ТБГ-8м #1 reg. #6903
/265/	Photo - Active САЧУ-И672М #136265
/266/	Photo - Active САЧУ-И672М #880326
/267/	Photo - ИП СР4У-И673М
/268/	Photo - Capacity gas corrector ОЕ.
/269/	Photo - Boiler ДКВР 10-13 #1 reg. #6864 dated 15/09/2009
/270/	Photo - Boiler ДКВР 10-13 #2 reg. #6865 dated 15/09/2009
/271/	Photo - Boiler shop inv. #24111

DETERMINATION REPORT

/272/	Photo - Boiler shop. Explosive category "Г".
/273/	Photo - Lithium battery
/274/	Photo - Ultrasonic gas meter "Курс-01" G650Б
/275/	Photo - Gas meter G 40 РГК-1/30-01
/276/	Photo - Reactive СРЧУ-И673М #929973
/277/	Photo - Reactive СРЧУ-И673М. №164333
/278/	Photo - CA4-195. #088174
/279/	Photo - CA4У-И672М. #349
/280/	Photo - СР4У-И673М
/281/	Photo - Meter #143859
/282/	Photo - Meter #349633. date of state verification: March 2004.
/283/	Photo - Active energy meter. Type CA4У-И672
/284/	Photo - Active energy meter. Type CA4У-И672М
/285/	Photo - Тандем. #1719, 2008
/286/	Registration wardrobe #1. #1000/5
/287/	Boiler shop electroscheme of "Santehdetal" plant
/288/	Photo. Boiler shop of city skin centre. LSCC "Теплокомуненерго"
/289/	Photo. Gas volume corrector. Tandem.
/290/	Daily record. Boiler shop. City skin centre. Date: from 17.10.2009 to 18.10.2009.
/291/	Daily record. Boiler shop. City skin centre. Date: from 25.10.2009 to 26.10.2009.
/292/	Daily record. Boiler shop. City skin centre. Date: from 15.10.2006 to 16.10.2006.
/293/	Daily record. Boiler shop. City skin centre. Date: from 17.10.2006 to 18.10.2006.
/294/	Photo. Meter. CA4-195. Inv. #36481.
/295/	Photo. Meter. Inv. #37744.
/296/	Photo. heating apparatus АОГВ-50 Э. Inv. #41284.
/297/	Photo. Meter. CA4-И678.
/298/	Photo. Boiler КСВА-3Г #2. Reg.#2277. Ser. #441. Inv. #34313.
/299/	Photo. Boiler КСВА-3Г #2. Reg.#2277. Ser. #440. Inv. #34312.
/300/	Photo. Electric motor of heat pump unit #3.
/301/	Photo. Gas volume corrector OE.



DETERMINATION REPORT

/302/	Photo. Lithium-type battery #05076.
/303/	Photo. Ultrasonic gas meter "Kurs-01" G160 A1.
/304/	Photo. Network pump #1.
/305/	Photo. Boost pump #2.
/306/	Daily records of boiler operators. Boiler shop Novopromyshlennaia from 14.10.2008.
/307/	Daily record. Boiler shop Novopromyshlennaia. Date: from 24.10.2008 to 25.10.2008.
/308/	Daily record. Boiler shop Novopromyshlennaia. Date: from 30.10.2008 to 31.10.2008.
/309/	Daily record. Boiler shop Novopromyshlennaia. Date: from 16.12.2006 to 17.12.2006.
/310/	Daily record. Boiler shop Novopromyshlennaia. Date: from 24.12.2006 to 25.12.2006.
/311/	Photo. Ultrasonic gas meter "Kurs-01" G40 A1.
/312/	Photo. Lithium-type battery.
/313/	Photo. Single-phase electronic meter of active electricity. "Meridian" COЭ-1.02/2KPT
/314/	Record of electricity. Tr-rs of current 50/5.
/315/	Photo. Meter ПГ-K-100. #8815.
/316/	Photo. Gas meter ПГ-K-100-0,1-4-5-Ex.
/317/	Photo. Boiler shop. SCC "Теплообеспечение".
/318/	Photo. Boiler #2. Reg. #2474.
/319/	Photo. Gas volume corrector. Tandem. CШ-28.
/320/	Photo. CШ-28. Inv. #82053.
/321/	Photo. Gas meter G ПГK-0,1-7-Ex.
/322/	Photo. Boiler #1. Reg. #2509.
/323/	Photo. Boiler #2. Reg. #2474.
/324/	Daily record. Boiler shop School #28. Date: from 02.11.2006 to 03.11.2006.
/325/	Daily record. Boiler shop School #28. Date: from 03.11.2006 to 04.11.2006.
/326/	Daily record. Boiler shop School #28. Date: from 25.10.2009 to 26.10.2009.
/327/	Daily record. Boiler shop School #28. Date: from 24.10.2009 to 25.10.2009.
/328/	Statement of services performance of transportation for October 2006 dated 31.10.2006.
/329/	Statement of services performance of gas transportation dated 01.11.2006.
/330/	Statement of transferring-acceptance of natural gas dated 30.11.2006.



DETERMINATION REPORT

/331/	Statement of transferring-acceptance of natural gas dated 31.12.2006.
/332/	Statement of transferring-acceptance of natural gas for heat energy production for budget enterprises dated 30.11.2007.
/333/	Statement of transferring-acceptance of natural gas for heat energy production for budget enterprises dated 31.10.2007.
/334/	Statement of transferring-acceptance of natural gas for heat energy production for budget enterprises dated 31.12.2007.
/335/	Statement of transferring-acceptance of natural gas for heat energy production for budget enterprises and other subjects dated 21.08.2007.
/336/	Statement of transferring-acceptance of natural gas for heat energy production for budget enterprises and other subjects dated 24.10.2007.
/337/	Statement of transferring-acceptance of natural gas for heat energy production for budget enterprises and other subjects dated 28.02.2007.
/338/	Statement of transferring-acceptance of natural gas for heat energy production for budget enterprises and other subjects dated 30.04.2007.
/339/	Statement of transferring-acceptance of natural gas for heat energy production for budget enterprises and other subjects dated 30.06.2007.
/340/	Statement of transferring-acceptance of natural gas for heat energy production for budget enterprises and other subjects dated 30.09.2007.
/341/	Statement of transferring-acceptance of natural gas for heat energy production for budget enterprises and other subjects dated 31.01.2007.
/342/	Statement of transferring-acceptance of natural gas for heat energy production for budget enterprises and other subjects dated 31.03.2007.
/343/	Statement of transferring-acceptance of natural gas for heat energy production for budget enterprises and other subjects dated 31.05.2007.
/344/	Statement of transferring-acceptance of natural gas for heat energy production for budget enterprises and other subjects dated 31.07.2007.
/345/	Statement of transferring-acceptance of natural gas for heat energy production for population needs dated 24.10.2007.
/346/	Statement of transferring-acceptance of natural gas for heat energy production for population needs dated 28.02.2007.
/347/	Statement of transferring-acceptance of natural gas for heat energy production for population needs dated 30.04.2007.
/348/	Statement of transferring-acceptance of natural gas for heat energy production for population needs dated 30.06.2007.
/349/	Statement of transferring-acceptance of natural gas for heat energy production for population needs dated 30.09.2007.
/350/	Statement of transferring-acceptance of natural gas for heat energy production for population needs dated 30.11.2007.
/351/	Statement of transferring-acceptance of natural gas for heat energy production for population needs dated 31.01.2007.
/352/	Statement of transferring-acceptance of natural gas for heat energy production for population needs dated 31.03.2007.
/353/	Statement of transferring-acceptance of natural gas for heat energy production for population needs dated 31.05.2007.



/354/	Statement of transferring-acceptance of natural gas for heat energy production for population needs dated 31.07.2007.
/355/	Statement of transferring-acceptance of natural gas for heat energy production for population needs dated 31.08.2007.
/356/	Statement of transferring-acceptance of natural gas for heat energy production for population needs dated 31.10.2007.
/357/	Statement of transferring-acceptance of natural gas for heat energy production for population needs dated 31.12.2007.
/358/	Statement of acceptance-transferring of natural gas dated 01.11.2006.
/359/	Statement of acceptance-transferring of natural gas dated 01.12.2006.
/360/	Statement of acceptance-transferring of natural gas dated 02.01.2007.
/361/	Statement of acceptance-transferring of natural gas dated 31.10.2006.
/362/	Statement of acceptance-transferring of natural gas according to the Contract dated 11.10.2006 #944 dated 31.10.2006.
/363/	Statement of acceptance-transferring of natural gas according to the Contract dated 31.10.2007 #Г-56/2007 dated 30.11.2007.
/364/	Statement of acceptance-transferring of natural gas according to the Contract dated 31.10.2007 #Г-56/2007 dated 31.12.2007.
/365/	Statement of amendment to the Statement of transferring-acceptance of natural gas for heat energy production for budget enterprises and other subjects for September 2007 dated 30.09.2007 dated 26.10.2007.
/366/	Statement of amendment to the Statement of transferring-acceptance of natural gas for heat energy production for budget enterprises and other subjects for July 2007 dated 21.08.2007 dated 26.10.2007.
/367/	Statement of amendment to the Statement of transferring-acceptance of natural gas for heat energy production for population needs for September 2007 dated 30.09.2007 dated 26.10.2007.
/368/	Statement of amendment to the Statement of transferring-acceptance of natural gas for heat energy production for population needs for July 2007 dated 31.07.2007 dated 26.10.2007.
/369/	Statement of amendment to the Statement of transferring-acceptance of natural gas for heat energy production for population needs for August 2007 dated 31.08.2007 dated 26.10.2007.
/370/	Statement of services performance of optimal supply plan realization of natural gas according to the Contract dated 31.10.2007 #Г-56/2007 dated 30.11.2007.
/371/	Statement of services performance of optimal supply plan realization of natural gas according to the Contract dated 31.10.2007 #Г-56/2007 dated 31.12.2007.
/372/	Statement of actual consumption of natural gas dated 01.03.2007.
/373/	Statement of actual consumption of natural gas dated 01.06.2007.
/374/	Statement of actual consumption of natural gas dated 01.08.2007.



