



Industrie Service

# Final Determination Report

Determination  
of

“Rehabilitation of the District Heating System in  
Donetsk Region”,  
JI Project, Ukraine

**Report No. 831042, revision 1**

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TÜV Süd  
Industrie Service GmbH  
Carbon Management Service  
Westendstr. 199 - 80686 Munich - GERMANY



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<b>Executing Operational Unit:</b>		TÜV SÜD Industrie Service GmbH Carbon Management Service Westendstr. 199 80686 Munich Germany		
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<b>Summary:</b>				
<p>The Certification Body "Climate and Energy" of TÜV SÜD Industrie Service GmbH has been ordered by Regional Municipal Enterprise "Donetskteplocomunenergo", Ukraine, to determine the above mentioned JI-project in Ukraine.</p> <p>The determination of this project has been performed by document reviews, interviews by e-mail and on-site inspections, audits at the locations of the project and interviews at the offices of the project owner.</p> <p>As the result of this procedure, it can finally be confirmed that the project is in line with the requirements set by the Marrakech Accords and the Kyoto Protocol after solving the two outstanding issues and preparing some additional documents (annexes) for uploading the project at JI-SC website.</p> <p>Then TÜV SÜD will recommend this project for registration at the JI Supervisory committee.</p> <p>The assessment team reviewed the estimation of the projected emission reductions. We can confirm that the indicated amount of emission reductions of 854 586 tons CO<sub>2e</sub> (to be issued as ERUs) in the intended first crediting period from 2008 - 2012 (the first Commitment Period of the Kyoto Protocol lasts from 2008-2012), resulting in annual emission reductions of 170 917 tons CO<sub>2e</sub>, represents a reasonable estimation using the assumptions given by the project documents.</p>				
Work carried out by:	Thomas Kleiser (project manager, lead auditor) Olga Mikhaylyuk (local expert)		Internal Quality Control by: Werner Betzenbichler, Javier Castro	



## Abbreviations

<b>CAR</b>	Corrective action request
<b>CR</b>	Clarification request
<b>DOE</b>	Designated Operational Entity
<b>DNA</b>	Designated National Authority
<b>DP</b>	Determination Protocol
<b>EIA / EA</b>	Environmental Impact Assessment / Environmental Assessment
<b>ER</b>	Emission reduction
<b>ERU</b>	Emission Reduction Unit
<b>GHG</b>	Greenhouse gas(es)
<b>IRR</b>	Internal Rate of Return
<b>JI</b>	Joint Implementation
<b>KP</b>	Kyoto Protocol
<b>LoA</b>	Letter of Approval
<b>MP</b>	Monitoring Plan
<b>MS</b>	Management System
<b>NGO</b>	Non Governmental Organisation
<b>NPV</b>	Net Present Value
<b>PDD</b>	Project Design Document
<b>SC</b>	Supervisory Committee
<b>VVM</b>	Validation and Verification Manual

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## 1 INTRODUCTION

### 1.1 Objective

Ukrainian company Regional Municipal Enterprise “Donetskteplocomunenergo”, based in Donetsk, Ukraine has commissioned TÜV SÜD Industrie Service Carbon Management Service to conduct a determination of the “Rehabilitation of the District Heating System in Donetsk Region”, JI Project, Ukraine with regard to the relevant requirements for JI project activities. The determination serves as a conformity test of the project design and is a requirement for all JI projects. In particular, the project's baseline, the monitoring plan (MP), and the project's compliance with relevant UNFCCC and host country criteria are validated in order to confirm that the project design as documented is sound and reasonable and meets the stated requirements and identified criteria. Determination is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of emission reductions (in particular ERUs - in the first commitment period under the Kyoto Protocol).

UNFCCC criteria refer to the Kyoto Protocol Article 6 criteria and the Guidelines for the implementation of Article 6 of the Kyoto Protocol as agreed in the Marrakech Accords.

### 1.2 Scope

The determination scope is defined as an independent and objective review of the project design document (PDD), 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. TÜV SÜD has, based on the recommendations in the Validation and Verification Manual (see [www.vvmanual.info](http://www.vvmanual.info)), employed a risk-based approach in the determination, focusing on the identification of significant risks for project implementation and the generation of emission reductions.

This report is based on the PDD version of June 2<sup>nd</sup>, 2006 (PDD version No. 2.0). This version was published in the context of the Global Stakeholder Process (GSP) on the website of [www.netinform.de](http://www.netinform.de). Potential stakeholders have been invited for commenting on the project by using the Climate-L announcement list service.

