DETERMINATION REPORT

"REDUCTION OF GREENHOUSE GASES BY GASIFICATION OF BURGAS MUNICIPALITY" IN BULGARIA

REPORT NO. 2006-1898

REVISION NO. 03C

DET NORSKE VERITAS

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DETERMINATION REPORT

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Client: Overgas Inc. AD	Client ref.: Mrs. Stela Krasteva Blagova

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Summary:

Det Norske Veritas Certification AS (DNV) has performed a determination of the "Reduction of greenhouse gases by gasification of Burgas Municipality" project in Bulgaria 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 modalities and procedures, and in particular the verification procedure under the JI supervisory committee.

The determination consists of the following three phases: i) a desk review of the project design documents, ii) follow-up interviews with project stakeholders and iii) the resolution of outstanding issues and the issuance of the final determination report and opinion

In Summary, it is DNV's opinion that, based on the JI criteria and their interpretation as per 06 April 2007 and with the exception of the formal approval by the Parties involved, the project as described in the project design document version 08 November 2007, meets all relevant UNFCCC and host country criteria for the JI.

On 15 February 2008 this determination report has been updated to reflect DNV conclusion on the assessment of the additional information provided by the project developer for the calculation of the grid emission factor based on a revised PDD version 08 of November 2007 and other supporting documents.

On 25 February 2010 the Ministry of Environment and Water of the Republic of Bulgaria provided the letter of approval including the authorization of the participation of the project participant Overgas Inc. AD, while the Danish letter of approval was provided on 24 March 2010 authorizing the Danish Ministry for Climate and Energy as a project participant in the project. This determination report was thus once more updated to reflect the status of approval by the participating Parties. However, no other part of this report has been updated and the final conclusion stated in the paragraph above remains valid based on the criteria available as per 6 April 2007

Report No.: 2006-1898	Subject Group: Environment
Report title: Reduction of greenhouse gases by gasification of Burgas Municipality" project in Bulgaria.	
Work carried out by: K.Venkata Raman, Miguel Rescalvo, Hendrik W. Brinks, Michael Lehmann, Mario Voros	
Work verified by: Einar Telnes	

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Abbreviations

CAR	Corrective Action Request
CEF	Carbon Emission Factor
CH_4	Methane
CL	Clarification request
CO_2	Carbon dioxide
CO_{2e}	Carbon dioxide equivalent
DNV	Det Norske Veritas
EIA	Environmental Impact Assessment
ERU(s)	Emission Reduction Unit(s)
FSERF	Fuel switch emission reduction factor
GHG	Greenhouse gas(es)
IPCC	Intergovernmental Panel on Climate Change
JI	Joint Implementation
MP	Monitoring Plan
MVP	Monitoring and Verification Plan
N_2O	Nitrous oxide
NGO	Non-governmental Organisation
PDD	Project Design Document
UNFCCC	United Nations Framework Convention for Climate Change
GWP	Global Warming Potential

1 INTRODUCTION

Overgas Inc. AD has commissioned Det Norske Veritas Certification AS (DNV) to perform a determination of the "Reduction of greenhouse gases by gasification of Burgas Municipality" (hereafter called "the project") in the Republic of Bulgaria. This determination report summarises the initial findings of the determination of the project, performed on the basis of UNFCCC criteria for Joint Implementation (JI) projects, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The determination team consists of the following personnel:

Mr. Miguel Rescalvo	DNV Certification Norway	Team leader and CDM/JI Validator.
Mr. K Venkata Raman	DNV India	GHG Validator.
Mr. Mario Voros	DNV Certification Slovakia	GHG auditor.
Mr. Hendrik W. Brinks	DNV Norway	GHG auditor.
Mr. Michael Lehmann	DNV Certification Norway	Sector expert.
Mr. Einar Telnes	DNV Certification Norway	Technical Reviewer.

1.1 Objective

The purpose of the determination is to have an independent third party assessing the project design. In particular, the project's baseline, the monitoring plan, and the project's compliance with relevant UNFCCC and host Party criteria for Joint Implementation (JI) projects are validated in order to confirm that the project design as documented is sound and meets the identified criteria.

In the absence of specific verification procedures for JI projects hosted by Republic of Bulgaria, the determination was carried out in accordance with the verification procedure under the Article 6 supervisory committee (JI track II) described in the JI modalities and procedures, i.e. the Guidelines for the implementation of Article 6 of the Kyoto Protocol (Decision 16/CP. 7).

Determination is a requirement for JI projects following the verification procedures under the Article 6 supervisory committee and it is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of the emission reduction units (ERUs).

1.2 Scope

The determination scope is defined as an independent and objective review of the Project Design Document (PDD). The information contained in this document is reviewed against the Kyoto Protocol requirements for JI projects, the guidelines for the implementation of Article 6 of the Kyoto Protocol (Decision 16/CP.7) as agreed in the Marrakech Accords, in particular the verification procedures under the Article 6 supervisory committee, and associated interpretations. DNV has, based on the recommendations in the Determination and Verification Manual /7/, employed a risk-based approach in the determination process, focusing on the identification of significant risks for project implementation and the generation of ERUs.

The determination is not meant to provide any consulting towards Overgas Inc. AD and other project participants. However, stated request for clarifications and/or corrective actions may provide input for improvement of the project design.

1.3 GHG Project Description

The project aims at greenhouse gases reduction by fuel switch from the liquid and solid fuels and electricity to natural gas in the Burgas Municipality, Bulgaria. The project envisages the construction of main gas branch and gas distribution network having total length of 230 km. The project aims to supply 55.6 million m^3 of natural gas to 187 industrial consumers, 170 public and administration consumers and more than 23500 households by the end of year 2017. The project is proposed to be implemented in different phases covering six different zones of Burgas Municipality. The first phase of the project started in mid 2006, natural gas delivery for this phase will start during 2007 and the construction is expected to be finalized in 2008. The finalization of the five phases is planned for 2014.

The project is expected to reduce emissions by an annual average of 63181 tCO_2 per year for the period 2008 - 2012.

2 METHODOLOGY

The determination of the project commenced in August 2006. The determination consists of the following three phases:

I a desk review of the project design, 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.

This determination report summarises the findings after phase I, II and III of the determination.

In order to ensure transparency, a determination protocol was customised for the project, according to the Determination and Verification Manual /7/. 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 the validator will document how a particular requirement has been validated and the result of the determination.

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

The completed determination protocol for the "Reduction of greenhouse gases by gasification of Burgas Municipality" project is included in Appendix A to this report.

Determination Protocol Table 1: Mandatory Requirements for Joint Implementation (JI) Project Activities			
Requirement	***Reference***	***Conclusion***	***Cross reference***
The requirements the project must meet.	*Gives reference to COP decision where the requirement is found.*	*This is either acceptable based on evidence provided (**OK**), a **Corrective Action Request (CAR)** of risk or non-compliance with stated requirements or a request for **Clarification (CL)** where further clarifications are needed.*	*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.*

Determination Protocol Table 2: Requirement 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 shall meet. The checklist is organised in six different sections. Each section is then further sub-divided. 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).*	*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). A request for **Clarification (CL)** is used when the independent entity has identified a need for further clarification. N/A means not applicable.*

Determination Protocol Table 3: Resolution of Corrective Action Requests and Requests for Clarification			
Draft report clarifications and corrective action requests	***Ref. to checklist question in table 2***	***Summary of project owner response***	***Determination conclusion***
If the conclusions from the draft 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 Table 2 where the Corrective Action Request or Clarification Request is explained.*	*The responses given by the project proponent or other project participants during the communications with the independent entity should be summarised in this section.*	*This section should summarise the independent entity's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".*

Figure 1: Determination protocol tables

2.1 Review of Documents

The Project Design Document /1/ for the "Reduction of greenhouse gases by gasification of Burgas Municipality", the initial version of 10 August 2006 and the final version 08 dated November 2007 including the annexes 1 to 10 and additional background documents /2/, submitted by Overgas Inc. AD, were reviewed.

2.2 Follow-up Interviews

DNV performed interviews with project stakeholders on 11th and 12th of September 2006 to confirm selected information and to resolve issues identified in the document review. Representatives of the project proponent Overgas Inc AD and representatives of the National Focal Point, Bulgaria were interviewed. The main topics of the interviews are summarised in Table 1.

Table 1 Interview topics

Interviewed organisation	Interview topics
Overgas Inc AD Gazosnabdyavane Burgas EAD	Baseline information Project planning Calculation of emission reduction. Methodology applied. Monitoring.
National Focal Point , Bulgaria	JI requirements in Bulgaria Environmental implications of the project.

2.3 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the determination is to resolve any other outstanding issues which need to be clarified for DNV's positive conclusion on the project design.

The initial determination has identified some corrective action requests and request for clarification. To guarantee the transparency of the determination process, the concerns raised by DNV are documented in table 3 of the determination protocol in Appendix A to this report. Sufficient answers to the clarification have been given.

3 DETERMINATION FINDINGS

3.1 Project design

The project activity "Reduction of greenhouse gases by gasification of Burgas municipality" in the Republic of Bulgaria envisages the phased switching from the present fuel mix being used in the industrial, public and administration and individual households sectors in the Burgas municipality to natural gas. The project activity involves the establishment of a new pipeline for the transportation of natural gas from the nearest gas network pipeline to the municipality and the distributing of it to the individual users. The project also involves changes in the combustion equipment at all points of use by the individual users. The project planning has been verified to be appropriate and the construction permits have been already obtained for five of the six zones where the project is planned.

The project participants are Overgas Inc. AD from Bulgaria and the Danish Government through Danish Environmental Protection Agency. On 25 February 2010 the Ministry of Environment and Water of the Republic of Bulgaria provided the letter of approval including the authorization of the participation of the project participant Overgas Inc. AD. The Danish Designated Focal Point, Danish Energy Agency, provided the letter of approval authorizing the Danish Ministry of Climate and Energy as a project participant in the proposed project.

The start date of the project activity is 2006 and the life time of the project activity is stated to be up to 2017 and is reasonable. The project proposes a five year crediting period starting from 1 January 2008. The project also aims at claiming early credits for the pre 2008-2012 period.

The geographical boundaries of the project are limited to the municipality of Burgas in the Republic of Bulgaria. The project's system boundaries include the new pipeline for transportation of the gas from the national transmission network, the gas distribution network in the municipality and the upgrade of all the combustion installations.