/375/	Statement of actual consumption of natural gas dated 01.11.2007.
/376/	Statement of actual consumption of natural gas dated 02.04.2007.
/377/	Statement of actual consumption of natural gas dated 02.07.2007.
/378/	Statement of actual consumption of natural gas dated 02.10.2007.
/379/	Statement of actual consumption of natural gas dated 03.05.2007.
/380/	Statement of actual consumption of natural gas dated 04.09.2007.
/381/	Statement of actual consumption of natural gas according to the Technical agreement in 2008. Statement of transferring-acceptance of natural gas for heat energy production for budget enterprises and organizations and other consumers dated 24.03.2008. Statement of transferring-acceptance of natural gas for heating and hot water supply to population dated 24.03.2008. Statement #0000021 of acceptance-transferring of natural gas dated 31.01.2008. Statement #0000001 of ensuring of natural gas supply dated 31.01.2008.
/382/	Statement of actual consumption of natural gas according to the Technical agreement 03.03.2008. Statement of transferring-acceptance of natural gas for heat energy production for budget enterprises and organizations and other consumers dated 24.03.2008. Statement of transferring-acceptance of natural gas for heating and hot water supply to population dated 24.03.2008. Statement #0000061 of acceptance-transferring of natural gas dated 29.02.2008. Statement #0000002 of ensuring of natural gas supply dated 29.02.2008.
/383/	Statement of actual consumption of natural gas according to the Technical agreement dated 30.12.2007.
/384/	Statement of actual consumption of natural gas according to the Technical agreement dated 28.02.2009. Statement of transferring-acceptance of natural gas for heat energy production for budget enterprises and organizations and other consumers dated 28.02.2009. Statement of transferring-acceptance of natural gas for heating and hot water supply to population dated 28.02.2009. Calculation of industrial and process losses of ЛГКП "Теплокommunенерго" for February 2009. Inventory of gas flow for February 2009 of ЛГКП "Теплокommunенерго".
/385/	Statement of actual consumption of natural gas according to the Technical agreement dated 30.04.2009. Statement of transferring-acceptance of natural gas for heat energy production for budget enterprises and organizations and other consumers dated 30.04.2009. Statement of transferring-acceptance of natural gas for heating and hot water supply to population dated 30.04.2009. Calculation of industrial and process losses of ЛГКП "Теплокommunенерго" for April 2009. Inventory of gas flow for April 2009 of ЛГКП "Теплокommunенерго".
/386/	Statement of actual consumption of natural gas according to the Technical agreement dated 30.06.2008. Statement of transferring-acceptance of natural gas for heat energy production for budget enterprises and organizations and other consumers dated 30.06.2008.

DETERMINATION REPORT

/387/	Statement of actual consumption of natural gas according to the Technical agreement dated 30.06.2009. Statement of transferring-acceptance of natural gas for heat energy production for budget enterprises and organizations and other consumers dated 30.06.2009. Statement of transferring-acceptance of natural gas for heating and hot water supply to population dated 30.06.2009. Calculation of industrial and process losses of ЛГКП "Теплокommunenergo" for June 2009. Inventory of gas flow for June 2009 of ЛГКП "Теплокommunenergo".
/388/	Statement of actual consumption of natural gas according to the Technical agreement dated 30.09.2008. Statement of transferring-acceptance of natural gas for heat energy production for budget enterprises and organizations and other consumers dated 30.09.2008.
/389/	Statement of actual consumption of natural gas according to the Technical agreement dated 30.09.2009. Calculation of industrial and process losses of ЛГКП "Теплокommunenergo" for September 2009. Inventory of gas flow for September 2009 of ЛГКП "Теплокommunenergo".
/390/	Statement of actual consumption of natural gas according to the Technical agreement 30.11.2008. Statement of transferring-acceptance of natural gas for heat energy production for budget enterprises and organizations and other consumers dated 30.11.2008. Statement of transferring-acceptance of natural gas for heating and hot water supply to population dated 30.11.2008.
/391/	Statement of actual consumption of natural gas according to the Technical agreement 30.01.2009. Statement of transferring-acceptance of natural gas for heat energy production for budget enterprises and organizations and other consumers dated 31.01.2009. Statement of transferring-acceptance of natural gas for heating and hot water supply to population dated 31.01.2009. Calculation of industrial and process losses of ЛГКП "Теплокommunenergo" for January 2009. Inventory of gas flow for January 2009 of ЛГКП "Теплокommunenergo".
/392/	Statement of actual consumption of natural gas according to the Technical agreement 31.03.2008. Statement of transferring-acceptance of natural gas for heat energy production for population needs dated 31.03.2008. Statement of transferring-acceptance of natural gas for heat energy production for budget enterprises dated 31.03.2008. Statement #0000111 of acceptance-transferring of natural gas dated 31.03.2008. Statement #0000004 of ensuring of natural gas supply dated 31.03.2008.
/393/	Statement of actual consumption of natural gas according to the Technical agreement 31.03.2009. Statement of transferring-acceptance of natural gas for heat energy production for budget enterprises and organizations and other consumers dated 31.03.2009. Statement of transferring-acceptance of natural gas for heating and hot water supply to population dated 31.03.2009. Calculation of industrial and process losses of ЛГКП "Теплокommunenergo" for March 2009. Inventory of gas flow for March 2009 of ЛГКП "Теплокommunenergo".
/394/	Statement of actual consumption of natural gas according to the Technical agreement 31.05.2009. Statement of transferring-acceptance of natural gas for

DETERMINATION REPORT

	heat energy production for budget enterprises and organizations and other consumers dated 31.05.2009. Statement of transferring-acceptance of natural gas for heating and hot water supply to population dated 31.05.2009. Calculation of industrial and process losses of ЛГКП "Теплокommunенерго" for May 2009. Inventory of gas flow for May 2009 of ЛГКП "Теплокommunенерго".
/395/	Statement of actual consumption of natural gas according to the Technical agreement 31.07.2008. Statement of transferring-acceptance of natural gas for heat energy production for budget enterprises and organizations and other consumers dated 31.07.2008.
/396/	Statement of actual consumption of natural gas according to the Technical agreement 31.07.2009. Calculation of industrial and process losses of ЛГКП "Теплокommunенерго" for July 2009. Inventory of gas flow for July 2009 of ЛГКП "Теплокommunенерго".
/397/	Statement of actual consumption of natural gas according to the Technical agreement 31.08.2008. Statement of transferring-acceptance of natural gas for heat energy production for budget enterprises and organizations and other consumers dated 31.08.2008.
/398/	Statement of actual consumption of natural gas according to the Technical agreement 31.08.2009. Statement of transferring-acceptance of natural gas for heat energy production for budget enterprises and organizations and other consumers dated 31.08.2009. Statement of transferring-acceptance of natural gas for heating and hot water supply to population dated 31.08.2009. Calculation of industrial and process losses of ЛГКП "Теплокommunенерго" for August 2009. Inventory of gas flow for August 2009 of ЛГКП "Теплокommunенерго".
/399/	Statement of actual consumption of natural gas according to the Technical agreement 31.10.2007.
/400/	Statement of actual consumption of natural gas according to the Technical agreement 31.10.2008. Statement of transferring-acceptance of natural gas for heat energy production for budget enterprises and organizations and other consumers dated 31.10.2008. Statement of transferring-acceptance of natural gas for heating and hot water supply to population dated 31.10.2008.
/401/	Statement of actual consumption of natural gas according to the Technical agreement 31.12.2008.
/402/	Statement of actual consumption of natural gas according to the Technical agreement 30.04.2008. Statement of transferring-acceptance of natural gas for heat energy production for budget enterprises and organizations and other consumers dated 30.04.2008. Statement of transferring-acceptance of natural gas for heating and hot water supply to population dated 30.04.2008. Statement #0000187 of acceptance-transferring of natural gas dated 30.04.2008. Statement #0000008 of ensuring of natural gas supply dated 30.04.2008.
/403/	Statement of actual consumption of natural gas according to the Technical agreement 31.05.2008. Statement of transferring-acceptance of natural gas for heat energy production for budget enterprises and organizations and other