According to CARs and CRs indicated in the audit process and discussions during the on-site audit the client decided to revise the PDD. The revised (and adjusted to JI-SC format) version of the PDD was published in a second stakeholder process from November 16<sup>th</sup>, 2006 to December 15<sup>th</sup>, 2006 (version 03). Again potential stakeholders have been invited for commenting using [www.netinform.de](http://www.netinform.de) (link see chapter 4). Furthermore the project was published in parallel on JI-SC website (Reference –No. 0007). No comments were received. After this there have been some additional minor changes. The final PDD version (version 05) from April 16<sup>th</sup>, 2007 serves as the basis for the final conclusions presented herewith.

Studying the existing project documentation, it was obvious that the competence and capability of the validation team has to cover at least the following aspects:

- Knowledge of Kyoto Protocol and the Marrakech Accords



- Environmental and Social Impact Assessment
- Skills in environmental auditing (ISO 14000, EMAS)

All changes aim at a clarification of open issues and have resulted in a conclusive argumentation in the final PDD version. The changes are not considered to be significant with respect to the qualification of the project as a JI project - as they rather have helped to clarify single aspects. Hence no repetition of the public stakeholder process has taken place.

Studying the existing documentation belonging to this project, it was obvious that the competence and capability of the determination team has to cover at least the following aspects:

- Knowledge of Kyoto Protocol and the Marrakech Accords
- Environmental and Social Impact Assessment
- Skills in environmental auditing (ISO 14000, EMAS)
- Quality assurance
- All technical aspects of district heating system as well as fuel switch and efficiency improvement
- Baseline concepts (project specific approach)
- Monitoring concepts
- Political, economical and technical random conditions in host country

According to these requirements TÜV SÜD has composed a project team in accordance with the appointment rules of the TÜV certification body "climate and energy":

**Thomas Kleiser** is head of division CDM and JI at TÜV Industrie Service GmbH. In this position he is responsible for validation, verification and certifications processes for GHG mitigation projects as well as trainings for internal auditors. He has already conducted more than 80 validations and verifications of CDM and JI projects.

**Olga Mikhaylyuk** participated as local auditor in the audit and functioned as local expert. Olga has received extensive training in the CDM and JI validation (determination) processes.

Furthermore other experts of the Munich team of TÜV SÜD's Carbon Management Service have been partially involved in the project audit.

The audit team covers the above mentioned requirements as follows:

- Knowledge of Kyoto Protocol and the Marrakech Accords (both)
- Environmental and Social Impact Assessment (both)
- Skills in environmental auditing (ISO 14000, EMAS) – (both)
- Quality assurance (both)
- All technical aspects of district heating system as well as fuel switch and efficiency improvement (Kleiser)



- Baseline concepts (project specific approach) - both
- Monitoring concepts (both)
- Political, economical and technical random conditions in host country

In order to have an internal quality control of the project, a team of the following persons has been composed by the certification body "climate and energy":

- Werner Betzenbichler (head certification body "climate and energy")
- Javier Castro (deputy certification body "climate and energy")

### 1.3 GHG Project Description

The Ukrainian JI project "Rehabilitation of the District Heating System in Donetsk Region" is aimed to the rehabilitation and replacement of the existing heat generating and heat distribution equipment at several sites in Donetsk City and Donetsk region (in total 24 sites). The main measures to improve the existing district heating system are

- Replacement of old boilers by the new highly efficient boilers
- Upgrading of boilers' burners
- Switching of boiler-houses from coal and fuel oil to natural gas
- Improving of the network organization, application of the new insulation and the pre-insulated pipes
- Installation of combined heat and power plants
- Installation of frequency controllers at smoke exhauster and hot water pumps engines.

Thus the project will improve district heating systems efficiency remarkably, contribute to fuel-saving and thus lead to a significant reduction of greenhouse gas emissions.

The starting date of the project activity was January 2004, when the technical design of the project has been defined and the measures have been designed. Already in this initial phase there has been a contact to Austrian CDM/JI program as a financing if the whole project is not possible without JI revenues. First technical measures have been implemented in a test phase in 2004 already. But real emission reductions are only taken into account from measures implemented since middle of year 2006. The last measures will be finalised in December 2008.

Crediting period under JI is from January 1<sup>st</sup>, 2008 until December 31<sup>st</sup>, 2007.

For the period from middle of 2006 until end of 2007 ERUs as AAUs will be claimed according to the national guidelines and procedures of Ukraine.

The project has three official project participants. The Project Participants of the Host Country Ukraine are RME "Donetskteplocomunenergo" from Donetsk and the "Institute of Engineering Ecology" from Kyiv. Project participant from the sponsor country Lithuania is C JSC "E energija".

The project documentation, especially baseline and monitoring plan, have been developed by the "Institute of Engineering Ecology" in Kyiv, Ukraine together with German company "SVT" in Bous, Germany.