3.2 Baseline

The project applies a methodology specific for the project activity. Although some similarities exist with the CDM approved baseline and monitoring methodology ACM0009 version 03, some deviations compared to this methodology are present. The main difference is that for ACM0009, project emissions are monitored and the baseline emissions are calculated by conversion of the project emissions. In this project, however, the opposite is done; baseline emissions are estimated based on an initial survey and the project emissions are estimated by conversion from these value. At the time of verification, the monitored gas amounts will be used to determine the actual project emissions.

The baseline is defined as the fuel and electricity demand in the absence of the project activity, and has been estimated as follow:

The fuel and electricity demand for the year 2005 has been estimated through a market research carried out by Overgas Inc. AD. In this study, the fuel and electricity demand have been analyzed for three different sectors: industrial; public sector and administration; residential. The energy sources' demand structure in 2005 was 17.7% solid fuels, 15.75% liquid fuels and 66.54% electricity.

The fuel and electricity demands, in the absence of this project activity for the years 2006 to 2017 have been forecasted for the development of Burgas Municipality based on the Bulgarian Government estimations and other public sources /2/. A growth of 2.5% in the energy demand of the Burgas Municipality has been forecasted (2.2% growth in the industrial sector, 4.9% in the public and administrative sector and 1.8% in the residential sector). The baseline fuel mix has been considered to remain the same. The fuel and electricity demands will be monitored and the estimated baseline will be updated based on local, regional and national fuel consumption data, which will be used to calculate the shift in fuel mix during the project period. The fuel mix for each year is proposed to be calculated from extrapolation of the fuel mix from the two proceeding years, excluding all data from distribution networks which benefit from JI revenues.

3.3 Additionality

The additionality of the project activity has been demonstrated based on the technical, investment, common practice and institutional barriers the projects faces.

Technical barriers: Natural gas is currently being used in only one other heating plant in Burgas municipality. The end users need to install new equipment and training in safety aspects and new equipment needs to be provided to the final users and installation companies. Furthermore, without taking into account the other JI projects proposed in Bulgaria for the same type of activity, the technology is new for Bulgaria and for the specific case of the Burgas municipality, it needs to be adapted to highly populated areas and some specific types of buildings. The technical barriers thus are deemed justified.

Investment analysis: The project activity has a capital investment of 22.9 million EUR. The investment barrier extends to end users who will have to change/replace the present combustion equipment in order to make the project activity feasible. The financial analysis of the project shows that the project IRR is 12.08% /3/. This IRR is below the 15% benchmark established by the State Energy Regulatory Committee for gas distribution companies in Bulgaria.

Financial barrier: It is claimed financial obstacles due to difficulties with bank loans without the JI project. However, evidences for this have not been presented and this could hence not be confirmed.

Common practice barriers and legal barriers: The residents of the Burgas municipality are accustomed to the use of solid and liquid fossil fuel and the use of electricity. The switch to natural gas is a first of its kind project in the Burgas municipality and is thus not representing a common practice. The project involves the need of training in safety issues, the mentioned installation of new equipment by the end users and Burgas will have to put in place the required legislation regarding safety and gas installations.

Institutional barriers: It was verified by DNV that apart from the JI revenues, there are not other benefits available for the project in Bulgaria. The Bulgarian government has a policy to support energy efficiency and renewable energy projects which does not include fuel switching projects.

In conclusion, it has been demonstrated that the project faces technical barriers due to the Burgas municipality specifics and that the project is not the common practice. Other barriers claimed prevent the project implementation but affect third parties (end users, installation companies, government) but do not directly relate to the project developer. The claimed financial barriers could not be evidenced, but based on the other barriers it can be concluded that the project is not the most likely scenario and thus can be considered additional.

3.4 Monitoring Plan

The monitoring methodology has been developed specifically for this project activity. The monitoring plan proposes the monitoring of the following parameters:

- Natural gas consumption by the industrial, public and administration and household sector.
- Total gas bought by the distribution company.
- Fuel consumption of all relevant fuels on a national, regional and local level, excluding JI projects.
- Leaks rate in the distribution network.

The calibration methods for the different equipment are included in the annex 3 to the PDD, monitoring plan, "methods for measurement of indicators and calibration of measurement appliances" and are correct.

The responsibilities for the activities providing for the monitoring are identified and it was verified during the site interviews that a number of procedures have been incorporated (document B-3V-009). Further specifications have been given in Table 3.

3.5 Calculation of GHG Emissions

Baseline emissions:

The baseline emissions are estimated ex-ante based on the market analysis done by Overgas. The baseline emissions are those due to the forecasted fuel consumption and electricity demand for the years 2006 to 2017. The predicted energy sources mix was calculated as explained in the section 3.2 above.

The emissions due to the fuel consumption are calculated for each year and sector (industrial, public, residential) as the amount of each type of fuel used times the net calorific value for that fuel times an emission factor calculated base on the carbon content of the fuel and the oxidation factor. The data source is the 1996 IPCC Guidelines and other local sources referenced in the PDD.

The baseline emissions due to the electricity utilization are calculated as the amount of electricity used times an emission factor of the grid the electricity is provided from. The grid emission factor used is calculated based on the CDM approved methodology ACM0002 version 6. The logic for the calculation has been presented in the document "Concise Baseline Study of Bulgarian EPC, CO2 Baseline Emission Factor of EPS", and the baseline calculation have been done using the data provided by the Bulgarian Ministry of Economy and Energy. The worksheet "Baseline Calculations 2003-2005 rev6.xls" has been provided. The operating margin has been calculated by the simple adjusted method, using the historic data of 2003, 2004 and 2005 which are the latest data available, and arrived at 0.967 t CO2/MWh. The build margin has been estimated using the option 1 (ex-ante) and arrived at 0.842 t CO2/MWh. The combined margin has been arrived at 0.9046 t CO2/MWh using a weight age of 50:50 as per the ACM0002 methodology. In line with the ERUPT Guidelines (Holland - Netherlands program for purchase of ERU/CER) and the UNFCCC/CCNUCC CDM - Executive Board, EB 32, Annex 10, methodological tool, "Tool to calculate project emissions from electricity consumption"(Version 01), the transmission and distribution losses have been added to the combined margin calculated.

By the inclusion of the transmission and distribution losses also in to the combined margin calculated, the final combined margin is 1.026 t CO2/MWh. The emission factor is fixed ex-ante for the entire crediting period.

Project emissions:

The project emission are those emissions due to the combustion of the natural gas expected to be used in the project scenario plus the emissions due to the utilization of electricity in the project scenario and the emissions from the combustion of fossil fuels. The emissions due to the natural gas utilization are estimated as the amount of natural gas expected to be used times the natural gas emission factor from 2006 IPCC Guidelines. The emissions due to the electricity utilization are estimated as the expected amount of electricity used times an emission factor as stated above. The estimated project emissions for the combustion of fossil fuels and electricity utilization in the project scenario are estimated as follow:

- Determination of the volume of fuels and amount of electricity replaced by the natural gas by sector. This is based on the market research and estimations pointed out in section 3.2 above and explained in further details in the section B and E of the protocol.
- Calculation of the equivalent quantity of natural gas needed to replace those quantities of fuels and electricity. The equivalent natural gas is calculated as the amount of fossil fuel or electricity expected to be replaced times a factor K, calculated based on the net calorific values and the energy efficiency of the combustion installation working on the previous fuel and natural gas. The efficiency factors sources are duly referenced in the PDD and are appropriate.
- Project emissions due to leaks in the newly built distribution network are considered immaterial. This is based on records from other distribution networks managed by Overgas Inc. AD. in Bulgaria which show that leak rates in the last three years are below 2%. Emissions due to natural gas leaking will be monitored as described and accounted for if necessary.

The estimated project emissions are on the average 896758 tCO_2/year from 2008 to 2012.

Leakage emissions:

Upstream leakage has been calculated as per the tier 1 method proposed in 2006 IPCC Good Practice Guidance based on the length of the pipeline and standard emission factors. For the period 2008-2012, methane leakage /2/ due to the natural gas distribution accounts for 4807 tCO2. The emissions due to the natural gas transportation are calculated as 1802 tCO2 and the emissions from the coal replaced are estimated to be 2056 tCO2. Upstream leakage is thus estimated as -151 tCO2 for the crediting period 2008-2012 i.e. 0.06% of the emissions reduction.

Emission reduction:

The emissions reduction are calculated based on the monitored amount of natural gas actually used for each sector times the factor FSERF (fuel switch emission reduction factor). This factor will vary for each year and sector and because the fuel mix is monitored, the factor will be determined ex post. The factor FSERF is defined as the estimated emission reduction divided by the estimated amount of natural gas that would be combusted in each sector with the project implementation.

The estimated emission reductions are on the average 63181 tCO_2/year from 2008 to 2012.

3.6 Environmental Impacts

The Ministry of the Environment and Waters Regional Inspectorare- Bourgas has confirmed (annex 10 of the PDD) that the project is not required to perform an EIA.

No major impacts are foreseen from the project activities.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

DNV published the PDD, baseline study and monitoring plan on its climate change website at http://www.dnv.com/certification/ClimateChange and invited Parties, stakeholders and observers through the Climate-L mailing list to provide comments on the PDD during a period of 30 days from 26th September 2006 to 25th October 2006. Four comments were received.

Comment by: No name given.

Inserted on: 2006-09-27

Subject: trustworthy company

Comment :At the moment only the heating plant in Burgas uses natural gas because there is no gas distribution network in the town. This is the reason why I welcome the initiative of Overgas to construct such a network and to deliver natural gas to the households. I suppose that the investment for the installation will not be little but I think that the convenience and the lower price of natural gas will be attractive for the inhabitants of the town. According to me more information for the natural gas and marketing mechanisms for attraction of customers will be very important for the realization of the project.

What concerns to Overgas it is a trustworthy company having great experience in a lot of towns in Bulgaria. Comment:

Comment by: Ivan Mastikov

Inserted on: 2006-10-23

Subject: Inconsistent baseline

Comment: This project is very well composed with clear benefits to the environment. Calculated reduction of greenhouse gases by gasification of Burgas Municipality is achievable. Burgas region is one of the rapidly developing regions of Bulgaria. A lot of houses, offices and hotels are under construction. It means that energy consumption will be increase continuously during next 10-15 years.

At the present time the available souses of energy for heating is coal, wood and electricity and a low value of liquid fuel. Production of electricity in Bulgaria is related with emission of SO2.

Gasification of Burgas will give also opportunity to increase using of natural gas in transport sector which will give additional significant reduction of pollutants.

Comment by: krasnodav Simenov, TUV Rheinland Bulgaria.