DETERMINATION REPORT

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/404/	Gas flow for February 2006 dated 01.02.2006.
/405/	Gas flow for February 2006 dated 02.02.2006.
/406/	Gas flow for February 2006 dated 03-05.02.2006.
/407/	Gas flow for February 2006 dated 06.02.2006.
/408/	Gas flow for February 2006 dated 07.02.2006.
/409/	Gas flow for February 2006 dated 08.02.2006.
/410/	Gas flow for February 2006 dated 09.02.2006.
/411/	Gas flow for February 2006 dated 10-12.02.2006.
/412/	Gas flow for February 2006 dated 13.02.2006.
/413/	Gas flow for February 2006 dated 14.02.2006.
/414/	Gas flow for February 2006 dated 15.02.2006.
/415/	Gas flow for February 2006 dated 16.02.2006.
/416/	Gas flow for February 2006 dated 17-19.02.2006.
/417/	Gas flow for February 2006 dated 20.02.2006.
/418/	Gas flow for February 2006 dated 21.02.2006.
/419/	Gas flow for February 2006 dated 22.02.2006.
/420/	Gas flow for February 2006 dated 23.02.2006.
/421/	Gas flow for February 2006 dated 24-26.02.2006.
/422/	Gas flow for February 2006 dated 27.02.2006.
/423/	Gas flow for February 2006 dated 28.02.2006.
/424/	Calculation of industrial and process losses of ЛГКП "Теплокommunенерго" for August 2007.
/425/	Calculation of industrial and process losses of ЛГКП "Теплокommunенерго" for December 2007.
/426/	Calculation of industrial and process losses of ЛГКП "Теплокommunенерго" for November 2007.
/427/	Calculation of industrial and process losses of ЛГКП "Теплокommunенерго" for October 2007.
/428/	Calculation of industrial and process losses of ЛГКП "Теплокommunенерго" for September 2007.
/429/	Inventory of gas flow for August 2007 of ЛГКП "Теплокommunенерго".
/430/	Inventory of gas flow for April 2007 of ЛГКП "Теплокommunенерго".
/431/	Inventory of gas flow for December 2006 of ЛГКП "Теплокommunенерго".



DETERMINATION REPORT

/432/	Inventory of gas flow for December 2007 of ЛГКП "Теплокommunenergo".
/433/	Inventory of gas flow for July 2007 of ЛГКП "Теплокommunenergo".
/434/	Inventory of gas flow for Junet 2007 of ЛГКП "Теплокommunenergo".
/435/	Inventory of gas flow for May 2007 of ЛГКП "Теплокommunenergo".
/436/	Inventory of gas flow for March 2007 of ЛГКП "Теплокommunenergo".
/437/	Inventory of gas flow for November 2006 of ЛГКП "Теплокommunenergo".
/438/	Inventory of gas flow for November 2007 of ЛГКП "Теплокommunenergo".
/439/	Inventory of gas flow for October 2006 of ЛГКП "Теплокommunenergo".
/440/	Inventory of gas flow for October 2007 of ЛГКП "Теплокommunenergo".
/441/	Inventory of gas flow for September 2007 of ЛГКП "Теплокommunenergo".
/442/	Inventory of gas flow for February 2007 of ЛГКП "Теплокommunenergo".
/443/	Inventory of gas flow for January 2007 of ЛГКП "Теплокommunenergo".
/444/	Information letter. Passport #28-4039 of physical and chemical indicators of natural gas for August 2006 dated 08.09.2006.
/445/	Photo - Boiler #70490
/446/	Photo - Boiler #70491
/447/	Photo - Meter #70500
/448/	Photo - Meter #086633

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/ Sukhach Svetlana – head of the department of housing and public utilities of Luhansk Sity Council
- /2/ Kolesnikov Pavel – chief manager of heat power unit
- /3/ Popov Alexander – chief engineer of operating unit
- /4/ Koryachkin Alexander – manager of heat power unit
- /5/ Grushko Anna - manager of heat power unit
- /6/ Savchenko Petr - manager of heat power unit
- /7/ Borodin Vasily - manager of heat power unit



DETERMINATION REPORT

APPENDIX A: DETERMINATION PROTOCOL

BUREAU VERITAS CERTIFICATION HOLDING SAS

Report No: UKRAINE/0048/2009 rev. 01

DETERMINATION REPORT - "REHABILITATION OF THE DISTRICT HEATING SYSTEM IN LUHANSK CITY"

JI PROJECT DETERMINATION PROTOCOL

Table 1 Mandatory Requirements for Joint Implementation (JI) Projects

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference to this protocol
1. The project shall have the approval of the Parties involved	Kyoto Protocol Article 6.1 (a)	CAR1 The project has no approval of the host Party. Verifiers' Note: JISC Glossary of JI terms/Version 01 defines the following: a) At least the written project approval(s) by the host Party(ies) should be provided to the AIE and made available to the secretariat by the AIE	Table 2, Section A.5



**BUREAU
VERITAS**

DETERMINATION REPORT

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference to this protocol
		<p>when submitting the determination report regarding the PDD for publication in accordance with paragraph 34 of the JI guidelines;</p> <p>(b) At least one written project approval by a Party involved in the JI project, other than the host Party(ies), should be provided to the AIE and made available to the secretariat by the AIE when submitting the first verification report for publication in accordance with paragraph 38 of the JI guidelines, at the latest.</p>	
<p>2. Emission reductions, or an enhancement of removal by sinks, shall be additional to any that would otherwise occur</p>	Kyoto Protocol Article 6.1 (b)	OK	Table 2, Section B
<p>3. The sponsor Party shall not acquire emission reduction units if it is not in compliance with its obligations under Articles 5 & 7</p>	Kyoto Protocol Article 6.1 (c)	OK	N/A
<p>4. The acquisition of emission reduction units shall be supplemental to domestic actions for the purpose of meeting commitments under Article 3</p>	Kyoto Protocol Article 6.1 (d)	OK	N/A
<p>5. Parties participating in JI shall designate national focal points for approving JI projects and have in place national guidelines and procedures for the approval of JI projects</p>	Marrakech Accords, JI Modalities, §20	National Environmental Investment Agency of Ukraine	
<p>6. The host Party shall be a Party to the Kyoto Protocol</p>	Marrakech	The Ukraine is a Party (Annex	



**BUREAU
VERITAS**

DETERMINATION REPORT

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference to this protocol
	Accords, JI Modalities, §21(a)/24	I Party) to the Kyoto Protocol and has ratified the Kyoto Protocol at April 12th, 2004.	
7. The host Party's assigned amount shall have been calculated and recorded in accordance with the modalities for the accounting of assigned amounts	Marrakech Accords, JI Modalities, §21(b)/24	This issue cannot be answered finally as it is out of the influence of the project participants. In the Initial Report submitted by Ukraine on 29. Dec. 2006 the AAUs are quantified with: 925 362 174.39 (x 5) tCO ₂ -e. (compare http://unfccc.int/national_report/initial_reports_under_the_kyoto_protocol/items/3765.php)	
8. The host Party shall have in place a national registry in accordance with Article 7, paragraph 4	Marrakech Accords, JI Modalities, §21(d)/24	The designed system of the national registry has been outlined in the Initial Report (see link above). This issue is out of the influence of the project owner. The National Registry is not a direct requirement for project registration.	
9. Project participants shall submit to the independent entity a project design document that contains all information needed for the determination	Marrakech Accords, JI Modalities, §31	OK	
10. The project design document shall be made publicly available	Marrakech	23 October 2009 - 21	



**BUREAU
VERITAS**

DETERMINATION REPORT

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference to this protocol
and Parties, stakeholders and UNFCCC accredited observers shall be invited to, within 30 days, provide comments	Accords, JI Modalities, §32	November 2009	
<p>11. Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, in accordance with procedures as determined by the host Party shall be submitted, and, if those impacts are considered significant by the project participants or the Host Party, an environmental impact assessment in accordance with procedures as required by the Host Party shall be carried out</p>	Marrakech Accords, JI Modalities, §33(d)	<p>Please, provide the necessary Environmental Impact Assessment for LCME “Teplocomunenergo” activity according to Ukrainian legislation.</p> <p>Technical report on inventory of contaminant emissions sources at the enterprise LCME “Teplocomunenergo” is presented in the Appendix 10 EIA of the PDD version 06. It was developed by PE “Firma Priroda” in 2007.</p> <p>For reconstructed objects that require Environmental Impact Assessment according to Ukrainian legislation PE “Firma Priroda” has developed EIA as a separate section of the project. Calculations of contaminant dispersion to atmosphere were made by the program complex “EOL plus” in accordance with requirements ОНД-86 “Methodology of calculation of</p>	Table 2, Section F