## 2 METHODOLOGY

In order to ensure transparency, a determination protocol was customised for the project, according to the Validation and Verification Manual (VVM). The protocol shows, in a transparent manner, criteria (requirements), means of verification and the results from validating the identified criteria. The determination protocol serves the following purposes:

- It organises, details and clarifies the requirements a JI project is expected to meet;
- It ensures a transparent determination process where TÜV SÜD has documented how a particular requirement has been validated and the result of the determination.

The determination protocol consists for this project of three tables. The different columns in these tables are described in Figure 1.

The completed determination protocol is enclosed in Annex 1 to this report.





<b>Determination Protocol Table 1: Mandatory Requirements</b>			
<b>Requirement</b>	<b>Reference</b>	<b>Conclusion</b>	<b>Cross reference</b>
<i>The requirements the project must meet.</i>	<i>Gives reference to the legislation or agreement where the requirement is found.</i>	<i>This is either acceptable based on evidence provided (OK), or a <b>Corrective Action Request (CAR)</b> of risk or non-compliance with stated requirements. The corrective action requests are numbered and presented to the client in the determination report. <b>O</b> is used in case of an outstanding, currently not solvable issue, <b>AI</b> means Additional Information is required.</i>	<i>Used to refer to the relevant checklist questions in Table 2 to show how the specific requirement is validated. This is to ensure a transparent determination process.</i>

<b>Determination Protocol Table 2: Requirement checklist</b>				
<b>Checklist Question</b>	<b>Reference</b>	<b>Means of verification (MoV)</b>	<b>Comment</b>	<b>Draft and/or Final Conclusion</b>
<i>The various requirements in Table 1 are linked to checklist questions the project should meet. The checklist is organised in six different sections. Each section is then further sub-divided. The lowest level constitutes a checklist question.</i>	<i>Gives reference to documents where the answer to the checklist question or item is found.</i>	<i>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.</i>	<i>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.</i>	<i>This is either acceptable based on evidence provided (OK), or a <b>Corrective Action Request (CAR)</b> due to non-compliance with the checklist question (See below). <b>Clarification</b> or <b>Additional Information</b> is used when the independent entity has identified a need for further clarification or more information.</i>

<b>Determination Protocol Table 3: Resolution of Corrective Action and Clarification Requests</b>			
<b>Draft report clarifications and corrective action and additional Information requests</b>	<b>Ref. to checklist question in table 2</b>	<b>Summary of project owner response</b>	<b>Determination conclusion</b>
<i>If the conclusions from the draft determination are either a Corrective Action Request or a Clarification or Additional Information Request, these should be listed in this section.</i>	<i>Reference to the checklist question number in Table 2 where the Corrective Action Request or Clarification or Additional Information Request is explained.</i>	<i>The responses given by the Client or other project participants during the communications with the independent entity should be summarised in this section.</i>	<i>This section should summarise the independent entity's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".</i>



## 2.1 Review of Documents

The project participants submitted a PDD comprising baseline study and monitoring plan on Jun2 2<sup>nd</sup>, 2006. A review for all these documents has been performed in order to identify all issues for discussion during the follow-up on-site visit, interviews and exchange of information by e-mail and by phone. Subsequently revised project documentation, additional background documents related to the national regulations in the energy and district heating sector in Ukraine, requirements for stakeholder consultation and EIA and information concerning social and environmental impacts of the project have been submitted during the following months to the determinator which have been undergone renewed document review. In November 2006 a revised PDD adjusted to JI-PDD format requirements with completed baseline study and monitoring plan and additionally final documents such as information on networks and boilers “Technical Description” and a “Business Plan” have been submitted to TÜV SÜD. After this some minor changes have been carried out. The final revised PDD was then submitted to the determinator on April 16<sup>th</sup>, 2007.

## 2.2 Follow-up Interviews

In the period from June 6<sup>th</sup>, 2005 until June 8<sup>th</sup>, 2006 TÜV SÜD performed o-site interviews (in Donetsk, in Donetsk region and parallel to a conference in Sevastopol, Crimea) with project participants and stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of Regional Municipal Enterprise “Donetskteplocomunenergo” as project owner, representatives of the “Institute of Engineering Ecology” and German company SVT as project developers and technical consultants and further employees from different district heating networks have been interviewed face-to-face or later via e-mails.

The main topics of the interviews are summarised in Table 1. The complete and detailed list of all persons interviewed will be enclosed in Annex 2 as Information Reference List.