Inserted on: 2006-10-04

Subject: Reduction of greenhouse gases by gasification of Burgas Municipality

Comment: I would like to underline that in the town of Burgas natural gas is available since 1994 but there is no gasification. I believe that this project will significantly contribute to the development of Burgas gasification

Comment by: Stanka Doncheva, Control P EOOD.
Inserted on: 2006-10-09
Subject: Project 'Reduction of greenhouse gases by gasification
Comment: The project providing gasification for Burgas is very interesting for me. On one hand because this is my native town and I have expected for years better conditions of life what concerns to the conveniences of heating for the citizens and on the other hand because of the great ecological effect that will be realized by such a project.

In my capacity as environmental protection expert I have accomplished a lot of environmental impact assessments including of gasification projects for Bulgarian towns and I could appraise the project idea presented by Overgas as very professionally developed. The methodology for assessment of the emissions is very correct considering different factors for the estimation of natural gas quantity in the different sectors.

Gasification projects demand great investments as a rule and the formula of Kyoto mechanism is very appropriate for them because the financial support related to the mechanism give the gasification projects chance to be implemented.
For a long time it was of great interest for us, the citizens of Burgas, when we would have the opportunity to use natural gas because there is a main gas pipeline near the town. The answer was always connected to the lack of money. I hope that this project will give us the chance for better choice of the way of heating.

P.S. As a person interested in the issues relevant to Kyoto Protocol I find this project by accident while looking through the Internet for news on emissions trading. With reference to this allow me to recommend you the projects for comments to be placed on more suitable place where it would be easier for the experts and interested persons to reach them and make their valuable comments.

DNV's response: Since all the comments received were positive in nature, no response is needed.

5 DETERMINATION OPINION

Det Norske VeritasCertification AS (DNV) has performed a determination of the "Reduction of greenhouse gases by gasification of Burgas Municipality" project in Bulgaria". The determination was performed on the basis of UNFCCC criteria for Joint Implementation projects, in particular the verification procedure under the Article 6 supervisory committee ~~(JI track I)~~ described in the Guidelines for the implementation of Article 6 of the Kyoto Protocol, as well as criteria given to provide for consistent project operations, monitoring and reporting.

The project activity in the Republic of Bulgaria envisages the phased switching of the present fuel mix being used in the industrial, public and administration and individual households sectors in the Burgas Municipality to natural gas. The project activity involves the establishment of a new pipeline for the transportation of natural gas from the nearest gas network pipeline to the municipality and the distributing of it to individual users. The project also involves changing the combustion equipment at all points of use for individual users.

The project is proposed as a JI project between Bulgaria and Denmark. The Ministry of Environment and Water of the Republic of Bulgaria provided the letter of approval including the authorization of the participation of the project participant Overgas Inc. AD. The letter of approval from Denmark was provided on 24 March 2010 authorizing the Danish Ministry of Climate and Energy as a project participant in the proposed project.

The project applies a methodology specifically designed for this project activity, which has similarities with the CDM methodology ACM0009. It is sufficiently demonstrated that the project faces relevant barriers and that the project is thus deemed to generate emission reductions that are additional to any that would have occurred in its absence.

The monitoring and reporting activities are clearly described and provisions are made for the daily handling of records, the monthly aggregation of information and the periodical review of monitored data.

The emission reductions are estimated as 315 904 tCO_2eq during the period 2008-2012. The underlying assumptions have been verified and it is deemed likely that the forecasted amount is achieved provided that the project is implemented as planned.

Parties, stakeholders and NGOs were invited to provide comments on the project.

In Summary, it is DNV's opinion that, based on the JI criteria and their interpretation as per 06 April 2007, the project as described in the project design document version 08 November 2007, meets all relevant UNFCCC for the JI.

On 15 February 2008 this determination report has been updated to reflect DNV conclusion on the assessment of the additional information provided by the project developer for the calculation of the grid emission factor based on a revised PDD version 08 of November 2007 and other supporting documents.

On 25 February 2010 the Ministry of Environment and Water of the Republic of Bulgaria provided the letter of approval while the Danish letter of approval was provided on 24 March 2010 authorizing the Danish Ministry for Climate and Energy as a project participant in the project. This determination report was thus once more updated to reflect the status of approval by the participating Parties. However, no other part of this report has been updated and the final

conclusion stated in the paragraph above remains valid based on the criteria available as per 6 April 2007.

6 REFERENCES

List documents provided by the Project Participants that relate directly to the GHG components of the project

/1/ Overgas Inc. AD. JI PDD for the "Reduction of greenhouse gases by gasification of Burgas Municipality" version 2 of 17 September 2006 and version 1 of 10 August 2006 and the final version 08 dated November 2007.

/2/ Baseline information, emissions reduction calculation

Baseline calculations:

Overgas Inc. AD. Bourgas_END_validatorV08.xls.

References used and included in the PDD:

National long term energy efficiency program till the year 2015. 2005 State Energy Efficiency Agency.

Short-term Forecast for Bulgaria's Economy, October 2005, AEAF

Energy strategy of Bulgaria, 2002, Ministry of Energy and energy recourses; State Energy Efficiency Agency

Ministry of Economy and Energy. Economic situation of the Southeastern Planning Region.

National plan for economic development. March 2003 Ministry of economy. "Economic situation of South-East planning region"

Regional plan for development of South-east planning region 2007-2013, June 2005 Ministry of regional development and public works

Regional strategy for development of Burgas municipality 2005-2015, Burgas municipality

/3/ IRR calculation:

Overgas Inc. AD. Financial plan. "Extract from Business plan of the project Reduction of greenhouse gases by gasification of Burgas Municipality" received on 18 September 2006.

Overgas Inc. AD. Cash flow forecast.xls. Received on 30 November 2006.

Overgas Inc. AD. Financial plan.ls. Received on 30 November 2006.

IRR benchmark:

State Energy Regulatory Committee (http://www.dker.bg/directions/direct_gas3.pdf)

/4/ Electricity grid emission factor carbon_emission_factor_for_electricity.pdf. "Concise Baseline Study of Bulgarian EPC, CO2 Baseline Emission Factor of EPS"

/5/ Ministry of Environment and Water of the Republic of Bulgaria, Letter of approval, 25 February 2010

/6/ Danish Energy Agency, Letter of approval, 24 March 2010.

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

/7/ International Emission Trading Association (IETA) & the World Bank's Prototype

Carbon Fund (PCF): Validation and Verification Manual, http://www.vvmanual.info

/8/ Decision 9/ CMP.1. Guidelines for the implementation of Article 6 of the Kyoto Protocol. Annex

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

/9/ Svetoslav Ivanov, Deputy Executive Director of "Overgas Inc."

Ms. Stela Blagova, Head of Ecology and Sustainable Development Department

Ms. Nevena Pingarova, Head of Sustainable Development Projects Section

Mr. Georgi Bazadjiev, Head of Methodology, Ecological evaluations and analysis Section

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Mr. Zlatin Dimov, Authorized representative, Gazosnabdyavane Burgas EAD

M. Dimitrova, representative of National focal point on Climate change of Bulgaria

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APPENDIX A

JI DETERMINATION PROTOCOL

Table 1 Mandatory Requirements for Joint Implementation (JI) Project Activities

Requirement	Reference	Conclusion	Cross Reference / Comment
1. The project shall have the approval of the Parties involved	Kyoto Protocol Article 6.1 (a)	OK ~~CAR 1~~	The Ministry of Environment and Water of the Republic of Bulgaria provided the letter of approval including the authorization of the participation of the project participant Overgas Inc. AD. The letter of approval by Denmark was received on 24 March 2010 authorizing the Danish Ministry of Climate and Energy as a project participant to the project.
2. Emission reductions, or an enhancement of removal by sinks, shall be additional to any that would otherwise occur	Kyoto Protocol Article 6.1 (b)	OK	Table 2, Section B.2
3. The sponsor Party shall not aquire emission reduction units if it is not in compliance with its obligations under Articles 5 & 7, i.e. the sponsor Party shall have in place a national system for estimating GHG emissions and a national registry and has submitted annualy its most recent inventory	Kyoto Protocol Article 6.1 (c) Guidelines for the implementation of Art. 6 §21c,d,e,f	OK	The determination has not in detail assessed Denmark's compliance with article 5 and 7 of the Kyoto Protocol. However, Denmark has in place a national system for estimating GHG emissions and annually reports its national GHG inventory to the UNFCCC.
4. The acquisition of emission reduction units shall be supplemental to domestic actions for the purpose of meeting commitments under Article 3	Kyoto Protocol Article 6.1 (d)	OK	The determination has not in detail assessed Denmark's domestic actions for meeting commitments under Article 3.

Requirement	Reference	Conclusion	Cross Reference / Comment
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	Guidelines for the implementation of Art. 6 §20	OK	The JI Focal Point for Bulgaria is the Ministry of Environment and Water and the JI focal point for Denmark is the Danish Ministry of Environment.
6. Parties participating in JI shall be a Party to the Kyoto Protocol	Guidelines for the implementation of Art. 6 §21a/24	OK	Bulgaria ratified the Kyoto protocol on 15 August 2002 and Denmark on the 31 May 2002.
7. The participating Parties' assigned amount shall have been calculated and recorded	Guidelines for the implementation of Art. 6 §21b/24	OK	The assigned amount units for both Bulgaria and Denmark have been calculated and recorded at 92% and 79% respectively.
8. The host Party shall have in place a national registry in accordance with Article 5 of the Kyoto Protocol	Guidelines for the implementation of Art. 6 §21d/24	OK	Bulgaria has in place a national system for estimating GHG emissions and annually reports its national GHG inventory to the UNFCCC.

Requirement	Reference	Conclusion	Cross Reference / Comment
9. ERUs shall not be issued as a result of project activities undertaken within the European Community that also lead to a reduction in, or limitation of, emissions from installations covered by Directive 2003/87/EC, unless an equal number of allowances is cancelled from the registry of the Member State of the ERUs' origin.	Directive 2004/101/EC of the European Parliament and of the Council of 27 October 2004	OK ~~CAR 2~~	~~The Government of Bulgaria needs to confirm that EU-ETS allowances will be cancelled from its registry equal to the ERUs issued due to fuel switch to natural gas by plants covered by the EU-ETS Directive.~~ In its letter of approval the Ministry of Environment and Water of the Republic of Bulgaria confirms that the project is listed in the planned reserve for approved JI projects in the National Allocation Plant for cancellation to avoid double counting according to Directive 2004/101/EC and the relevant decisions by the European Commission.
10. Project participants shall submit to the independent entity a project design document that contains all information needed for the determination	Guidelines for the implementation of Art. 6 §31	OK ~~CL 1~~	The project developer is requested to clarify the project participant included in table A.3 of the PDD.