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VERITAS**

DETERMINATION REPORT

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference to this protocol
		concentration in atmosphere contaminant that containing in enterprisers emissions.	
12. The baseline for a JI project shall be the scenario that reasonably represents the GHG emissions or removal by sources that would occur in absence of the proposed project	Marrakech Accords, JI Modalities, Appendix B	OK	Table 2, Section B
13. A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances	Marrakech Accords, JI Modalities, Appendix B	OK	Table 2, Section B
14. The baseline methodology shall exclude to earn ERUs for decreases in activity levels outside the project activity or due to force majeure	Marrakech Accords, JI Modalities, Appendix B	OK	Table 2, Section B
15. The project shall have an appropriate monitoring plan	Marrakech Accords, JI Modalities, §33(c)	OK	Table 2, Section D
16. Are project participants authorized by a Party involved	JISC "Modalities of communication of Project Participants with the JISC" Version 01, Clause A.3	OK	Table 2, Section A



DETERMINATION REPORT

Table 2 Requirements Checklist

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
A. General Description of the project					
A.1 Title of the project					
A.1.1. Is the title of the project activity presented?	1, 2	DR	"Rehabilitation of the District Heating System in Luhansk City"	OK	OK
A.1.2. Is the current version number of the document presented?	1, 2	DR	Yes. Version 06	OK	OK
A.1.3. Is the date when the document was completed presented?	1, 2	DR	December 11, 2009	OK	OK
A.2. Description of the project					
A.2.1. Is the purpose of the project activity included?	1, 2	DR	<p>The following activities will ensure fuel saving:</p> <ul style="list-style-type: none"> - Replacement of old boilers by the new highly efficient boilers; - Switching of load from boiler-houses with obsolete equipment to modern equipped boiler houses; - Switching of boiler-houses from coal to natural gas; - Improving of the network organization; - Application of the pre-insulated pipes; - Installation of combined heat and power production units; - Replacement of heat exchangers; 	OK	OK



**BUREAU
VERITAS**

DETERMINATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			<ul style="list-style-type: none"> - Installation of heat pump station; - Installation of frequency controllers at electric drives of draught-blowing equipment and hot water pumps motors. 		
A.2.2. Is it explained how the proposed project activity reduces greenhouse gas emissions?	1, 2	DR	See section A.2 of the PDD. The project employs the increase in fuel consumption efficiency to reduce greenhouse gas emissions relative to current practice.	OK	OK
A.3. Project participants					
A.3.1. Are project participants and Party(ies) involved in the project listed?	1, 2	DR	Ukraine (Host party): LCME "Teplocomunenergo" Netherlands: "E – energy B.V."	OK	OK
A.3.2. Are project participants authorized by a Party involved?	1, 2, 10	DR	See section A. of PDD	OK	OK
A.3.3. The data of the project participants are presented in tabular format?	1, 2	DR	See section A.3 of the PDD	OK	OK
A.3.4. Is contact information provided in annex 1 of the PDD?	1, 2	DR	See Annex 1 of the PDD	OK	OK
A.3.5. Is it indicated, if it is the case, if the Party involved is a host Party?	1, 2	DR	Ukraine (Host Party)	OK	OK
A.4. Technical description of the project					


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VERITAS**

DETERMINATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
A.4.1. Location of the project activity					
A.4.1.1. Host Party(ies)	1, 2, 10	DR	Ukraine	OK	OK
A.4.1.2. Region/State/Province etc.	1, 2	DR	Luhansk region	OK	OK
A.4.1.3. City/Town/Community etc.	1, 2	DR	Luhansk City	OK	OK
A.4.1.4. Detail of the physical location, including information allowing the unique identification of the project. (This section should not exceed one page)	1, 2	DR	See section A.4.1.4 of the PDD	OK	OK
A.4.2. Technology(ies) to be employed, or measures, operations or actions to be implemented by the project					
A.4.2.1. Does the project design engineering reflect current good practices?	1, 2	DR	Yes. See section A.4.2 of the PDD.	OK	OK
A.4.2.2. Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used technologies in the host country?	1, 2	DR	Yes. See section A.4.2 of the PDD.	OK	OK
A.4.2.3. Is the project technology likely to be substituted by other or more efficient technologies within the project period?	1, 2	DR	Please, clarify in PDD if the project technology is likely to be substituted by other or more efficient technologies within the project period.	CL1	-
A.4.2.4. Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period?	1, 2	DR	Please, clarify in PDD if the project requires extensive initial training and maintenance efforts in order to work as presumed during the project period.	CL2	-
A.4.2.5. Does the project make provisions for meeting	1, 2	DR	Please, clarify in PDD if the project makes	CL3	



**BUREAU
VERITAS**

DETERMINATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
training and maintenance needs?			provisions for meeting training and maintenance needs		
A.4.3. 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					
A.4.3.1. Is it stated how anthropogenic GHG emission reductions are to be achieved? (This section should not exceed one page)	1, 2	DR	Yes. See section A.4.3 of the PDD	OK	OK
A.4.3.2. Is it provided the estimation of emission reductions over the crediting period?	1, 2	DR	Please, clarify project crediting period.	CL4	
A.4.3.3. Is it provided the estimated annual reduction for the chosen credit period in tCO ₂ e?	1, 2	DR	Yes. See section A.4.3 of the PDD	OK	OK
A.4.3.4. Are the data from questions A.4.3.2 to A.4.3.4 above presented in tabular format?	1, 2	DR	See section A.4.3.1 of the PDD. Please clarify why amount of the emission reduction in PDD and Appendixes is different.	CL5	
A.5. Project approval by the Parties involved					
A.5.1. Are written project approvals by the Parties involved attached?	1, 2, 10	DR	There is no evidence of written project approvals by the Parties involved. Pending until LoAs by Parties involved will be issued.	CAR1	
B. Baseline					



DETERMINATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
B.1. Description and justification of the baseline chosen					
B.1.1. Is the chosen baseline described?	1, 2, 5, 6	DR	Yes. See section B.1 of PDD.	OK	OK
B.1.2. Is it justified the choice of the applicable baseline for the project category?	1, 2, 5, 6	DR	Yes. See section B.1 of PDD.	OK	OK
B.1.3. Is it described how the methodology is applied in the context of the project?	1, 2, 5, 6	DR	Yes. See section B.1 of PDD.	OK	OK
B.1.4. Are the basic assumptions of the baseline methodology in the context of the project activity presented (See Annex 2)?	1, 2, 5, 6	DR	Yes. See section B.1 of PDD.	OK	OK
B.1.5. Is all literature and sources clearly referenced?	1, 2	DR	See section B.1 of the PDD. Please provide in this section reference on all sources of the data that was used for baseline approach, such as Lower Heating Value of a fuel (LHV), etc. The latest version of GUIDELINES FOR USERS OF THE JI PDD FORM is Version 04 but not Version 2.2.	CL6 CAR2	
B.2. Description of how the anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the JI project					
B.2.1. Is the proposed project activity additional?	1, 2, 5, 6, 7	DR	See section B.2 (step 3) of the PDD. Please specify which of the proposed technologies are widely used already in Ukraine?	CL7	



DETERMINATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
B.2.2. Is the baseline scenario described?	1, 2, 5, 6,7	DR	See section B.1 of the PDD. The business-as-usual scenario.	OK	OK
B.2.3. Is the project scenario described?	1, 2, 5, 6, 7	DR	Please provide in section B.2 of the PDD description of the project scenario.	CL8	
B.2.4. Is an analysis showing why the emissions in the baseline scenario would likely exceed the emissions in the project scenario included?	1, 2, 5, 6, 7	DR	See section B.2 of the PDD.	OK	OK
B.2.5. Is it demonstrated that the project activity itself is not a likely baseline scenario?	1, 2, 5, 6, 7	DR	See section B.2 of the PDD.	OK	OK
B.2.6. Are national policies and circumstances relevant to the baseline of the proposed project activity summarized?	1, 2, 5, 6, 7	DR	See section B.2 of the PDD.	OK	OK
B.3. Description of how the definition of the project boundary is applied to the project activity					
B.3.1. Are the project's spatial (geographical) boundaries clearly defined?	1, 2	DR	Please provide the project's spatial (geographical) boundaries in this section.	CL9	
B.4. Further baseline information, including the date of baseline setting and the name(s) of the person(s)/entity(ies) setting the baseline					
B.4.1. Is the date of the baseline setting presented (in DD/MM/YYYY)?	1, 2, 5, 6	DR	12/01/2007	OK	OK
B.4.2. Is the contact information provided?	1, 2	DR	See section B.4 of the PDD.	OK	OK



DETERMINATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			The baseline is determined by the Institute of Engineering Ecology (IEE), project developer and project partner and LCME "Teplocomunenergo", the project supplier.		
B.4.3. Is the person/entity also a project participant listed in Annex 1 of PDD?	1, 2	DR	See Annex 1 of the PDD	OK	OK
C. Duration of the small-scale project and crediting period					
C.1. Starting date of the project					
C.1.1. Is the project's starting date clearly defined?	1, 2	DR	Please clarify in PDD why the date 07/02/2006 was accepted as the project's starting date clearly defined?	CL10	
C.2. Expected operational lifetime of the project					
C.2.1. Is the project's operational lifetime clearly defined in years and months?	1, 2	DR	Please, provide the project's operational lifetime in years and months	CAR3	
C.3. Length of the crediting period					
C.3.1. Is the length of the crediting period specified in years and months?	1, 2	DR	Date December 31, 2026 can not be determined as date of the crediting period end. Date of the crediting period end is December 31, 2012.	CL11	
D. Monitoring Plan					
D.1. Description of monitoring plan chosen					
D.1.1. Is the monitoring plan defined?	1, 2, 4, 5, 6	DR	See section D.1 of the PDD.	OK	OK
D.1.2. Option 1 – Monitoring of the emissions in the	1, 2,	DR	Yes. See section D.1.1 of the PDD.	OK	OK



**BUREAU
VERITAS**

DETERMINATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
project scenario and the baseline scenario.	4, 5, 6				
D.1.3. Data to be collected in order to monitor emissions from the project, and how these data will be archived.	1, 2, 4, 5, 6	DR	Refer to section D.1.1.1 of the PDD.	OK	OK
D.1.4. Description of the formulae used to estimate project emissions (for each gas, source etc.; emissions in units of CO2 equivalent).	1, 2, 4, 5, 6	DR	Refer to section D.1.1.2 of PDD.	OK	OK
D.1.5. Relevant data necessary for determining the baseline of anthropogenic emissions of greenhouse gases by sources within the project boundary, and how such data will be collected and archived.	1, 2, 4, 5, 6	DR	Refer to section D.1.1.3 of PDD. Please clarify procedure of measuring of average inside temperature during the heating season.	CL12	
D.1.6. Description of the formulae used to estimate baseline emissions (for each gas, source etc, emissions in units of CO2 equivalent).	1, 2, 4, 5, 6	DR	Refer to section D.1.1.4 of PDD.	OK	OK
D.1.7. Option 2 – Direct monitoring of emissions reductions from the project (values should be consistent with those in section E)	1, 2, 4, 5, 6	DR	N/A	OK	OK
D.1.8. Data to be collected in order to monitor emission reductions from the project, and how these data will be archived.	1, 2, 4, 5, 6	DR	N/A	OK	OK
D.1.9. Description of the formulae used to calculate emission reductions from the project (for each gas, source etc.; emissions/emission reductions in units of CO2 equivalent).	1, 2, 4, 5, 6	DR	Refer to section D.1.2.2 of PDD.	OK	OK
D.1.10. If applicable, please describe the data and	1, 2,	DR	N/A	OK	OK



DETERMINATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
information that will be collected in order to monitor leakage effects of the project.	4, 5, 6				
D.1.11. Description of the formulae used to estimate leakage (for each gas, source etc.; emissions in units of CO2 equivalent).	1, 2, 4, 5, 6	DR	N/A	OK	OK
D.1.12. Description of the formulae used to estimate emission reductions for the project (for each gas, source etc.; emissions in units of CO2 equivalent).	1, 2, 4, 5, 6	DR	Refer to section D.1.4 of PDD	OK	OK
D.1.13. Is information on the collection and archiving of information on the environmental impacts of the project provided?	1, 2, 4, 5, 6	DR, I	See section D.1.5 of PDD.	OK	OK
D.1.14. Is reference to the relevant host Party regulation(s) provided?	1, 2, 4, 5, 6	DR, I	Please, provide reference to the relevant host Party regulation(s) See section D.1.5 of PDD	CL13	
D.1.15. If not applicable, is it stated so?	1, 2, 4,	DR, I	Reference to section D.1.14 (CL) above	-	-
D.2. Qualitative control (QC) and quality assurance (QA) procedures undertaken for data monitored					
D.2.1. Are there quality control and quality assurance procedures to be used in the monitoring of the measured data established?	1, 2, 4	DR	See section D.2 of the PDD. Please provide uncertainty level of inside temperature. Please provide reference on relevant national standards.	CL14 CL15	
D.3. Please describe of the operational and management					



DETERMINATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
structure that the project operator will apply in implementing the monitoring plan					
D.3.1. Is it described briefly the operational and management structure that the project participants(s) will implement in order to monitor emission reduction and any leakage effects generated by the project activity	1, 2	DR	See section D.3 of the PDD.	OK	OK
D.4. Name of person(s)/entity(ies) establishing the monitoring plan					
D.4.1. Is the contact information provided?	1, 2	DR	IEE: Institute of Engineering Ecology Kyiv, Ukraine. Dmitri Paderno Vice director, PhD. Phone: (+38 044) 453 28 62 Fax: (+38 044) 456 92 62 e-mail: engeco@kw.ua ME "Luhanskski teplovi merezhi": LCME "Teplocomunenergo": Luhansk, Ukraine. Oleksiy Rusakov, Director. Phone: (+38 0642 52-03-43)	OK	OK



DETERMINATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
			Fax: (+38 0642 52-73-67) e-mail: lgkp@yandex.ru		
D.4.2. Is the person/entity also a project participant listed in Annex 1 of PDD?	1, 2	DR	See Annex 1 of the PDD.	OK	OK
E. Estimation of greenhouse gases emission reductions					
E.1. Estimated project emissions					
E.1.1. Are described the formulae used to estimate anthropogenic emissions by source of GHGs due the project?	1, 2, 4	DR	Description of the formulae used to estimate anthropogenic emissions by source of GHGs due the project is not provided.	CAR4	-
E.1.2. Is there a description of calculation of GHG project emissions in accordance with the formula specified in for the applicable project category?	1, 2, 4	DR	See Appendixes 1-6 of the PDD.	OK	OK
E.1.3. Have conservative assumptions been used to calculate project GHG emissions?	1, 2, 4	DR	Please clarify if conservative assumptions are used to calculate project GHG emissions	CL16	
E.2. Estimated leakage					
E.2.1. Are described the formulae used to estimate leakage due to the project activity where required?	1, 2, 4	DR	Leakage is not expected.	OK	OK
E.2.2. Is there a description of calculation of leakage in accordance with the formula specified in for the applicable project category?	1, 2, 4	DR	Refer to E.2.1 above.	-	-
E.2.3. Have conservative assumptions been used to calculate leakage?	1, 2, 4	DR	Refer to E.2.1 above.	-	-
E.3. The sum of E.1 and E.2.					



**BUREAU
VERITAS**

DETERMINATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
E.3.1. Does the sum of E.1 and E.2 represent the project activity emissions?	1, 2, 4	DR	Refer to E.2.1 above.	-	
E.4. Estimated baseline emissions					
E.4.1. Are described the formulae used to estimate the anthropogenic emissions by source of GHGs in the baseline using the baseline methodology for the applicable project category?	1, 2, 4	DR	Description of formulae used to estimate the anthropogenic emissions by source of GHGs in the baseline using the baseline methodology for the applicable project category is not provided.	CAR5	
E.4.2. Is there a description of calculation of GHG baseline emissions in accordance with the formula specified in for the applicable project category?	1, 2, 4	DR	See Appendix 8 of the PDD.	OK	OK
E.4.3. Have conservative assumptions been used to calculate baseline GHG emissions?	1, 2, 4	DR	Please clarify in section E.4 of PDD if conservative assumptions are used to calculate baseline GHG emissions	CL17	
E.5. Difference between E.4. and E.3. representing the emission reductions of the project					
E.5.1. Does the difference between E.4. and E.3. represent the emission reductions due to the project during a given period?	1, 2, 4	DR	Refer to E.5 of the PDD.	OK	OK
E.6. Table providing values obtained when applying formulae above					
E.6.1. Is there a table providing values of total CO ₂ abated?	1, 2, 4	DR	Table presented in section E.6 of the PDD	OK	OK
F. Environmental Impacts					
F.1. Documentation on the analysis of the environmental					



**BUREAU
VERITAS**

DETERMINATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
impacts of the project, including transboundary impacts, in accordance with procedures as determined by the host Party					
F.1.1. Has an analysis of the environmental impacts of the project been sufficiently described?	1, 2, 4	DR, I	See section F.1 of PDD. Please clarify procedure of the old equipment recycling	CL18	
F.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is and EIA approved?	1, 2, 4	DR, I	Please, clarify if are any requirements for an Environmental Impact Assessment (EIA)?	CL19	
F.1.3. Are the requirements of the National Focal Point being met?	1, 2, 4	DR, I	Please clarify are the requirements of the National Focal Point being met?	CL20	
F.1.4. Will the project create any adverse environmental effects?	1, 2, 4	DR, I	Adverse environmental effects are not expected.	OK	OK
F.1.5. Are transboundary environmental considered in the analysis?	1, 2, 4	DR, I	Transboundary effects are not considered (no effect can be deduced only). Please, specify if the project has no transboundary impact. If no, clarify why it is not expected.	CAR6	
F.1.6. Have identified environmental impacts been addressed in the project design?	1, 2, 4	DR, I	See section F of the PDD. Adverse environmental effects are not expected.	OK	OK
G. Stakeholders' comments					
G.1.Information on stakeholders' comments on the project, as appropriate					