**Table 1: Interview topics**

Interviewed organisation	Interview topics
Regional Municipal Enterprise “Donetskteplocomunenergo”,	Project design, baseline, monitoring plan, environmental impacts, stakeholder comments, additionality, monitoring procedures, calibration of the measurement equipment, documentation, archiving of data, approval procedures, starting date of the project, crediting period
“Institute of Engineering Ecology” and SVT	Baseline, monitoring plan, environmental impacts, stakeholder comments, approval of the projects, environmental impacts, stakeholder comments, national and sectoral policy; approval procedures, monitoring plan, responsibilities, archiving of data



## **2.3 Resolution of Clarification and Corrective Action Requests**

The objective of this phase of the determination is to resolve the requests for corrective actions and clarification and any other outstanding issues which need to be clarified in order to achieve a positive conclusion during the assessment process. Clarification Requests raised by TÜV SÜD have been resolved totally by the revision of the project documentation submitted April 2007. Furthermore additional documents have been submitted separately in order to provide the required evidences. To guarantee the transparency of the determination process, the concerns raised and the responses given are summarised in chapter 3 below. The whole process is documented in more detail in the determination protocol in Annex 1.



### 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 summarised. A much more detailed record of these findings can be found in the Final Determination Protocol in Annex 1.
- 2) Where TÜV SÜD has identified issues that needed clarification or that represented a risk to the fulfilment of the project objectives, a Clarification or Corrective Action Request, respectively, has 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 Annex 1. Furthermore in some topics the given information was not comprehensive enough so that the determination team required Additional Information. In total there were 5 corrective action requests, 15 clarification requests as well as tow outstanding issues which need to be solved until uploading the project for final registration (approval) at JI-supervisory committee.
- 3) Where Clarification and Corrective Action Requests have been issued, the response by the project participants to resolve these requests is summarized in the determination report.
- 4) The conclusions of the determination are presented consecutively.

#### 3.1 Project Design

##### 3.1.1 Findings

A project documentation consisting of a baseline study and a monitoring plan as well as information concerning information on requirements for EIAs, need for stakeholder consultation and information of municipal /City of Donetsk) as well as regional (Donetsk Oblast) authorities as well as financial figures demonstrating the additionality of the project have been submitted to the validator.

The project's spatial boundaries and the components of the project are not completely and transparently described overall in chapter A.2 and B.2.. There are some inconsistencies in the PDD concerning involved sites, used fuel at the different sites and considered measures for improvement of the district heating system in this project. Also the question of considering the internal electricity consumption of the new equipment and question whether it is envisaged to feed-in surplus electricity in the grid is not finally solved.

The project boundaries include three types of emission reductions: Carbon dioxide emission reductions by fuel switch, carbon dioxide reductions by efficiency improvement of the district heating system (new burners, new boilers, CHPs, new pre-insulated pipelines; installation of frequency controllers at smoke exhauster and hot water pumps engines) as well as reduction of consumed electricity delivered from the grid.



The employed technology does reflect current good practice in the host country and hence the project uses state of the art technology. The renewing of the district heating system, installation of more efficient boilers and new burners, the installation of CHPs for heat and electricity production are standard procedures in Ukraine and staff is trained or will be trained and will hence have the required experience in operating such a system.

Two parties are involved in this project: Ukraine as host country and Lithuania as sponsor country.

Ukraine has already appointed its national focal point to UNFCCC and nominated the responsible persons for the approval of JI projects. Furthermore Ukraine has published its guidelines and procedures for the approval of JI projects. The date of ratification of the Kyoto Protocol was April 12th, 2004. A national focal point will be appointed soon. The future responsible person is already nominated.

Lithuania has also appointed its national focal point to UNFCCC but currently still not published its national guidelines and procedures for the approval of JI projects.

Currently no LOAs are available from the involved parties, neither from Ukraine nor from Lithuania. A pre-condition for issuing the LoAs is in both cases a positive determination opinion in this report.

The project currently is approved verbally by the responsible municipal and regional authorities.

In the PDD January 1<sup>st</sup>, 2004 is outlined as starting date (starting of planning) of the project. First measures as test already have been implemented in 2004 in the context of a test phase. Emission reductions are generated since mid of 2006. The project claims for ERUs in the 5 years from 2008 – 2012 and before 8 (according to the Ukrainian Guidelines) for AAUs. The project currently is fully in line with the envisaged time-schedule.

### **3.1.2 Issued CARs/CRs**

#### Outstanding Issue No. 1:

Documents demonstrating the approval of the project from both countries (Ukraine and Lithuania) have to be presented to the audit team before the project can finally be uploaded on JI-SC website for registration (approval).

#### Response:

A basic requirement for the LoAs from Ukraine and Lithuania will be a positive determination opinion in the final determination report.

#### Outstanding Issue No. 2:

Before the project can receive a LoA from Lithuania national guidelines and procedures for the approval of JI projects by Lithuania have to be published.



Response:

The guidelines are still not available. This outstanding issue is out of the influence of the project participants

Corrective Action Request No. 1:

The information concerning the project boundaries, envisaged measures at the different sites, time schedule, involved boiler houses should be updated and completed, elaborated more detailed and illustrated via additional figures.

Response:

The required information was submitted to the determinator in the annexes and included in the PDD as far as possible.