Requirement	Reference	Conclusion	Cross Reference / Comment
11. The project design document shall be made publicly available and Parties, stakeholders and UNFCCC accredited observers shall be invited to, within 30 days, provide comments	Guidelines for the implementation of Art. 6 §32	OK	The PDD was made publicly available on www.dnv.com/certification/climatechange and Parties, stakeholders and NGOs were through the DNV website invited to provide comments during the 30 day period from 26th September 2006 to 25th October 2006. Four positive comments were received.
12. 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	Guidelines for the implementation of Art. 6 §33d	OK	Table 2, Section F
13. 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	Guidelines for the implementation of Art. 6, Appendix B	OK	Table 2, Section B.2
14. 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	Guidelines for the implementation of Art. 6, Appendix B	OK	Table 2, Section B.2
15. The baseline methodology shall exclude to earn EURs for decreases in activity levels outside the project activity or due to force majeure	Guidelines for the implementation of Art. 6, Appendix B	OK	Table 2, Section B.2

Requirement	Reference	Conclusion	Cross Reference / Comment
16. The project shall have an appropriate monitoring plan	Guidelines for the implementation of Art. 6 §33c	OK	Table 2, Section D

Table 2 Requirements Checklist

Checklist question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
A. General Description of Project Activity The project design is assessed.					
A.1. Project Boundaries Project boundaries are the limits and borders defining the GHG emission reduction project.					
A.1.1. Are the project's spatial (geographical) boundaries clearly defined?	/1/	DR	The project spatial boundaries are clearly defined. The project activity will be implemented in the municipality of Burgas in the Republic of Bulgaria.		OK
A.1.2. Are the project's system (components and facilities used to mitigate GHGs) boundaries clearly defined?	/1/	DR	The project's system boundaries are clearly defined. The project envisages construction of main gas branch and gas distribution network having total length of 230 km and reconstruction of the combustion equipments in the end users in the industrial, public and administrative and residential sectors. The plants serving the electricity grid are included in the project boundaries.		OK
A.2. Technology to be employed Determination of project technology focuses on the project engineering, choice of technology and competence/ maintenance needs. The validator should ensure that environmentally safe and sound technology and know-how is used.					
A.2.1. Does the project design engineering reflect	/1/	DR	OK. The project involves the construction of the gas distribution network,		OK

* MoV = Means of Verification, DR= Document Review, I= Interview

Checklist question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
current good practices?			reconstruction of combustion installation to operate with natural gas and construction of new gas installations. The construction of the gas network is done by Overgas Engineering AD, company with extensive experience in the field, using mainly PE-HD 80 and 100 pipes and fittings. As per the Bulgarian legislation, the gas installations can be put in operation only after acceptance by an independent technical supervision company. The monitoring is done using an automatic dispatcher system (Overcomm 2.0).		
A.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/	DR	The technology used in the project will result in better performance than the commonly used technology as the fuel switch is from fossil fuel to natural gas and the project will reduce the consumption of electricity from the national grid which is mainly generated from thermal sources. The technologies that will be used in the project have been used in the construction of gas distribution networks of 26 towns in Bulgaria.		OK
A.2.3. Is the project technology likely to be substituted by other or more efficient technologies within the project period?	/1/	DR	The project is not likely to be substituted by other efficient technologies within the project period.		OK
A.2.4. Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period?	/1/	DR	Since the project involves the supply of natural gas to industrial and public facilities as well as households initial training and maintenance is required for ensuring the safety operation of the		OK

Checklist question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			installations and for assuring an adequate monitoring.		
A.2.5. Does the project make provisions for meeting training and maintenance needs?	/1/	I	Though not mentioned in the PDD, it was confirmed during the site interview that the needs for training and information have been identified and addressed in the marketing mix of the business plan. The annex 3 (monitoring plan) to the PDD includes a list of the procedures related to the operation of the system implemented by the company.		OK
A.3. Compliance with host country requirements *The project's contribution to sustainable development is assessed.*					
A.3.1. Is the project in line with relevant legislation and plans in the host country?	/1/	I	Yes, the project is in line with the relevant legislations and plans of the host country. The project has been granted the construction permission from the competent authorities for 5 zones. This was evidenced during the site visit.		OK
A.3.2. Is the project in line with host-country specific JI requirements?	/1/	DR	The letter of support from the Republic of Bulgaria, through the Ministry of environment and water confirms that the project is within the scope of JI project of Kyoto Protocol. The letter of support was evidenced (annex 9 to the PDD). This needs to be finally confirmed by the LoA from Bulgaria	~~CAR1~~	

Checklist question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
B. Project Baseline The determination of the project baseline establishes whether the selected baseline methodology is appropriate and whether the selected baseline represents a likely baseline scenario.					
B.1. Baseline Methodology It is assessed whether the project applies an appropriate baseline methodology.					
B.1.1. Is the discussion and selection of the baseline methodology transparent?	/1/	DR	The current situation in the municipality of Burgas is the use of fossil fuels like heavy fuel oil, gas oil, brown coal, anthracite coal, wood, coal and briquettes and electricity, LPG (and natural gas by a single consumer – Heating Plant Burgas). Since there is no availability of natural gas in the municipality for the other users (industrial, public and administration and households), the baseline scenario is that, in the absence of the project activity, the present mix of fuels would continue to be used in the municipality.		OK
B.1.2. Does the baseline methodology specify data sources and assumptions?	/1/	DR	The baseline methodology specifies the data sources and the assumptions made. The fuels and electricity demand for the baseline year 2005 were estimated based on a direct survey to the final consumers. The forecasted emissions for each year from 2006 to 2017 have been calculated based on the expected development of the country and the expected fuels and		OK

Checklist question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			electricity demand from public reports from the Bulgarian government referenced in the PDD. For the calculation of baseline emissions data from the Bulgaria's national communication to UNFCCC and IPCC default values are used.		
B.1.3. Does the baseline methodology sufficiently describe the underlying rationale for the algorithm/formulae used to determine baseline emissions (e.g. marginal vs. average, etc.)	/1/	DR	Yes the baseline methodology sufficiently describes the underlying rationale for the formulae used. The baseline emissions have been calculated as the sum of the emission from the three different sectors: industrial, commercial and household. The baseline also considers the electricity which could be replaced with natural gas. The emission release from the fuels has been calculated from the quantity of fuel, the lower heating value and the emission factor for the fuel. The emissions from the electricity used have been calculated using the emission factor of the national Electricity Company – NEC. The fuel demand for the year 2005 has been estimated from a market research carried out by Overgas Inc. AD. The structure of the energy sources within the project's boundaries in 2005 was: 17.7% solid fuels, 15.75% liquid fuels and 66.54% electricity. The baseline emissions for each year of		OK

Checklist question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			the crediting period have been forecasted assuming a conservative growth of 2.5% in the energy demand of the Burgas municipality (2.2% industrial sector, 4.9% public and administrative sector, 1.8% residential sector) and the same energy sources structure. The assumption is based on official documents referenced in the PDD. Baseline emissions for the electricity consumption are estimated using the emission factor published by the National Electric Company-NEC for the electric power sector in the republic of Bulgaria. The PDD states these values were calculated based on the CDM approved methodology ACM002. This could not be confirmed and thus the project developer is requested to submit additional documents supporting this affirmation. The leakages due to storage and transportation of the fuels being minimal have not been included in the calculation of the emissions.	~~CL 2~~	OK
B.1.4. Does the baseline methodology specify types of variables used (e.g. fuels used, fuel consumption rates, etc)?	/1/	DR	Yes, the baseline methodology specifies the fuels used in the baseline year and also the forecasted fuels consumption in the absence of the project activity.		OK
B.1.5. Does the baseline methodology specify the spatial level of data (local, regional, national)?	/1/	DR	Yes. Most of the data used for the baseline emissions is local and national level data. IPCC default values have also		OK

Checklist question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			been considered.		
B.2. Baseline Determination The choice of baseline will be validated with focus on whether the baseline is a likely scenario, whether the project itself is not a likely baseline scenario, and whether the baseline is complete and transparent.					
B.2.1. Is the application of the methodology and the discussion and determination of the chosen baseline transparent?	/1/	DR	Yes the application of the baseline study chosen is clear and transparent. The baseline scenario is the continuation of the current practice of combusting fossil fuels and the utilization of electricity. The baseline emissions are calculated as described in section E below. The project developer is requested to clarify in which specific steps the CDM approved methodologies ACM0009 and ACM0002 are applied. The PDD states the methodology ACM0009 is used for the calculation of emissions reductions while the approach follow in section B, E of the PDD is not in line with the methodology (e.g. calculation of project emissions). The baseline emissions are those estimated for each year from 2006 to 2017 from the baseline year 2005. As explained above, the emissions of 2005 were estimated based on a field research and the estimations are substantiated in public reports and official data. These	~~CL 3~~ ~~CL 4~~	OK OK

Checklist question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			estimations could be influenced by two factors: 1) The remaining lifetime of the installed facilities using fossil fuels and electricity in the industrial and public administration sectors. If the facilities had to be replaced in any case in the coming years, the option of using natural gas or other fuel could be the most appropriate, even without this project activity. 2) The current compliance status with current or planned environmental laws and regulation of the emissions from industrial installations and other public sector's facilities (e.g. regulations regarding level of emissions or boilers emissions). If these installations do not comply with the current regulations or new regulations are expected to be put in place leading these facilities not complying with them, the installation of new equipment using natural gas or other different fuel could be the only option even without this project activity. The project developer is requested to clarify how the two points above could affect the baseline emissions estimations (fuel mix and lack of natural gas utilization in the baseline scenario from 2006 to 2017)		
B.2.2. Has the baseline been determined using conservative assumptions where possible?	/1/	DR	Yes, as explained in section B.1. above, the baseline has been determined using		OK