BUREAU
VERITAS

DETERMINATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
G.1.1. Is there a list of stakeholders from whom comments on the project have been received?	1, 2	DR	Section G.1 of PDD	OK	OK
G.1.2. The nature of comments is provided?	1, 2	DR	Section G.1 of PDD	OK	OK
G.1.3. Has due account been taken of any stakeholder comments received?	1, 2	DR	Section G.1 of PDD	OK	OK

Table 3 Baseline and Monitoring Methodologies: Own format

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
1. Baseline Methodology					
1. 1. General					
1.1.1. Does the baseline cover emissions from all gases, sectors and source categories listed in Annex A, and anthropogenic removals by sinks, within the project boundary?	1, 2, 5, 6	DR I	Section B.3 of the PDD establishes project boundaries. Only CO2 emissions are taken into account by the project.	OK	OK
1.1.2. Is baseline established on a project-specific basis	1, 2,	DR	A multi-project emission factor is used for baseline	OK	OK



DETERMINATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
and/or using a multi-project emission factor?	5, 6	I	establishing.		
1.1.3 Is baseline established in a transparent manner with regard to the choice of approaches, assumptions, methodologies, parameters, data sources and key factors?	1, 2, 5, 6	DR I	All CLs and CARs to the baseline are provided in item B (Table 2) above.	-	-
1.1.4 Is baseline established taking into account relevant national and/or sectoral policies and circumstances, such as sectoral reform initiatives, local fuel availability, power sector expansion plans, and the economic situation in the project sector?	1, 2, 5, 6	DR	All relevant national and/or sectoral policies and circumstances were taken into account.	OK	OK
1.1.5 Is baseline established in such a way that ERUs cannot be earned for decreases in activity levels outside the project activity or due to <i>force majeure</i> ?	1, 2, 5, 6	DR I	Baseline does not envisage earning ERUs for activity level decrease outside the project or due to <i>force majeure</i> .	OK	OK
1.1.6 Is baseline established taking account of uncertainties and using conservative assumptions?	1, 2, 5, 6	DR I	See Annex 3 of the PDD.	OK	OK
1.2. Additionality					
1.2.1. Was the additionality of the project activity demonstrated and assessed?	1, 2, 5, 6, 7	DR	See section B.2.1 (CL) above.	-	-
2. Monitoring Methodology					
2.1. Monitoring plan					
2.1.1. Is a monitoring plan included?	1, 2, 5, 6	DR I	Yes, monitoring plan is included.	OK	OK
2.1.2. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for estimating or measuring anthropogenic emissions by sources and/or anthropogenic removals by sinks of	1, 2, 5, 6	DR I	Refer to section D.1.1.1 of PDD.	OK	OK



DETERMINATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
greenhouse gases occurring within the project boundary during the crediting period?					
2.1.3. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining the baseline of anthropogenic emissions by sources and/or anthropogenic removals by sinks of greenhouse gases within the project boundary during the crediting period?	1, 2, 5, 6	DR I	Refer to item D.1.5 (CL) above.	-	-
2.1.4. Does the monitoring plan provide for the identification of all potential sources of, and the collection and archiving of data on increased anthropogenic emissions by sources and/or reduced anthropogenic removals by sinks of greenhouse gases outside the project boundary that are significant and reasonably attributable to the project during the crediting period?	1, 2, 5, 6	DR	Increase of anthropogenic emissions outside the project boundary that are significant and reasonably attributable to the project during the crediting period is not anticipated.	OK	OK
2.1.5. Does the project boundary encompass all anthropogenic emissions by sources and/or removals by sinks of greenhouse gases under the control of the project participants that are significant and reasonably attributable to the JI project?	1, 2, 5, 6	DR	Significant anthropogenic emissions by sources and/or removals by sinks of greenhouse gases under the control of the project participants are envisaged by the project. Validated onsite.	OK	OK
2.1.6. Does the monitoring plan provide for the collection and archiving of information on environmental impacts, in accordance with procedures as required by the host Party, where applicable?	1, 2, 5, 6	DR	See section D.1.5 of PDD.	OK	OK
2.1.7. Does the monitoring plan provide for quality assurance and control procedures for the monitoring process?	1, 2, 5, 6	DR	See section D.2.1 (CL, CL) above.	-	-
2.1.8. Does the monitoring plan provide for procedures for the periodic calculation of the reductions of	1, 2, 5, 6	DR I	The monitoring plan provides formulae for the periodic calculation of the reductions of	OK	OK



DETERMINATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
anthropogenic emissions by sources and/or enhancements of anthropogenic removals by sinks by the proposed JI project, and for leakage effects, if any?			anthropogenic emissions (see section D.1.1.2.). Leakage is not applicable.		
2.1.9. Does the monitoring plan provide for documentation of all steps involved in the calculations?	1, 2, 5, 6	DR I	Yes, the monitoring plan provide for documentation of all steps involved in the calculations.	OK	OK
2.2. Quality Control (QC) and Quality Assurance (QA) Procedures					
2.2.1. Did all measurements use calibrated measurement equipment that is regularly checked for its functioning?	1, 2, 5, 6	DR I	Control of the measuring equipment is implemented and followed, that was validated onsite.	OK	OK
2.2.2 Is frequency of monitoring the parameters defined?	1, 2, 5, 6	DR I	Frequency of monitoring the parameters is defined.	OK	OK

Table 4 Legal requirements

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
1. Legal requirements					
1.1. Is the project activity environmentally licensed by the competent authority?	1, 2	DR, I	Proposed project activity is not capital construction. Please clarify in PDD is the project activity environmentally licensed by the competent authority.	CL21	
1.2. Are there conditions of the environmental permit? In case of yes, are they already being met?	1, 2	DR, I	Please clarify in PDD if conditions of the environmental permit are met?	CL22	



DETERMINATION REPORT

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl	Final Concl
1.3. Is the project in line with relevant legislation and plans in the host country?	1, 2	DR, I	See items 1.1 (CL) and 1.2 (CL) above	-	-

Table 5 Resolution of Corrective Action and Clarification Requests

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
<u>Corrective Action Request 1 (CAR1):</u> There is no evidence of written project approvals by the Parties involved. Pending until LoAs by Parties involved will be issued.	Table 2, checklist question A.5.1.	Ministry for Environmental Protection of Ukraine issued the Letter of Endorsement for this JI project (# 11569/11/10-07 from 24.10.2007). According to the procedure, the LoAs by Parties involved will be issued after the project determination.	This CAR will be closed after report finalizing
<u>Corrective Action Request 2 (CAR2):</u> The latest version of GUIDELINES FOR USERS OF THE JI PDD FORM is Version 04 but not Version 2.2.	Table 2, checklist question B.1.5.	Reference on the latest version of GUIDELINES FOR USERS OF THE JI PDD FORM was corrected in the PDD version 06	PDD version 06 was checked. Issue is closed.
<u>Corrective Action Request 3 (CAR3):</u> Please, provide the project's operational lifetime in years and months	Table 2, checklist question C.2.1.	The nominal lifetime of the new boilers is - 20 years. The real average lifetime of the new network equipment is estimated to be up to 30 – 40 years. Thus the expected operational lifetime of the project may be about 30 years. According to conservatism principle, for further calculations we assume operational	PDD version 06 was checked. Issue is closed.



DETERMINATION REPORT

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
		lifetime for the project equal to 20 years or 240 months (2007-2026). See PDD version 06.	
<u>Corrective Action Request 4 (CAR4):</u> Description of the formulae used to estimate anthropogenic emissions by source of GHGs due the project is not provided.	Table 2, checklist question E.1.1	Formulae presented in D.1.4. are used to estimate anthropogenic emissions by source of GHGs due the project. Results of the corresponding calculations made with using of these formulae are listed in Appendices 1 - 8. These calculations are based on equipment efficiency increasing. Parameters' names corresponding to these formulae are pointed out in Appendices 1 - 8. See also section B of the PDD.	Issue is closed.
<u>Corrective Action Request 5 (CAR5):</u> Description of formulae used to estimate the anthropogenic emissions by source of GHGs in the baseline using the baseline methodology for the applicable project category is not provided.	Table 2, checklist question E.4.1.	Formulae presented in D.1.4. are used to estimate the anthropogenic emissions by source of GHGs in the baseline. Results of the corresponding calculations made with using of these formulae are listed in Appendices 1 - 8. These calculations are based on equipment efficiency increasing. Parameters' names corresponding to these formulae are pointed out in Appendices 1 - 8. See also section B of the PDD.	Issue is closed.
<u>Corrective Action Request 6 (CAR6):</u> Transboundary effects are not considered (no effect can be deduced only).	Table 2, checklist question	Emissions are mainly localised not far from the source sites. Transboundary effects may appear only in	Issue is closed.