Clarification Request No. 1:

The responsibilities in the project should be described more detailed in the project documentation. Furthermore it should be elaborated more detailed in which way staff will be trained for the operation of the new equipment.

Response:

The responsibilities for the monitoring could be found out during the on-site visit and have been confirmed by the new submitted documents with more detailed information. The responsibility for the project lies totally in the hand Regional Municipal Enterprise “Donetskteplocomun-energo”.

### **3.1.3 Conclusion**

A pre-condition for the LoAs, both from host as well as from the sponsor party, is a positive determination opinion in this determination report. The approval and publishing of the national Lithuanian guidelines and procedures of approval of JI projects is beyond the time horizon of the determination and must be considered as being outstanding. Otherwise the required clarifications and corrective action requests have been solved and the project fulfils the belonging criteria set for the approval of JI-projects.

## **3.2 Baseline and Additionality**

### **3.2.1 Findings**

JI-Supervisory committee foresees that the project applies an already approved baseline methodology for CDM projects in case such a methodology is available for the project type assessed herewith. For this project no approved baseline methodology is available but an approach from the Austrian CDM/JI programme which already has been used in former projects under the Austrian CDM/JI programme.



Thus for the improvement of the efficiency of the district heating system the methodology of JI Project "District heating system rehabilitation of Chernigiv Region", submitted to Dutch ERUPT-4, and validated by TÜEV-IS was applied. For the part "reduction of electricity consumption from the grid" an approach from Dutch Erupt-4 tender has been used.

The project developer thus subsequently has applied the generic baseline methodology concept as defined for the Austrian JI/CDM Programme and also in the ERUPT guidelines.

The baseline is established in a project specific manner and refers to the consumption, the specific carbon emission factors and the low heating values of the utilized fuels.

Carbon emission factor for the Ukrainian grid on annual basis are adopted correctly from the SENTER TOR (ERUPT 4 and 5) and guidelines, further parameters are adopted from international standard literature.

The baseline does take into account the major national and/or sectoral policies, macro-economic trends and political developments. Relevant key factors are described in a clear and transparent manner and their impact on the baseline and the project risk is evaluated in the main. The description includes economic, legal, political and technological factors. But currently the argumentation is not adequate ensured as the business plan is not completed and the argumentation in the PDD is not conclusive and assured enough. Furthermore some background information concerning the national policy is still missing.

The discussion and selection of the baseline methodology per se is considered to be transparent although the project developer does not refer to any specific project type defined in the guidelines mentioned above. All data used is specified and documented.

The calculations given in the project documentastion are plausible given the technical equipment to be installed. But no evidence has been given until now whether the prognosed amount of methane used for electricity generation is a realistic and conservative one. Sources to prove this should be added. Thus the baseline discussion is not complete in total and not transparent enough.

The baseline represent a likely scenario in the non-project case as it conforms to all legal requirements and the prevailing practice in the Ukrainian district heating sector.

The assessment team has found convincing evidence that demonstrates that the project is not a business as usual project in the district heating sector in Ukraine and even Europe.

It is demonstrated plausibly that the project is combined with significant investment costs for the investing company. Thus without JI-revenues the project would not be feasible for the investing company or it's timetabe had to be set back at least.

Without the pre-financing using the Kyoto Mechanisms and selling the prospective ERUs to a tender in advance the project with it's provided schedule would be too risky and thus not feasible for the project owwner and investor.

To be fully in line with the requirements of the CDM assessment tool for demonstration of additionality which also is applied for JI projects nevertheless further information needs to be given. Further information has to be added in the revised financial calculations.





### 3.2.2 Issued CARs/CRs

#### Clarification Request No. 2:

The theoretical discussion and selection of the baseline methodology is plausible, but not considered as transparent and complete enough currently and thus should be elaborated more detailed, more transparently, plausibly and re-traceably

#### Response:

The requested clarification and additional information has been submitted to the determinator during the on-site audit. Additional information has been also submitted as Annexes to the PDD.

#### Clarification Request No. 3:

The baseline has to be worked out more transparently and should always be based on conservative assumptions and calculations.

This means in detail:

All sources and effects have to be included. Fundamentals for the calculations must be added as annexes necessarily, sources must be documented re-traceably and plausibly. Excel-Sheets with the underlying rationales should be submitted to the determinator.

#### Response:

The requested clarification and additional information has been submitted to the determinator during the on-site audit. Additional information has been also submitted as Annexes to the PDD.

#### Clarification Request No. 4:

The spatial level of data (sources for example for emission factors, efficiency of old (and new) equipment etc.) should be explained more detailed and added to the PDD at least in annexes.

#### Response:

The requested clarification and additional information has been included in the final PDD and further been completed in the annexes to the PDD.

#### Clarification Request No. 5:

The baseline of the project is the "business as usual" scenario. The discussion and determination of the chosen baseline should be elaborated more detailed.