Checklist question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			conservative estimates		
B.2.3. Has the baseline been established on a project-specific basis?	/1/	DR	Yes.		
B.2.4. Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	/1/	DR	The baseline scenario of the continuation of the present practice for fossil fuel consumption is in compliance with the national / sectoral policies. There are not laws or regulations in Bulgaria enforcing the switch of fuels.		OK
B.2.5. Is the baseline determination compatible with the available data?	/1/	DR	The baseline determination is compatible with the available data.	~~CL 3~~ ~~CL 4~~	OK
B.2.6. Does the selected baseline represent a likely scenario in the absence of the project?	/1/	DR	Yes, the selected baseline of continuation of the present usage pattern of fuels in the absence of the project is justified, as even though there is gas availability in Bulgaria, gas is not available in the municipality of Burgas.		OK
B.2.7. Is it demonstrated that the project activity itself is not a likely baseline scenario (e.g. through (a) a flow-chart or series of questions that lead to a narrowing of potential baseline options, (b) a qualitative or quantitative assessment of different potential options and an indication of why the non-project option is more likely, (c) a qualitative or quantitative assessment of one or more barriers facing the proposed project activity or (d) an indication that the project type is not common practice in the proposed area of implementation, and not required by a Party's legislation/regulations)?	/1/	DR	The additionality of the project is demonstrated through the existence of the following barriers. **Technical:** It is argued that the usage of natural gas is new to all the users in the Burgas municipality, which requires extensive training on the safety aspects and usage. The technology for the conversion of the combustion equipment for the fuel switch is also new to the users in the P&A and the household sector, who are used and exposed to the use of solid		

Checklist question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			and liquid fuels, other than electricity. The arguments presented are deemed justified even though, similar project has been implemented in 26 cities in the Republic of Bulgaria, as the project involves a large section of people for successful implementation. **Investment:** The project is highly capital intensive not only for the project proponent but also for the individual users who have to convert their installations to natural gas, or build entirely new units. The total investment, as presented in the "Extract from Bossiness plan of the project "Reduction of greenhouse gases by gasification of Burgas Municipality" reaches 22.62 M €. The project developer is requested to confirm the consistency of the data included in this document (e.g. estimated net cash flow 2008-2012)	~~CL 5~~	OK
			The project developer has presented a simple cost analysis of the project. As the project generates other revenues than the sales of ERUs, the project developer is requested to apply an investment comparison analysis applying an appropriate financial indicator for justifying the investment barriers.	~~CL 6~~	
			Financial: the project is stated to have a high investment cost, and financing from the banks is not forthcoming due to the high risks associated with the project. The project developer is requested to provide evidences of this barrier.	~~CL 7~~	

Checklist question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			The project cost is estimated at 22.9 million euros as per the financial plans, and is expected to be financed from own capital, loan from subsidiary companies and long term credits and reinvestments. **Institutional:** it has been argued that there are no subsidies available. However there is in existence policy to support the fuel switch, not in financial terms. It was confirmed during the site visit that though the second National Action plan on Climate Change for the years 2005 to 2008 reflect national policies concerning the measures for the support of emission reduction projects, assistance is given to energy efficiency and renewable sources project and not to gasification projects. It was confirmed during site visit that of the similar type of projects executed in Bulgaria, 5 were JI projects and the other 21 were gasification projects on a smaller scale compared to the project activity.		
B.2.8. Have the major risks to the baseline been identified?	/1/	DR	The risks to the project are the availability of natural gas and the risk of not all users switching to natural gas usage.		OK
B.2.9. Is all literature and sources clearly referenced?	/1/	DR	Yes, all the literature and sources of data have been clearly referenced.		OK

Checklist question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
C. Duration of the Project/ Crediting Period It is assessed whether the temporary boundaries of the project are clearly defined.					
C.1.1. Are the project's starting date and operational lifetime clearly defined and reasonable?	/1/	DR	The project starting date is mentioned as year 2006, and the lifetime of the project is specified as up to year 2017, i.e. 11 years and is reasonable.		OK
C.1.2. Is the project's crediting time clearly defined?	/1/	DR	It needs to be clarified if the project aims at claiming early credits or the crediting period starts in 2008 (page 10 vs. section C).	~~CL 8~~	OK
D. Monitoring Plan The monitoring plan review aims to establish whether all relevant project aspects deemed necessary to monitor and report reliable emission reductions are properly addressed.					
D.1. Monitoring Methodology It is assessed whether the project applies an appropriate baseline methodology.					
D.1.1. Does the monitoring methodology reflect good monitoring and reporting practices?	/1/	DR	The monitoring methodology designed by the project developer only requires the monitoring of the natural gas demand for each of the three sectors (industrial, public and residential). This methodology leads to high level of uncertainty in the calculation of GHG emissions. This high level of uncertainty could be reduced if the calculation of GHG emissions is done based on other data the company actually monitors (as shown in annex 3 to the	~~CL 9~~	OK

Checklist question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			PDD) as the leak rates. The monitoring of other variables could also decrease the uncertainty on the emission reduction calculation, e.g. natural gas NCV.		
D.1.2. Is the selected monitoring methodology supported by the monitored and recorded data?	/1/	DR	The project is not yet implemented and hence there is no monitored or recorded data available at present.		NA
D.1.3. Are the monitoring provisions in the monitoring methodology consistent with the project boundaries in the baseline study?	/1/	DR	Yes		OK
D.1.4.Have any needs for monitoring outside the project boundaries been evaluated and if so, included as applicable?	/1/	DR	No needs for monitoring outside the municipality limits have been identified. The leakages from the pipeline have been demonstrated to be negligible at about 0.46% and hence neglected.		OK
D.1.5.Does the monitoring methodology allow for conservative, transparent, accurate and complete calculation of the ex post GHG emissions?	/1/	DR	The calculation of GHG emissions as per the method designed by the project developer only requires the monitoring of the natural gas demand for each of the three sectors (industrial, public and residential). This methodology leads to high level of uncertainty in the calculation of GHG emissions.		OK
D.1.6.Does the methodology mitigate possible monitoring errors or uncertainties?	/1/	DR	The monitoring plan provided in the annex-3 of the PDD highlights the variables of control to be monitored and the procedures implemented to ensue the proper monitoring. It should be clarified why the monitoring table contain in the PDD is based on sales statements and	~~CL 10~~	OK

Checklist question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			does not take into account the monitored variables included in the monitoring plan in annex 3.		
D.2. Monitoring of Project Emissions It is established whether the monitoring plan provides for reliable and complete project emission data over time.					
D.2.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for estimation or measuring the greenhouse gas emissions within the project boundary during the crediting period?	/1/	DR	The project activity monitors the following parameters. • Natural gas used in the industrial sector. • Natural gas consumed in the public and administrative sector • Natural gas consumed in the residential sector • Total amount of natural gas bought from Bulgargas AD.	~~CL 9~~ ~~CL 10~~	OK
D.2.2. Are the choices of project GHG indicators reasonable?	/1/	DR	The selection of CO_2 as the GHG indicators is reasonable.		OK
D.2.3. Will it be possible to monitor / measure the specified project GHG indicators?	/1/	DR	It should be clarified why the monitoring table contain in the PDD is based on sales statements and does not take into account the monitored variables included in the monitoring plan in annex 3.	~~CL 10~~	OK
D.2.4. Will the indicators enable comparison of project data and performance over time?	/1/	DR	Yes		

Checklist question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
D.3. Monitoring of Leakage It is assessed whether the monitoring plan provides for reliable and complete leakage data over time.					
D.3.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	/1/	DR	It is necessary to clarify if the leakage from the pipeline distribution system is monitored or not. The PDD in section d.1.3 states the leakage is not monitored while the monitoring plan in annex 3 proposes the monitoring of leakage based on a mass balance. The estimation of leakage, and the decision of these emissions to be not material, is done based on applying the IPCC Guidelines tier 1 "Production-Based Average Emission Factors Approach". This approach leads to the higher uncertainties in the estimations. The IPCC Good Practice Guidance suggest as a good practice to disaggregate the area of analysis into segments, and then evaluate the emissions separately for each of these parts. The approach to estimate emissions from each segment should be adapted to the emissions level and the available resources. Consequently, it may be appropriate to apply different approaches to different parts. Two segments involved in this project are "gas transmission & storage" (upstream emissions) and "gas distribution". The project developer is requested to justify the application of the same method for the two segments and	~~CL 11~~ ~~CL 12~~	OK OK

Checklist question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			why an approach based on direct monitoring for the segment of the distribution system is not applied.		
D.3.2. Have relevant indicators for GHG leakage been included?	/1/	DR	Yes, relevant leakages have been included.		OK
D.3.3. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	/1/	DR	Same as above		OK
D.3.4. Will it be possible to monitor the specified GHG leakage indicators?	/1/	DR	Yes.		OK
D.4. Monitoring of Baseline Emissions It is established whether the monitoring plan provides for reliable and complete project emission data over time.					
D.4.1. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining the baseline emissions during the crediting period?	/1/	DR	The baseline emissions are established ex-ante for the entire crediting period and no monitoring is proposed. The project developer is requested to justify the selection of a fixed basline. Refer to CL4.	~~CL 4~~	OK
D.4.2. Is the choice of baseline indicators, in particular for baseline emissions, reasonable?	/1/	DR	NA	~~CL 4~~	OK
D.4.3. Will it be possible to monitor the specified baseline indicators?	/1/	DR	NA	~~CL 4~~	OK

Checklist question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
D.5. Monitoring of Environmental Impacts It is checked that choices of indicators are reasonable and complete to monitor sustainable performance over time.					
D.5.1. Does the monitoring plan provide for the collection and archiving of relevant data on environmental impacts?	/1/	I	As per the Bulgarian legislation, there is no necessity for the collection and archiving of relevant data on environmental impacts. However, in the complex permits issued to the project activity, the monitoring requirements are specified and will be monitored by the Regional Inspectorate of Environment and Water. This was verified during the site visit.		OK
D.5.2. Will it be possible to monitor the specified environmental impact indicators?	/1/	DR	This is not required as per legislation.		OK
D.6. Project Management Planning It is checked that project implementation is properly prepared for and that critical arrangements are addressed.					
D.6.1. Is the authority and responsibility of project management clearly described?	/1/	DR	The authority and responsibility of the project lies with Overgas Inc. AD. Gazosnabdyavane Burgas EAD, will be in charge of the collection of data on the consumption of natural gas in each of the sectors.		OK
D.6.2. Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described?	/1/	DR	Yes		OK