DETERMINATION REPORT

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
Please, specify if the project has no transboundary impact. If no, clarify why it is not expected.	F.1.5,	the case of maximum permissible emissions (MPE) of contaminant to atmosphere exceeding. There were no MPE exceeding fixed at the LCME "Teplocomunenergo".	
Clarification Request 1 (CL1): Please, clarify in PDD if the project technology is likely to be substituted by other or more efficient technologies within the project period.	Table 2, checklist question A.4.2.3.	Taking into account the overall economic situation, it is not likely that the project technology will be substituted with any more efficient technology in the next 20 - 30 years. As to the first commitment period from 2008 to 2012, it is ensured that there is absolutely no risk that this technology will be substituted by any other technology during this time. Included in PDD version 06.	PDD version 06 was checked. Issue is closed.
Clarification Request 2 (CL2): Please, clarify in PDD if the project requires extensive initial training and maintenance efforts in order to work as presumed during the project period.	Table 2, checklist question A.4.2.4.	As far as the main activity of LCME "Teplocomunenergo" will not change in course of the JI project implementation, the special technical trainings for personnel are not necessary. The technical personnel of the enterprise has sufficient knowledge and experience for implementation of the project activity and maintenance of the usual equipment. In cases of the new (never used at this enterprise before), equipment installation, the company - producer of this equipment should provide trainings for personnel.	PDD version 06 was checked. Issue is closed.



DETERMINATION REPORT

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
		<p>LCME “Teplocomunenergo” provides personnel retraining according to the labour protection norms. The enterprise has the Labour protection department, which is responsible for raising the level of personnel skills and trainings.</p> <p>The special training on the data collection according to Monitoring plan for this project was hold by the IEE, and the special group that consisted of representatives of LCME “Teplocomunenergo” and Institute of Engineering Ecology was organized. Included in PDD version 06.</p>	
<p>Clarification Request 3 (CL3): Please, clarify in PDD if the project makes provisions for meeting training and maintenance needs.</p>	<p>Table 2, checklist question A.4.2.5.</p>	<p>The special training on the data collection for Monitoring reports for this project is provided. Cost of it is included into the total price of PDD development.</p> <p>As far as the main activity of LCME “Teplocomunenergo” will not change in course of the JI project implementation, the special training and maintenances are not necessary. Included in PDD version 06.</p>	<p>PDD version 06 was checked. Issue is closed.</p>
<p>Clarification Request 4 (CL4): Please, clarify project crediting period.</p>	<p>Table 2, checklist question</p>	<p>Total estimated amount of emissions reduction for which ERUs will be received during 2008 – 2012 (commitment period) - is</p>	<p>OK</p>



DETERMINATION REPORT

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
	A.4.3.2.	about: 401295.6 tCO ₂ eq. Total estimated amount of emissions reduction that will be received during 2008 – 2026 (crediting period) - is about: 2733126.2 tCO ₂ eq. See PDD version 06.	
<p>Clarification Request 5 (CL5): Please clarify why amount of the emission reduction in PDD and Appendixes is different.</p>	Table 2, checklist question A.4.3.4.	<p>Different amount of the emission reduction in PDD and Appendixes appeared due to rounding error. For example, Total amount of the emission reduction in Appendix_7 was calculated as the sum of emission reductions due to different implemented measures, and it is 165687.9 t CO₂ for 2012 year.</p> <p>Total amount of the emission reduction in Appendix_8 was calculated as the difference of Baseline emissions and Project emissions 165687.3 t CO₂ for 2012 year Included in PDD version 06.</p>	
<p>Clarification Request 6 (CL6): Please provide reference on all sources of the data that was used for baseline approach, such as Lower Heating Value of a fuel (LHV), etc.</p>	Table 2, checklist question B.1.5.	<p>For determination of Lower Heating Value of natural gas LCME “Teplocomunenergo” uses data, provided by gas supply organization on the base of physical-chemical indexes passports. These passports are transferred monthly and contain as many values of LHV as many times it has changed.</p> <p>Average Lower Heating Value of natural gas that was used for baseline approach was</p>	Issue is closed.



DETERMINATION REPORT

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
		<p>calculated as average value of data that was provided by DE "Ukrtransgas" for 2006. See section B.1 of the PDD version 06.</p> <p>For example in August 2006 LHV of natural gas was:</p> <p>Gas Distribution Station (GDS) Balagovka, Dyakovo – 8082, 8144 Kcal/m³;</p> <p>GDS -2 Luhansk - 7891 Kcal/m³;</p> <p>GDS – Rubezhnoe, Severodonetsk, N-Astrahan – 8062, 8034, 8097 Kcal/m³.</p> <p>Thus Average Lower Heating Value in August 2006 was 8052 Kcal/m³.</p>	
<p>Clarification Request 7 (CL7): Please specify which of the proposed technologies are widely used already in Ukraine?</p>	<p>Table 2, checklist question B.2.3.</p>	<p>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 reconstruction 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,</p>	<p>Issue is closed.</p>



DETERMINATION REPORT

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
		installation of frequency controllers and CHP units. The technology of Heat Pump Station deployment at municipal DH systems was not used before in Ukraine. Included in PDD version 06.	
Clarification Request 8 (CL8): Please provide in section B.2 of the PDD description of the project scenario.	Table 2, checklist question B.2.3.	The anthropogenic emissions of GHG in the project scenario will be reduced due to complex modernization of heat generating and distributing equipment with application of the technologies proposed in the project activities and described above, which include replacement of old obsolete boilers by new ones with higher efficiency, replacement of obsolete coal-fired boilers by the modern gas-fired ones, frequency controllers installation, installation of cogeneration units and heat pump station at the boiler houses, renovation of degraded heat distribution networks with using of the pre-insulated pipes. Planned emissions according to the project scenario are shown at the Fig. 8. of the PDD version 06.	Issue is closed.
Clarification Request 9 (CL9): Please provide the project's spatial	Table 2, checklist	The project's spatial (geographical) boundaries coincide with territory of Luhansk	PDD version 06 was checked. Issue is closed.



DETERMINATION REPORT

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
(geographical) boundaries in this section.	question B.3.1.	city that is divided into 4 administrative districts: Leninskiy, Zhovtneviy, Kaminebrodskiy and Artemivskiy. LCME "Teplocomunenergo" is divided into 4 applicable branches. The district heating systems from all territorial districts of the Luhansk city are involved in this project. See section B.3 of the PDD.	
Clarification Request 10 (CL10): Please clarify in PDD why the date 07/02/2006 was accepted as the project's starting date clearly defined?	Table 2, checklist question C.1.1.	The date 07/02/2006 was accepted as the project's starting date because on this date the agreement was signed between the LCME "Teplocomunenergo" and the Institute of Engineering Ecology on development of the Joint Implementation Project on Green House Gas Emissions Reduction due to fuel saving through rehabilitation of the district heating system of Luhansk city. See PDD version 06	PDD version 06 was checked. Issue is closed.
Clarification Request 11 (CL11): Date December 31, 2026 can not be determined as date of the crediting period end. Date of the crediting period end is December 31, 2012.	Table 2, checklist question B.3.1.	Date December 31, 2026 is the scheduled date of the crediting period end for this JI project. Date December 31, 2012 is the date of the first commitment period end, and not of the general crediting period. See: "'Crediting period' has not been expressly defined for Joint Implementation	Issue is closed.



DETERMINATION REPORT

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
		<p>(JI) projects. The crediting period is the period during which emission reductions from the baseline are verified, either according to national guidelines (Track 1) or by an accredited independent entity (AIE) (Track 2), for the purpose of issuance of emission reduction units (ERUs) to project participants. The crediting period can continue past 2012, subject to the approval of the host Party, and the status of any ERUs generated after this time is subject to an agreement by the UNFCCC relating to the post-2012 period.” http://www.jirulebook.org/3265 According to Order #33 of National Environmental Investment Agency of Ukraine from 25.06.2008 “On approval of requirements for joint implementation projects preparation”. Article 2.9. Crediting period – period in years, during which the owner of a source, where JI project is realized, has to transfer to Purchaser verified reduction of anthropogenic GHG emissions, that was received as a result of this project.</p>	
Clarification Request 12 (CL12):	Table 2,	As we are interested firstly in that the	Issue is closed.



DETERMINATION REPORT

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
Please clarify procedure of measuring of average inside temperature during the heating season.	checklist question D.1.5.	<p>normative inside temperature is met or not, the apparent values are determined only for the case of non-meeting.</p> <p>Average inside temperature during the heating season is estimated from the sum of returned payments caused by insufficient heating (in case of normative level (18 °C) is not satisfied)</p> <p>Above 18 °C – is treated as 18 °C (according to the conservatism principle) and as meeting the normative.</p> <p>Below 18 °C – is treated as not meeting the normative, and is calculated as below.</p> <p>According to “Rules of rendering of heat and hot water supply service to population” № 1497 from 30.12.1997, the enterprises must make the return payments to population for delivery less than necessary amount of heat. The normative inside temperature should be not lower than 18 °C.</p> <p>Amount of the return payment is:</p> <ul style="list-style-type: none"> – 5% from normative payment for every degree from 18 to 12 °C; – 10% from normative payment for every degree from 12 to 5 °C; – when inside temperature is lower than 5 °C the payment is to be returned completely. 	