This means in detail:

Cogent and demonstrative reasons should be given in the PDD (maybe the lifetime of the existing equipment, national legislation etc.) that the continuation of the current practice is a realistic scenario.

Moreover further information should be added to demonstrate that in the last years (period 2000-2003) no major improvements of the district heating system have been conducted (information concerning renewed boilers, renewed pipelines, major maintenance works etc.) and





that the assumption to use the year 2003 as baseline year is justified and was not an extraordinary year.

Response:

The requested clarification has been submitted to the determinator and is included in the final PDD as well as in the annexes.

Corrective Action Request No. 2

Additional information on current electricity consumption and electricity consumption of the new equipment is needed. Sources for the assumptions in the calculations have to be submitted to the determinator.

Response:

The requested clarification and additional information has been included in the final PDD and further been completed and confirmed in the annexes to the PDD.

Corrective Action Request No. 3

It should be demonstrated and argued that there are no requirements by the national legislation or local authorities to switch from oil or coal to gas or to renew boilers older than 25 years (for security reasons).

The specific significance of factors as relevant national and/or sectoral policy, macro-economic trends and political aspirations (in this case for example the likely cogeneration law and the possible influence on the project) should be elaborated more detailed and a compendium of the implemented considerations should be included.

Response:

The requested information and corrections have been submitted to the determinator.

Clarification Request No. 6:

Information/figures concerning the investment comparison analysis should be added.

This means in detail:

A detailed cash flow analyses including IRR, NPV with and without influence of cash inflows from selling AAUs/ERUs (2007 – 2012) should be presented for the project.

Evidence should be given regarding the consideration of JI during the phase of considering project realization.

The influence of JI registration should be described and argued more detailed and transparent.

The extended business plan should be added to the PDD (as confidential annex).

Response:

The requested information and clarification has been submitted to the determinator.



Clarification Request No. 7:

The major risks for the project (lack of money, increasing gas prices, changes in national legislation etc.) should be elaborated more detailed,

Response:

The requested information and clarification has been submitted to the determinator.

Clarification Request No. 8:

The major risks for the project (lack of money, increasing gas prices, changes in national legislation etc.) should be elaborated more detailed,

Response:

The information has been given to the determinator and is deemed to be sufficient

### 3.2.3 Conclusion

All responses given to the indicated CARs and CRs are resolving the belonging issues. All required additional information was added to the PDD directly or in the form of annexes. The project fulfils the criteria on baselines as set for the approval of JI-projects.

## 3.3 Monitoring Plan

### 3.3.1 Findings

JI-Supervisory committee foresees for track 2 projects that the project applies an approved monitoring methodology for CDM projects in case such a methodology is available for the project type assessed herewith. In this project the methodology of JI Project "District heating system rehabilitation of Chernigiv Region", submitted to Dutch ERUPT-4, and validated by TÜV-IS was applied has been used for the field "Rehabilitation of District Heating system. This proceeding is a practicable approach and is deemed to be consistent and correct.

The monitoring methodology does reflect current good practice and is supported by the monitored and recorded data. The monitoring provisions are in line with the project boundaries. The proposed monitoring methodology is considered to be a comprehensive approach given the project type. The provisions are consistent with the project boundaries. But the monitoring plan is not detailed enough currently and has to be deepened in some positions.

Only relevant emission reductions are reductions of CO<sub>2</sub>-emissions. This is achieved in different ways:

- By switching fuels (from oil and coal to natural gas)
- By improving the heat generation system (new boilers, burners, frequency controllers, pre-insulated pipelines)

- By installing CHPs and thus produce electricity to substitute electricity formerly supplied by the grid

Direct on-site emissions CO<sub>2</sub>-emissions occur by burning fossil fuels in the boiler houses, indirect off-site emissions CO<sub>2</sub>-emissions occur by electricity production on mostly fossil fuels for the national Ukrainian electricity grid. So, as a minimum, the quantity of fossil fuels consumed by the boiler houses and the electricity produced and the average inside temperatures in the heating season which influence the heat demand have to be monitored.

Significant leakage emissions are not to be expected. Thus the monitoring of leakage effects is not required. But this has to be demonstrated more re-traceably.

Parameters outside the project boundaries can be included in the monitoring plan to assess the plausibility of the results. The monitoring methodology is clear and user friendly. The monitoring provisions are in line with the project boundaries.

The choice of the indicators is mostly reasonable and all indicated GHG parameters can be monitored and/or measured.

A monitoring of the baseline emissions is required. The adjustment of the baseline emissions (ex post determination of the baseline) via monitored data is possible, foreseen and demonstrated/explained traceably and plausibly in the PDD. But the adjustment also must be elaborated more detailed.

Negative environmental impacts requiring a monitoring provision are not expected.