Checklist question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
D.6.3. Are procedures identified for training of monitoring personnel?	/1/	I	It was verified during the site visit that the all procedures have been documented and approved by the document B-3V-009, 05.09.2006.		OK
D.6.4. Are procedures identified for emergency preparedness where emergencies can result in unintended emissions?	/1/	DR	Instructions are provided in the monitoring plan in Annex-3.		OK
D.6.5. Are procedures identified for calibration of monitoring equipment?	/1/	DR	Instructions are provided in the monitoring plan in Annex-3.		OK
D.6.6. Are procedures identified for maintenance of monitoring equipment and installations?	/1/	DR	Instructions are provided in the monitoring plan in Annex-3.		OK
D.6.7. Are procedures identified for monitoring, measurements and reporting?	/1/	DR	Instructions are provided in the monitoring plan in Annex-3.		OK
D.6.8. Are procedures identified for day-to-day records handling (including what records to keep, storage area of records and how to process performance documentation)?	/1/	DR I	It should be clarified which are the data handling practices from the individual readings (for the 3 sectors) to the final values.	~~CL 13~~	OK
D.6.9. Are procedures identified for dealing with possible monitoring data adjustments and uncertainties?	/1/	DR I	It needs to be described the procedures granting the right processes for data adjustments (if errors are identified, data lost, readings missing or calibration results show the data were incorrect).	~~CL 14~~	OK
D.6.10. Are procedures identified for internal audits of GHG project compliance with operational requirements where applicable?	/1/	DR I	It was verified during the site visit that the all procedures have been documented and approved by the document B-3V-009, 05.09.2006.		OK
D.6.11. Are procedures identified for project performance reviews?	/1/	DR I	It was verified during the site visit that the all procedures have been documented and approved by the document B-3V-009, 05.09.2006.		OK

* MoV = Means of Verification, DR= Document Review, I= Interview

Checklist question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
D.6.12. Are procedures identified for corrective actions?	/1/	I	It was verified during the site visit that the all procedures have been documented and approved by the document B-3V-009, 05.09.2006.		OK
E. Calculation of GHG Emissions by Source It is assessed whether all material GHG emission sources are addressed and how sensitivities and data uncertainties have been addressed to arrive at conservative estimates of projected emission reductions.					
E.1. Predicted Project GHG Emissions The determination of predicted project GHG emissions focuses on transparency and completeness of calculations.					
E.1.1. Are all aspects related to direct and indirect GHG emissions captured in the project design?	/1/	DR	Yes, all aspects related to the direct and indirect GHG emissions have been captured in the project design. The methodology foresees the direct monitoring of emission reduction. The estimation of the project emission has been done using the following methodology. • Determination of the volume of fuels and electricity replaced by the natural gas by sector. This is based on a market research carried out by the project proponent. • Calculation of the equivalent quantity of natural gas based on		OK

Checklist question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			the calorific values and the efficiencies of the original fuels and the natural gas. • Estimation of the project emissions as the emissions from the different fuels combusted in the project scenario, the emissions form the electricity utilization and the emissions from the natural gas. The estimated projects emissions are on the average 896 758 tCO_2/year from 2008 to 2012.		
E.1.2. Are the GHG calculations documented in a complete and transparent manner?	/1/	DR	Yes, the calculations are documented in a transparent manner.		OK
E.1.3. Have conservative assumptions been used to calculate project GHG emissions?	/1/	DR	The source for the emission factor for each fuel is the IPCC 96 guidelines. The sources for the efficiency factors of the different equipment are duly referenced in the PDD and seem conservative. The fuel and electricity demand from 2006 to 2017 have been calculated based on the expected development of the country and the expected fuels and electricity demand from public reports from the Bulgarian government referenced in the PDD.		OK
E.1.4. Are uncertainties in the GHG emissions estimates properly addressed in the documentation?	/1/	DR	The methodology proposed for the calculation of project and baseline emissions involves a high level of uncertainty while the estimation are based on a direct survey of consumers and the	~~CL 15~~	OK

Checklist question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			estimation of fuel and electricity demand in the future. The PDD does not include an analysis of how a deviation on the demand estimation could influence the estimation of GHG emissions and the probability of that deviation to happen.		
E.1.5. Have all relevant greenhouse gases and source categories listed in Kyoto Protocol Annex A been evaluated?	/1/	DR	Yes		OK
E.2. Leakage Effect Emissions It is assessed whether there leakage effects, i.e. change of emissions which occurs outside the project boundary and which are measurable and attributable to the project, have been properly assessed.					
E.2.1. Are potential leakage effects beyond the chosen project boundaries properly identified?	/1/	DR	Leakages from transport and distribution of natural gas are determines according to IPCC Good Practice Guidance for tier 1 level based on the length of the pipeline and standard emission factors. The estimated leakage at the last stage of gasification (222.4km) length of pipeline in the year 2012 are 3 324 tCO_2. The project developer considers these emissions not material and thus proposes not to monitor them.	~~CL 11~~ ~~CL 12~~	OK
E.2.2. Have these leakage effects been properly accounted for in calculations?	/1/	DR	Same as E.2.1		OK
E.2.3. Does the methodology for calculating leakage	/1/	DR	Same as E.2.1		OK

Checklist question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
comply with existing good practice?					
E.2.4. Are the calculations documented in a complete and transparent manner?	/1/	DR	Yes		OK
E.2.5. Have conservative assumptions been used when calculating leakage?	/1/	DR	Yes		OK
E.2.6. Are uncertainties in the leakage estimates properly addressed?	/1/	DR	Same as E.2.1		OK
E.3.Baseline Emissions The determination of predicted baseline GHG emissions focuses on transparency and completeness of calculations.					
E.3.1. Have the most relevant and likely operational characteristics and baseline indicators been chosen as reference for baseline emissions?	/1/	DR	The baseline emissions are calculated as the sum of emissions due to the different fuels combustion and electricity utilization. The estimation of fuels and electricity demand in the baseline scenario is based on the demand survey for the year 2005 and the estimation of demand increase. As pointed out in section B, this estimation of demand increase is substantiate in the analysis of official sources and other reports duly referenced in the PDD. The baseline emissions due to each type of fuel combusted are estimated as the quantity of fuel that would be combusted for each of the three sectors without the project implementation times the net calorific value times the emission factor for that fuel. The emissions due to electricity planned to	~~CL 4~~	OK

Checklist question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			be displaced by natural gas are estimated as the amount of electricity used times an emission factor. The estimated baseline emissions are an average of 959 939 tCO_2/year from 2008 to 2012.		
E.3.2. Are the baseline boundaries clearly defined and do they sufficiently cover sources and sinks for baseline emissions?	/1/	DR	Yes.		OK
E.3.3. Are the GHG calculations documented in a complete and transparent manner?	/1/	DR	Yes, the GHG emissions are documented in a transparent manner. The worksheets provided are also clear and complete.		OK
E.3.4. Have conservative assumptions been used when calculating baseline emissions?	/1/	DR	The fuels' emission factor is calculated based on the carbon content and the oxidation factor, both from 1996 IPCC. The source of the grid emission factor is referenced in the PDD.	~~CL 2~~	OK
E.3.5. Are uncertainties in the GHG emission estimates properly addressed in the documentation?	/1/	DR	The ex-ante calculation of the baseline emissions for the entire crediting period leads to a high level or uncertainty. Furthermore, the methodology proposed for the calculation of project and baseline emissions involves a high level of uncertainty while the estimations are based on a direct survey of consumers and the estimation of fuel and electricity demand in the future. The PDD does not include an analysis of how a deviation on the demand estimation could influence the estimation of GHG emissions and the probability of that deviation to happen.	~~CL 15~~	OK

Checklist question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
E.3.6. Have the project baseline(s) and the project emissions been determined using the same appropriate methodology and conservative assumptions?	/1/	DR	Yes.		OK
E.4. Emission Reductions Determination of baseline GHG emissions will focus on methodology transparency and completeness in emission estimations.					
E.4.1. Will the project result in fewer GHG emissions than the baseline scenario?	/1/	DR	The emission reductions are calculated as: • Based on the estimation of baseline and project emissions with the methods described in section E.1.1. and E.3.1, the expected emission reduction are calculated. • Calculation of the factor FSERF (fuel switch emission reduction factor) per year and sector. The factor FSERF is defined as the estimated amount of emission reduction per sector and year between the equivalent quantity of natural gas needed to replace the fossil fuel and electricity (based on the calorific values and the efficiencies of the original fuels and the natural gas). • The actual consumption of natural gas is monitored per sector and year • The emission reduction are calculated as the factor FSERF times the natural		OK

Checklist question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
			gas demand. The project will result in an average reduction of CO2 emissions of 63 181 t $CO_{2\ eq}$/year during the period of 2008 to 2012.		
F. Environmental Impacts Documentation on the analysis of the environmental impacts will be assessed, and if deemed significant, an EIA should be provided to the validator.					
F.1.1. Has an analysis of the environmental impacts of the project activity been sufficiently described?	/1/	DR	As stated in the PDD, the project activity will not have any negative impact on the environment. An impact assessment has not been carried out as it is not required per legislation.		OK
F.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	/1/	I	It is stated that the project proponent has followed the procedure for determining if an EIA is essential for the project activity and has received permission from the competent authority, Regional Inspectorate of Environment and Water (RIEW) Burgas, exempting from an EIA for 5 zones, where the project activity planned first. It was confirmed during the site visit that EIA is not required for the permits issued.		OK
F.1.3. Will the project create any adverse environmental effects?	/1/	DR	Since the project activity envisages the fuel switch from solid and liquid fuels and electricity to natural gas, the project is expected not to have any negative environmental effects.		OK

Checklist question	Ref.	MoV*	Comments	Draft Concl.	Final Concl.
F.1.4. Are transboundary environmental impacts considered in the analysis?	/1/	DR	The project will not have any trans boundary environmental impacts.		OK
F.1.5. Have identified environmental impacts been addressed in the project design?	/1/	DR	An EIA is not required for the project activity and no negative impacts are foreseen.		OK
F.1.6. Does the project comply with environmental legislation in the host country?	/1/	I	The project activity at present has the construction permits in place for the 5 zones. It was confirmed during the site visit that the project activity that the project was agreed with the Focal point of Bulgaria and the project has a letter of support from the Ministry.		OK