DETERMINATION REPORT

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
		<p>Therefore the inside temperature will be calculated by formulae: If $R = 0$ (according to conservatism principle for the baseline assume $R < 0.05$): $T_{in b} = 18 \text{ }^{\circ}\text{C}$. If $0.05 < R \leq 0.3$ NP: $T_{in b} = 18 - (R/5) \text{ } [^{\circ}\text{C}]$ If $0.3 \text{ NP} < R < \text{NP}$: $T_{in b} = 12 - [(R - 0.3 \text{ NP})/10] \text{ } [^{\circ}\text{C}]$ where: R - % of return payment from NP; NP – amount of normative payment. Thus if the inside temperature will be $18 \text{ }^{\circ}\text{C}$ or higher we will accept it as $18 \text{ }^{\circ}\text{C}$ according to conservatism principle, if it will be lower than $18 \text{ }^{\circ}\text{C}$ it will be calculated from return payments by the methodology presented before. See section 4.4 of the Annex 3. Monitoring plan.</p>	
<p>Clarification Request 13 (CL13): Please, provide reference to the relevant host Party regulation(s)</p>	<p>Table 2, checklist question D.1.14.</p>	<p>Law of Ukraine # 1264-XII “On environmental protection” from 25.06.1991 Law of Ukraine # 2707-XII “On atmospheric air protection” from 16.10.1992. Actual rules on emissions limitation: “Norms of limit admissible emissions of pollution</p>	<p>Issue is closed.</p>

DETERMINATION REPORT

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
		agents from stationary sources” – adopted by Ministry for Environmental Protection of Ukraine 27.06.2006, #309 issued Ministry of and registered in Ministry of Justice of Ukraine 01.09.2006, #912/12786. See section D.1.5 of PDD	
Clarification Request 14 (CL14): Please provide uncertainty level of inside temperature.	Table 2, checklist question D.2.1.	Uncertainty level of inside temperature was added to the section D.2 of the PDD version 06.	PDD version 06 was checked. Issue is closed.
Clarification Request 15 (CL15): Please provide reference on relevant national standards.	Table 2, checklist question D.2.1.	“Rules of rendering of heat and hot water supply service to population” № 1497 from 30.12.1997, See section 4.4 of the Monitoring plan.	Issue is closed.
Clarification Request 16 (CL16): Please clarify if conservative assumptions are used to calculate project GHG emissions	Table 2, checklist question E.1.3.	The following conservative assumption is used to calculate project and baseline GHG emissions: Average inside temperature during the heating season above the normative level (18 °C) is treated as 18 °C (according to the conservatism principle) and as meeting the normative. In the PDD calculations, by the conservatism principle, the minimal guaranteed effects from all energy saving measures were taken in to	PDD version 06 was checked. Issue is closed.



DETERMINATION REPORT

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
		<p>account .</p> <p>Also, emission reductions from implemented measures were calculated only for the next years after energy saving measures implementation. In fact result in the form of emissions reduction is achieved immediately after energy saving measures implementation in the year of reconstruction, especially if it was done at the beginning of the year.</p> <p>See PDD version 06.</p>	
<p>Clarification Request 17 (CL17): Please clarify in section E.4 of PDD if conservative assumptions are used to calculate baseline GHG emissions</p>	<p>Table 2, checklist question E.4.3.</p>	<p>The following conservative assumption is used to calculate baseline and project GHG emissions:</p> <p>Average inside temperature during the heating season above the normative level (18 °C) is treated as 18 °C (according to the conservatism principle) and as meeting the normative.</p> <p>As far as baseline is dynamic and may changes for any project year, calculation of baseline GHG emissions will be realized for every reported year on the base of the "Monitoring methodology developed for "District Heating" projects in Ukrainian conditions" described in the section D of</p>	<p>PDD version 06 was checked. Issue is closed.</p>



DETERMINATION REPORT

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
		PDD. This Methodology contains adjustment factors which have an influence on the baseline in accordance with principle of conservatism (see section B of PDD).	
Clarification Request 18 (CL18): Please clarify procedure of the old equipment recycling	Table 2, checklist question F.1.1.	According to the "Law on waste products", (article 17) "Obligations of economical activity subjects in sphere of waste treatment" - enterprises must apply statistic reports on waste creating, gathering, transporting keeping, treating, utilizing, decontaminating and excreting. - provide complete gathering, appropriate keeping and non-admission waste destruction and spoilage, for utilization of which there is an appropriate technology in Ukraine. Reasoning from aforesaid LCME "Teplocomunenergo" delivers old equipment to metal recycling. See section F.2 of PDD version 06.	PDD version 06 was checked. Issue is closed.
Clarification Request 19 (CL19): Please, clarify if are any requirements for an Environmental Impact Assessment (EIA)	Table 2, checklist question F.1.2.	Requirements for Environmental Impact Assessment are listed in the State Building Norms of Ukraine A.2.2-1-2003. LCME "Teplocomunenergo" has the appropriately approved Environmental Impact	Issue is closed.



DETERMINATION REPORT

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
		Assessments (EIA) for all capital constructions. See section F.1 of PDD version 06.	
<p>Clarification Request 20 (CL20): Please clarify are the requirements of the National Focal Point being met?</p>	Table 2, checklist question F.1.3.	<p>The main requirement of National Focal Point is that JI Project must not lead to deterioration of environment condition in the place of project location. This requirement is completely executed.</p> <p>See Order #33 of National Environmental Investment Agency of Ukraine from 25.06.2008 “On requirements approval for join implementation projects preparation”.</p>	Issue is closed.
<p>Clarification Request 21 (CL21): Proposed project activity is not capital construction. Please clarify in PDD is the project activity environmentally licensed by the competent authority.</p>	Table 4, legal requirements, question 1.1.	LCME “Teplocomunenergo” has all necessary environmental permissions for its activity according to Ukrainian legislation. See Appendix_10 of PDD. The special permissions are not required if project doesn’t anticipate capital reconstructions.	OK. Issue is closed.
<p>Clarification Request 22 (CL22): Please clarify in PDD if conditions of the environmental permit are met?</p>	Table 4, legal requirements, question 1.2.	According to Ukrainian legislation LCME “Teplocomunenergo” gets “Permission for emissions” ones per 5 years. For getting this permission it is necessary to calculate maximum permissible emission (MPE). If actual emissions exceed MPE, enterprise will be penalized.	Issue is closed.



DETERMINATION REPORT

Draft report clarifications and corrective action requests by determination team	Ref. to checklist question in tables 2, 3 and 4	Summary of project owner response	Determination team conclusion
		<p>Indicators calculated in the “Technical report on inventory of contaminant emissions sources at the enterprise LCME “Teplocomunenergo” that was developed by PE “Firma Priroda” for 2007 year are not exceed MPE and “Permission for emissions” # 90303.</p> <p>Thus conditions of the environmental permit already are met.</p>	





ANNEX B: VERIFIERS CV's

Nadiya Kaiiun, M. Sci. (environmental science)

Team Leader Climate Change Verifier

Bureau Veritas Ukraine HSE Department project manager.

She has graduated from National University of Kyiv-Mohyla Academy with the engineer Degree in Environmental Science. She is a Lead auditor of Bureau Veritas Certification for Environment Management System (IRCA registered). She performed over 15 audits since 2008. She has undergone intensive training on Clean Development Mechanism /Joint Implementation and she is involved in the validation of 6 JI projects.

Oleg Skoblyk, Specialist (Energy Management)

Climate Change Verifier

Bureau Veritas Ukraine HSE Department project manager.

He has graduated from National Technical University of Ukraine 'Kyiv Polytechnic University' with specialty Energy Management. He is a Lead auditor of Bureau Veritas Certification for Environment Management System (IRCA registered). He performed over 10 audits since 2008. He has undergone intensive training on Clean Development Mechanism /Joint Implementation and he is involved in the validation of 3 JI projects.

Kateryna Zinevych, M. Sci. (environmental science)

Climate Change Verifier

Bureau Veritas Ukraine HSE Department project manager.

She has graduated from National University of Kyiv-Mohyla Academy with the engineer Degree in Environmental Science. She is a Lead auditor of Bureau Veritas Certification for Environment Management System (IRCA registered). She performed 6 audits since March of 2009. She has undergone intensive training on Clean Development Mechanism /Joint Implementation and she is involved in the validation of 3 JI projects.

The determination report was reviewed by:



DETERMINATION REPORT

Ivan G. Sokolov, Dr. Sci. (biology, microbiology)

Bureau Veritas Certification Internal reviewer

He has over 25 years of experience in Research Institute in the field of biochemistry, biotechnology, and microbiology. He is a Lead auditor of Bureau Veritas Certification for Environment Management System (IRCA registered), Quality Management System (IRCA registered), Occupational Health and Safety Management System, and Food Safety Management System. He performed over 130 audits since 1999. Also he is Lead Tutor of the IRCA registered ISO 14000 EMS Lead Auditor Training Course, and Lead Tutor of the IRCA registered ISO 9000 QMS Lead Auditor Training Course. He has undergone intensive training on Clean Development Mechanism /Joint Implementation and he is involved in the validation of 3 JI projects.