Procedures for calibration of monitoring equipment should be identified and procedures for the maintenance of monitoring equipment and installations should be described.

Possible uncertainties are known, but respective procedures for dealing with these uncertainties should be worked out more detailed and transparently until the date of the first verification.

The monitoring methodology allows for conservative, transparent, accurate and complete calculation of the ex post GHG emissions.

The current and future responsibilities and quality assurance procedures have been explained during the visit on site in a plausible manner but not specific written documentation has been submitted so far.

### **3.3.2 Issued CARs/CRs**

#### Corrective Action Request No. 4:

Additional information on parameters to be monitored is required - in detail:

a. Common information is required:

Which parameters have to be measured to calculate the project emissions and to re-calculate the baseline emissions (ex post calculation).

b. Detailed information for each site is required:

Information concerning measurement equipment / measured parameters/measuring points at each site involved in the project should be added (as an annex) to the PDD. The information which is the current situation/ which will be the future information (concerning the measurement)



at each site should be given in the PDD (as an annex). Which parameters can be measured, which have to be calculated/ calculation is done in which way information also should be given concerning calibration frequencies and measurement (calculation accuracy, information concerning responsibilities and further information concerning procedures in emergency cases. The procedure and different steps of the reporting process should be explained.

Response:

The requested corrections have been carried out. Additional information has been included in the PDD and has been submitted via e-mails to the determinator.

Clarification Request No. 9:

The necessity for monitoring further parameters (own electricity consumption) should be assessed.

In detail:

- The own electricity consumption of the new equipment (CHPs) has to be monitored.
- Information concerning data storage and storage duration should be adjusted.

The monitoring plan has to be adjusted.

Response:

The requested clarifications have been given to the determinator and included in the final PDD.

Clarification Request No. 10:

After completing the monitoring plan it should be explained and proofed whether or whether not a monitoring of parameters outside the project boundaries is necessary (especially for the purpose of cross checks) – especially for the carbon emission factor of the Ukrainian electricity grid..

Response:

The requested clarifications have been given to the determinator and included in the final PDD.

Clarification Request No. 11:

Information should be added whether the monitoring concept can be integrated in an ISO 9001 system (if it is planned to install such a system)).

Independent from this the monitoring system, frequencies of reporting, internal review phases and adjustment procedures should be demonstrated more detailed (which positions are responsible for the different steps of monitoring).

Response:

The requested clarifications have been given to the determinator and included in the final PDD. Currently there is no ISO9000 system within RME "Donetskteplocomunenergo".

Clarification Request No. 12:

Possible monitoring errors or uncertainties and the influence on the emissions reductions should be addressed and discussed.

Response:

The requested clarifications have been given to the determinator and included in the final PDD.

Clarification Request No. 13:

After completing the monitoring plan this issue should be addressed again and also discussed more detailed in the PDD. Evidence should be given that leakage effects amount to less than 1% of the calculated and expected emissions reductions.

Response:

The requested clarifications have been given to the determinator and included in the final PDD.

Clarification Request No. 14:

The issue "monitoring manual" for this complex project should be discussed. It should be mentioned that a project management manual will be developed until the starting date of the crediting period at the latest with certain information on the project management, monitoring responsibilities, training courses etc.. Also written working instructions should be developed until this date. First examples therefore should be integrated in the PDD.

Response:

The requested clarifications and information have been given to the determinator and included in the final PDD.

### **3.3.3 Conclusion**

All responses given to the indicated CARs, CRs resolve the belonging issues. The project fulfils the criteria on monitoring as set for the approval of JI-projects.

## **3.4 Calculation of GHG Emissions**

### **3.4.1 Findings**

The project's spatial boundaries are currently not clearly enough described in the PDD (see also under 3.1).

The list with participating boiler houses and a map demonstrating their locations should be added to the PDD. Thus the description currently is not complete (missing detailed information).

Regarding emissions sources all aspects are covered. Only CO<sub>2</sub> emissions have correctly been identified as relevant for the project.

The PDD gives a complete and transparent calculation of the project GHG emissions, but the calculations need to be adjusted after completing the information required above.



Leakage calculations are not requested, as they are plausibly considered as being low.

The calculation is based on spreadsheets, which have been submitted as hard-copy only until now. No underlying formula has been delivered so far. The related spreadsheets should be submitted to the determinator. Meanwhile the spreadsheets already could be checked during the on-site audits. Some small corrections have been required.

All data is based either on default values or on the activity level of the project. Both components have been verified during the determination process. But the underlying assumptions and parameters are not supported by clearly referenced sources.

Thus currently the calculations have been checked and occurred not to be conservative totally.

The calculations should be proved and adjusted and based on more conservative assumptions, if necessary.

Under the assumption that the project scenario is not identical to the baseline scenario, the project will result in fewer GHG emissions than the baseline scenario.