Table 3 Resolution of Corrective Action and Clarification Requests

Draft report clarifications and corrective action requests	Ref. to Table 2	Summary of project participants' response	Final determination conclusion
OK CAR ~~1~~ Letter of approval from the Bulgaria and Denmark Focal Points needs to be obtained. A copy of the bilateral agreement signed between Bulgaria and Denmark needs to be provided to DNV.	Table 1	On receipt of the Letters of approval copies will be submitted to DNV. A copy of the Memorandum of Understanding signed between Bulgaria and Denmark is attached.	The Ministry of Environment and Water of the Republic of Bulgaria provided the letter of approval including the authorization of the participation of the project participant Overgas Inc. AD. The Danish Energy Agency has provided the letter of approval from Denmark, authorizing the Danish Ministry of Climate and Energy as a project participant to the project. This CAR is closed.
OK ~~CAR 2~~ The Government of Bulgaria needs to confirm that EU-ETS allowances will be cancelled from its registry equal to the ERUs issued due to fuel switch to natural gas by installations in this project that are covered by the EU-ETS Directive.	Table1		In its letter of approval the Ministry of Environment and Water of the Republic of Bulgaria confirms that the project is listed in the planned reserve for approved JI projects in the National Allocation Plant for cancellation to avoid double counting according to Directive 2004/101/EC and the relevant decisions by the European Commission.
OK CL ~~1~~ The project developer is requested to clarify the project participant included in table A.3 of the PDD.	Table 1	The project participants are Overgas Inc. AD and DEPA.	Reviewed and closed.
CL 2	B.1.3,	For the calculation of the emission reductions	The logic for the calculation of the grid

Draft report clarifications and corrective action requests	Ref. to Table 2	Summary of project participants' response	Final determination conclusion
The grid emission factor for the most recent years and the estimation of the grid future emissions factor are available from the Ministry of Environment and Water of Bulgaria. The PDD states these values were calculated based on the CDM approved methodology ACM002. This could not be confirmed and thus the project developer is requested to submit additional documents supporting this affirmation.	E.3.1	resulting from the replacement of electricity by natural gas has been used the emission factor* of NEC specified in „Baseline study of joint implementation projects in the Bulgarian energy sector. Carbon emission factor"†. This is quoted in the PDD In support of the above we are sending the document „Baseline study of joint implementation projects in the Bulgarian energy sector. Carbon emission factor".	emission factor has been provided in the document "Concise baseline study of Bulgarian EPS, CO2 baseline emission factor of EPS". The worksheet has also been provided. The methodology used is in line with the ACM0002 version 06 and hence the clarification is closed.
CL 3 The project developer is requested to clarify in which specific steps the CDM approved methodologies ACM0009 and ACM0002 are applied. The PDD states the methodology ACM0009 is used for the calculation of emissions reductions while the approach follow in section B, E of the PDD is not in line with the methodology (e.g. calculation of project emissions).	B.2.1	The methodology for ERU's calculation used by Overgas Inc. AD is not new. It has already been applied to three JI projects. The specificity of the gasification projects is connected with the involvement of great number of installations (over 23 800 in Burgas project) and with the consideration of the replacement of the part of the electricity used. The approach of the approved CDM methodology ACM 0009 "Consolidated methodology for industrial fuel switching from coal or petroleum fuels to natural gas" has been used in the PDD when calculating the emission reductions resulting from the fuel switch. Concerning the calculations in the PDD the	ACM0009 is mainly followed with regards to calculation of project emissions and baseline. The main difference is that for ACM0009, project emission are monitored and the baseline are calculated by conversion of the project emissions. In this project, however, the opposite is done; baseline emissions are postulated based on the marketing report and the project emissions are calculated by conversion from these value. At the time of verification, the monitored gas amounts have to be used to determine the project emissions. Furthermore, it is not clear how the baseline is going to be

* http://www2.moew.government.bg/recent_doc/climate/Baseline%20CEF%20Summary.pdf

† http://www2.moew.government.bg/recent_doc/international/climate/carbon_emission_joint.pdf

Draft report clarifications and corrective action requests	Ref. to Table 2	Summary of project participants' response	Final determination conclusion
		formulas of ACM 0009 have been used as follows: ***1.Baseline*** $BEy = \sum_i FF_{baseline,y,i} . NCV_{FF,i} . EF_{FF,CO2,i}$ **(ACM0009 – Formula 3)** $BE_{y.sec}=\sum_i FF_{baseline\ i\ y} LHV_{FF.i}. EF_{FF,CO2,i}$ **+ EE** **(B.1.4. – Formula 4)** ***2. Energy efficiency*** $FF_{baseline,i,y}=FF_{project,i,y} . NCV_{NG,y} . \varepsilon_{project,i}/NCV_{FF,i.} \varepsilon_{baseline,i,y}$ **(ACM0009 – Formula 4)** $K_i = LHV_{FF,I} . \varepsilon_{baseline,i,y} /LHV_{NG,y} . \varepsilon_{project,NG,y}$ **(D.1.1.2. – Formula 6)** ***3. Project emissions*** $PE_{y.sec}=\sum_i FF_{project,i\ y} LHV_{FF.i}EF_{FF,CO2,i} + EE_y + FF_{project\ NG\ y} LHV_{NG,.y} EF_{NG,CO2}$ **(D.1.1.2. – Formula 8)** $PE_y = FF_{project,y} NCV_{NG,y} . EF_{NG,CO2,y}$ **(ACM0009 – Formula 1)** ***4. Leakages*** $LE_Y = LE_{NG,Y} - LE_{FF,Y}$ **(E.2. – Formula 11)**	calculated during verification based on measured gas consumption and change of fuel mix. The clarification is closed.

Draft report clarifications and corrective action requests	Ref. to Table 2	Summary of project participants' response	Final determination conclusion
		$LE_{CH4,y} = [FF_{project,y} \cdot NCV_{NG,y} \cdot EF_{NG,upstream,CH4} - \sum_k FF_{baseline,k,y} \cdot NCV_k \cdot EF_{k,upstream,CH4}] \cdot GWP_{CH4}$ **(ACM0009 – Formula 5)** The difference between ACM 0009 and the methodology used in the PDD derives from the specificity of the project, which requires the inclusion of the emissions resulting from the replacement of the electricity and the emissions resulting from the fuels not replaced in the formula for calculation of the baseline and project emissions.	
CL 4 The project developer is requested to analyze how the following cases can affect the baseline: 1) the remaining lifetime of the installed facilities using fossil fuels and electricity in the industrial and public administration sectors. If the facilities had to be replaced in any case in the coming years, the option of using natural gas or other more efficient fuel than the one currently used, could be the most appropriate, even without this project activity. 2) the compliance status with current or planned environmental laws and	B.2.1	1) The remaining lifetime of the installed facilities may result in fuel switch and retrofit of the combustion installations; It is impossible to consider fuel switch of the currently used fuels to natural gas without the development of the gasification project, which includes as a main investment the construction of gas distribution network and facilities. The installations burning solid fuels have the lowest efficiency. That is the reason why the fuel switch from the solid fuels currently in use to liquid fuels is possible when the technical lifetime of the combustion installations expires. The gradual switch from the used in the industrial	The local, regional and national fuel consumption will be monitored and used to calculate the shift in fuel mix during the project period. It is crucial that all these parameters are monitored and that these statistical data are used in the most conservative way and used consistently during the project. The fuel mix for each year is calculated from extrapolation of the fuel mixes from the two proceeding years, excluding all data from JI projects. There are no indications that future regulations will lead to fuel switch to more efficient fuels.

Draft report clarifications and corrective action requests	Ref. to Table 2	Summary of project participants' response	Final determination conclusion
regulations regarding the emissions from industrial installations and other public sector's facilities (e.g. regulations regarding level of emissions or boilers emissions). If these installations do not comply with the current regulations or new regulations are expected to be put in place leading these facilities not complying with them, the use of natural gas or other more efficient fuel than the one currently used, could be the only option even without this project activity.		sector heavy fuel oil to gas oil and electricity, produced by cogeneration and renewable energy sources is possible. It is expected that the electricity use in the public and administrative sector and especially in the services will increase irrespective of the price The absence of natural gas will lead to increase of the share of biofuels and decrease of the share of solid fuels in the residential sector. 2) The expected stricter legislation regarding the limit values of harmful emissions in the atmosphere is related to Bulgaria meeting its commitments to the EU under the Environment Chapter. The national limit values of emissions from the combustion installations have already been put in compliance with the European standards. The switch from the use of highly sulphurous heavy fuel oil with 3.5% sulphur to the use of low sulphurous liquid fuels has a grace period which is being implemented according to a schedule – by 3.0% as of January 1, 2007, 1.0% as of January 1, 2012. The construction of purification installations is considered in The Program for compliance with the Directive 2001/80/EC on the limitation of emissions of certain pollutants into the air from large combustion installations. The introduction of new emissions limit values and new requirements to the fuels will lead to gradual change in the share of the used high sulphurous fuel.	Clarification is reviewed and closed.

Draft report clarifications and corrective action requests	Ref. to Table 2	Summary of project participants' response	Final determination conclusion
CL 5 The project developer is requested to confirm the consistency of the data included in the Extract from Bossiness plan of the project "Reduction of greenhouse gases by gasification of Burgas Municipality" (e.g. estimated net cash flow 2008-2012)	B.2.7	"Extract from Bussiness plan of the project" is presented to DNV. The estimated operating and maintenance costs contained in the extract do not include the purchase cost of the natural gas. This has led to misunderstanding the information. The Annex presents "Cash flow forecast" by years containing indicators for economic efficiency evaluation. (Financial-plan.xls, CASH FLOW FORECAST.xls)	Reviewed and closed
CL 6 The project developer has presented a simple cost analysis of the project. As the project generates other revenues than the sales of ERUs, the project developer is requested to apply an investment comparison analysis applying an appropriate financial indicator for justifying the investment barriers.	B.2.7	The Business plan of the project presents the estimated cash flow details according to three scenarios. (See Financial-plan.xls.) 1. Low gas price: considering the DanishCarbon revenues transfer into a natural gas price reduction for the end-users (description of the current situation); 2. Low project cost: having DanishCarbon revenues invested directly in the project (description of a virtual situation); 3. No DanishCarbon: A financial plan without DanishCarbon revenues (description of a virtual situation). The evaluation of the project additionality addresses two aspects: 1. Concerning the effectiveness of the GDN being constructed; 2. Concerning the end-users investments. Similar to other fuel switch projects, the costs	Reviewed and closed.

Draft report clarifications and corrective action requests	Ref. to Table 2	Summary of project participants' response	Final determination conclusion
		related to the switch are an important factor - a financial and psychological barrier. The additional investments in appliances, installations and their mounting which have to be made by the end users so as to switch to natural gas are a serious barrier. In order to help the end users to take a decision Overgas Inc. AD applies different marketing and financial mechanisms and a scheme for transformation of the revenues under DanishCarbon into lower end-users gas prices. The gas price reduction will decrease the payback time to a more acceptable period for larger groups of end-users. From the comparison of the "No DanishCarbon revenues" and "Low project cost" is obvious that the IRR would improve from 12.08% to 16.04%. The NPV would increase from 1 million EUR to 2.9 million EUR. These results show the financial sensitivity of the project to the ERU revenues which is a significant enhancement of the economic indexes for such an infrastructure project. The use of DanishCarbon revenues leads to gas prices decrease for the end-users and to improvement of the efficiency of the investments in natural gas appliances. In this way the financial effect of the JI project is being transferred to the end users. That's why when the IRR and NPV of the "low gas price" and the "no DanishCarbon" scenarios are compared a small difference between them is recognized.	