### **3.4.2 Issued CARs/CRs**

#### Corrective Action Request No. 5:

In the calculation the following items are not considered and integrated or not discussed totally:

- Own electricity consumption of the new equipment
- Some values in the first submitted calculation sheets (for the CHPs, for influence of new pipelines) seem to be wrong and have to be checked.

These aspects should be considered and, if necessary, taken into account in the GHG calculations.

#### Response:

The requested corrections have been implemented in the revised PDD.



Clarification Request No. 15:

A discussion concerning uncertainties should be included in the PDD.

Response:

The requested clarifications have been given to the determinator and included in the final PDD.

### **3.4.3 Conclusion**

All responses given to the indicated CARs/CRs are resolving the belonging issues. The project fulfils the criteria on baselines as set for the approval of JI-projects.

## **3.5 Environmental Impacts**

### **3.5.1 Findings**

The description of the environmental impacts is sufficient.

Due to the project type and legislative frame conditions no general Environmental Impact Assessment (EIA) has to be carried out, but site-specific EIA have to be submitted to the responsible state authorities for getting the approval to implement the specific measures.

The Environmental Impact Assessment (EIA) for the different subprojects will be conducted by local appropriate accredited local authorities. Already existing EIAs have been shown to the determinator.

The project complies with the environmental legislation in Ukraine. All required licenses and contracts to start with the project are available so far.

### **3.5.2 Issued CARs/CRs**

There are no CARs/CRs under this chapter.

### **3.5.3 Conclusion**

The project fulfils the criteria on Environmental Impact Assessment as set for the approval of JI-projects. A further voluntary monitoring of environmental and socio-economic impacts is possible and designated.



## **3.6 Local stakeholder process**

### **3.6.1 Findings**

The project has already been made public in the context of the overall project concept. The single sub-projects will be made public according to the national and regional regulations.

There have been no negative comments concerning the project currently, which would have required any further action directly related to the specific projects assessed herewith. Only positive estimation have been received by the involved institutions.

### **3.6.2 Issued CARs/CRs**

There are no CARs/CRs under this chapter.

### **3.6.3 Conclusion**

The project fulfils the criteria on stakeholders involvement as set for the approval of JI-projects.





#### **4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS**

The project documents have been made public available via TÜV SÜD's website for calling on stakeholders to comment CDM/JI projects [www.netinform.net](http://www.netinform.net) module "climate and energy" and in parallel on JI-SC website from November 16<sup>th</sup>, 2006 until December 15<sup>th</sup>, 2006.

Link:

[http://www.netinform.net/KE/Wegweiser/Guide2.aspx?ID=2166&Ebene1\\_ID=26&Ebene2\\_ID=646&mode=1](http://www.netinform.net/KE/Wegweiser/Guide2.aspx?ID=2166&Ebene1_ID=26&Ebene2_ID=646&mode=1)

No comments have been received.



## 5 FINAL DETERMINATION OPINION

TÜV SÜD has performed a determination of the Rehabilitation of the District Heating System in Donetsk Region submitted by RME "Donetskteplocomunenergo", located in Donetsk.

The determination was performed on the basis of all currently valid and relevant JI criteria.

The review of the project design documentation and the subsequent follow-up interviews have provided TÜV SÜD with sufficient evidence to determine the fulfilment of stated criteria.

In our opinion, the project meets all relevant UNFCCC requirements for JI under the prerequisite that all four outstanding issues are resolved.

Additionally the assessment team reviewed the estimation of the projected emission reductions. We can confirm that the indicated amount of emission reductions of 854 586 tons CO<sub>2e</sub> (to be issued as ERUs) in the intended first crediting period from 2008 - 2012 (the first Commitment Period of the Kyoto Protocol lasts from 2008-2012), resulting in annual emission reductions of 170 917 tons CO<sub>2e</sub>, represents a reasonable estimation using the assumptions given by the project documents. As these figures will depend on the future performance of the project, this confirmation gives no guarantee on the realisation.

The determination is based on the information made available to us and the engagement conditions detailed in this report. The determination has been performed using a risk-based approach as described above. The only purpose of the report is its use during the registration process as JI project. Hence, TÜV SÜD can not be held liable by any party for decisions made or not made based on the determination opinion, which will go beyond that purpose.

Munich, 2007-06-08

Munich, 2007-06-08

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Javier Castro

**Deputy Head of Certification Body  
"Climate and Energy"**

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Thomas Kleiser

**Responsible Project Manager**

Determination Report:  
"Rehabilitation of the District Heating System in Donetsk Region,  
JI Project, Ukraine

Annex 1 of 2



Industrie Service

## ***Determination Protocol***

Determination Report:  
"Rehabilitation of the District Heating System in Donetsk Region,  
JI Project, Ukraine

Annex 2 of 2



Industrie Service

## ***Information Reference List***