Draft report clarifications and corrective action requests	Ref. to Table 2	Summary of project participants' response	Final determination conclusion
		The scenario "no DanishCarbon" is virtual. In practice the planned positive cash flows will not be reached in the absence of a large group of residential end-users.	
CL 7 The PDD claims that financing from the banks is not forthcoming due to the high risks associated with the project. The project developer is requested to provide evidences of this barrier.	B.2.7	Being approved as a JI project makes the project for Burgas gasification more attractive and low risk for the banks. The improvement of the project financial indexes after receipt of the ERUs revenues and primarily of the preliminary payments is a higher guarantee for the bank for successful implementation of the project. The Letter of Intent signed by Overgas Inc. AD and DEPA is instrumental in the negotiations with DSK BANK EAD for long term investment loan.	Evidence is not given, so the financial barrier could not be confirmed. However other barriers provide sufficient proof of additionality of the project.
CL 8 It needs to be clarified if the project aims at claiming early credits or the crediting period starts in 2008 (page 10 vs. section C).	C.1.2	The project provides for claiming early credits. After the receipt of Letter of approval by MOEW the AAUs will be calculated till the end of 2007 and delivered in 2008.	Reviewed and closed
CL 9 The level of uncertainty in the GHG emissions calculation could be reduced if the calculations were done based on other data the company actually monitors (as shown in annex 3 to the PDD) as the leak rates.	D.1.1	The variables - temperature and pressure are being measured by OVERCOMM2.0 – an automatic system for remote monitoring of the technological parameters. These variables are used for re-calculation at standard conditions /T=20°C, P=1atm/ of the natural gas consumption, read on the end users' gas meters. In Bulgaria the delivered natural gas has NCV = 8000±100 kcall/1000 nm^3. A change of the	It has been demonstrated that the natural gas in Bulgaria is provided by one supplier and its NCV is agreed under contractual conditions to be 8000±100 kcal/1000 nm^3 thus not monitoring the NCV does not involved a material level of uncertainty. As per the version 06 of the PDD eak rates are monitored using the

Draft report clarifications and corrective action requests	Ref. to Table 2	Summary of project participants' response	Final determination conclusion
The monitoring of other variables could also decrease the uncertainty on the emission reduction calculation, e.g. natural gas NCV.		supplier or of the natural gas quality would be possible after the construction of another gas main pipeline or LNG terminal. This is highly unlikely to happen before the end of the credit period until 2012.	OVERCOMM0.2. software which is appropriate. CL closed.
CL 10 For the calculation of leakage and in line with the IPCC Good Practice Guidance, two segments involved in this project are "gas transmission & storage" (upstream emissions) and "gas distribution". The project developer is requested to justify the application of the same method for the two segments and why an approach based on direct monitoring for the segment of the distribution system is not applied.	D.3.1	The level of the leakages of the two segments "gas transmission" (upstream emissions) and "gas distribution" are re-calculated according to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories. Methane leakages in transport and distribution of 35 268 thous. sm^3 are 1 802 tCO_2e or 0.25% of the project emissions in the year 2012. The methane leakages resulting from the underground mining of the replaced 7129t coal in year 2012 are 2056 tCO_2e. The total methane leakages for the period 2008-2012 are -151 tCO_{2e}. The monthly analyses of input and output natural gas quantity conducted by Overgas Inc. AD in the segment "gas distribution" during the last 3 years show a deviation (±0.2%). To prove the immateriality of the leakages from distribution during the verification, the data concerning the number of the incidents and the quantity of gas emitted in the atmosphere are being checked in compliance with the company's	Upstream leakage has been calculated as per the tier 1 method proposed in2006 IPCC Guidelines for National Greenhouse Gas Inventories. For the period 2008-2012, methane leakage /2/ due to the natural gas distribution accounts for 4807 tCO_2. The emissions due to the natural gas transportation are calculated as 1690 tCO_2 and the emissions from the coal replaced are estimated to be 6648 tCO_2. Upstream leakage is thus estimated as -151 tCO_2 for the crediting period 2008-2012 i.e. 0.06% of the emissions reduction. The downstream leakage or leakage produced during the distribution of natural gas is monitored using the OVERCOMM2.0 software as included in annex 3 of the PDD. This method is found to be appropriate and thus the CL is closed.

Draft report clarifications and corrective action requests	Ref. to Table 2	Summary of project participants' response	Final determination conclusion
		procedures and instructions. We suggest in D.1., "Monitoring principles", in the general conditions to be added the following: "Every year the leakage is to be calculated and its immateriality (±0.2%) is to be proved."	
CL 11 It is necessary to clarify if the leakage from the pipeline distribution system is monitored or not. The PDD in section d.1.3 states the leakage is not monitored while the monitoring plan in annex 3 proposes the monitoring of leakage based on a mass balance. To reduce the uncertainty in the calculations, the immateriality of the leakage emissions is proposed to be monitored and periodically calculated.	D.1.6	The leakages are being reported in emergency statements. They could be determined as a difference of the meter readings before and after the damaged area or by an expert evaluation. The deviation between natural gas purchase and natural gas sales of Overgas Inc. AD gas distribution companies is under ±0.2% and is due to: - the time gap between the readings of the gas meters in the beginning and at the end of the GDN; - omissions and blow outs in case of GDN accidents; - measuring equipment inaccuracy (non working meters, inexact results etc.); The share of natural gas leakage in the atmosphere is immaterial. The immateriality of the leakages is being monitored and it is added in "Monitoring principles" (D.1. in PDD) that the immateriality is subject to yearly evaluation	It is important to minimize leakage, because a small leakage will for this project significantly reduce the emission reductions. Reviewed and closed.
CL 12 It should be clarified why the monitoring table contain in the PDD	D.1.6	The monitoring table includes the realized sales re-calculated for standard conditions (sm^3) after the reading of the variables temperature and pressure.	Reviewed and closed.

Draft report clarifications and corrective action requests	Ref. to Table 2	Summary of project participants' response	Final determination conclusion
is based on sales statements and does not take into account the monitored variables included in the monitoring plan in annex 3.		The realized sales are based on the meter readings of every end-user. The input data forming the meter readings are the temperature, pressure and volume data. That is the reason why the monitoring of these data by OVERCOMM system is very important and is applied to the project.	
CL 13 It should be clarified which are the data handling practices from the individual readings (for the 3 sectors) to the final values.	D.6.8	The quantity of the consumed natural gas is read by end users gas meters. The gas meters data of the industrial and big public and administrative users are being read remotely by the system OVERCOMM and then are being input in electronic system for processing. The gas meters of the households are being read by persons collecting on site the gas meters data. These data are also being input in electronic system for processing.	Reviewed and closed
CL 14 It needs to be described the procedures granting the right processes for data adjustments (if errors are identified, data lost, readings missing or calibration results show the monitoring equipment were giving wrong results).	D.6.9	Three cases of error occurrence are possible in the process of data package formation for the consumed natural gas quantity. 1. The measuring done by the gas meter is correct but the physical parameters (temperature, pressure, volume) are beyond the allowable limits. In this case an alarm is set off sending a signal to the Central Dispatching Office where the network is monitored 24 hours a day. An emergency team is sent to eliminate the cause of taking the parameters beyond limits. In this case there are no incorrect data because the fault is eliminated	Reviewed and closed

Draft report clarifications and corrective action requests	Ref. to Table 2	Summary of project participants' response	Final determination conclusion
		before affecting the natural gas consumption readings. Possible leakage and errors are minimized. 2. An error has been detected in the readings of some of the parameters (temperature, pressure or volume) or an error in the consumption reading. When the error occurs in the parameters readings the method of action is as described above (as in the case of detection of a parameter that has gone beyond the allowable limits). When the error occurs in the consumption readings it is addressed by the preparation of an operational balance of the consumption over a specific period of time. Depending on the pressure and consumption in the different networks the period for the preparation of such a balance ranges from one day to one week. Applicable is Instruction for preparation of the gas balance based on data from the automatic dispatch system OVERCOMM. In case a disbalance occurs the point of leakage identification is localized in the network and the measuring devices and gas pipelines are checked. This is followed by repair and reconstruction works. A temporary gas meter is installed. 3. A communication failure has occured. Remote data reading rules out the probability of information distortion. The data transfer is effected by equipment of the type GSM SIEMENS M20, M20Terminal, TC35, TC35Terminal, MC35, MC35Terminal, which secures extra data	

Draft report clarifications and corrective action requests	Ref. to Table 2	Summary of project participants' response	Final determination conclusion
		encoding and rules out the probability of an error in transfer The measuring devices and the dispatching station software also use their own algorithm for extra data encoding in putting together the data packages. The monitoring plan includes the natural gas consumtion readings, ajusted if required according to the methods described.	
CL 15 The methodology proposed for the calculation of project and baseline emissions involves a high level of uncertainty while the estimations are based on a direct survey of consumers and the estimation of fuel and electricity demand in the future. The PDD does not include an analysis of how a deviation on the forecasted demand could influence the estimation of GHG emissions and the probability of that deviation to happen.	E.1.4 E.3.5	The project implementation plan envisages that over 23 800 users will switch from the currently used fuels and electricity to natural gas. The deviation from the forecast of separate users or small groups will not affect the basic forecast and the end energy consumption. The forecast presented in the PDD is the closest to the national forecasts and with the lowest level of uncertainty. We suggest baseline monitoring which includes monitoring of the fuel mix change at a national level during the last three years proceeding the year of monitoring and correction of the baseline structure according to the changes occurred. The methodology of expression of the changes is shown in the PDD.	For an economy in transition like in Bulgaria it is not unlikely with a change in fuel mix without this project which will affect the baseline of this project. This is taken into account by monitoring and using local, regional and national data to calculate the shift in fuel mix during the project period. It is crucial that all these parameters are monitored and that these statistical data are used in the most conservative way and used consistently during the project. The fuel mix for each year is calculated from extrapolation of the fuel mixes from the two previous years, excluding all data from JI projects. Clarification is reviewed and closed.

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