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Determination Report

EUROPEAN BANK FOR CONSTRUCTION AND DEVELOPMENT, UK

Determination of the Bulgarian Energy Efficiency Portfolio, Bulgaria

Report No. 733895-1

September 29, 2006

TÜV SÜD Industrie Service GmbH
Carbon Management Service
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Summary:

The Certification Body ”Climate and Energy” has been ordered by European Bank for Construction and Development (EBRD) to perform a determination of the above mentioned project.

In summary, it is TÜV SÜD´s opinion that the project “Bulgarian Energy Efficiency Portfolio”, as described in the revised project design document of August 2006, meets all relevant UNFCCC requirements for the JI, set by the Kyoto Protocol, the Marrakech Accords and relevant guidance by the JI Supervisory Board and that the project furthermore meets all relevant host country criteria and a proper baseline and monitoring methodology was developed and applied. The sole remaining outstanding issue is the missing of Letter of Approvals of the involved Annex-I-Parties.

Additionally the assessment team reviewed the estimation of the projected emission reductions. We can confirm that the indicated amount of emission reductions of 95403 tonnes CO_{2e} (to be issued as ERUs) in the intended crediting period from 2008 – 2012 represents a reasonable estimation using the assumptions given by the project documents. Furthermore the project is expected to result in emission reductions 34 195 tonnes CO2 prior to this indicated crediting period.

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Abbreviations

BEF	Baseline Emission Factor for the Bulgarian Grid
CAR	Corrective Action Request
CEF	Carbon Emission Factor
CR	Clarification Request
DHV	DHV Environment and Transportation, Amersfoort, Netherlands
DOE	Designated Operational Entity
EBRD	European Bank for Construction and Development
EIA / EA	Environmental Impact Assessment / Environmental Assessment
ER	Emission reduction
ERU	Emission Reduction Unit
GHG	Greenhouse gas(es)
JI	Joint Implementation
KP	Kyoto Protocol
MP	Monitoring Plan
NFP	National Focal Point
PDD	Project Design Document
REUP	Rational Energy Utilisation and Financing Plan, prepared by EnCon Services
TÜV SÜD	TÜV SÜD Industrie Service GmbH
UBB	United Bulgarian Bank
UNFCCC	United Nations Framework Convention on Climate Change
VVM	Determination and Verification Manual

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1 INTRODUCTION

1.1 Objective

EBRD has commissioned TÜV SÜD Industrie Service GmbH to determine the Bulgarian Energy Efficiency Portfolio. The determination serves as design verification and is a requirement of all Bulgarian JI projects. The purpose of a determination is to have an independent third party assess of the project design. In particular, the project's baseline, the monitoring plan (MP), and the project's compliance with relevant UNFCCC and host country criteria are validated in order to confirm that the project design as documented is sound and reasonable and meets the stated requirements and identified criteria. Determination is a requirement for all Bulgarian JI projects and is seen as necessary to provide assurance to stakeholders of the quality of the project and its intended generation of emission reductions (in particular ERUs – in the first commitment period under the Kyoto Protoccol).

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

1.2 Scope

The determination scope is defined as an independent and objective review of the project design document, the project's baseline study and monitoring plan and other relevant documents. The information in these documents is reviewed against Kyoto Protocol requirements, UNFCCC rules and associated interpretations. TÜV SÜD has, based on the recommendations in the Determination and Verification Manual employed a risk-based approach in the determination, focusing on the identification of significant risks for project implementation and the generation of ERUs.

The audit team has been provided with the first PDD-version in November 2005. The version from November, 2005 was published on the website of www.netinform.de. Potential stakeholders have been invited for commenting by using the Climate-L announcement list service. The demanded additional information is addressed in annex 1. Requested information was given and the PDD was updated accordingly. That final PDD was submitted in September 2006 and serves as the basis for the final assessment presented herewith.

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

1.3 GHG Project Description

This energy efficiency project is divided in three sub-projects. All sub-projects aim to save electricity delivery from the grid and to increase the efficiency of the energy producing facilities. The objective of all sub-projects is to minimise consumption of steam, heat and/or electricity and further on to use high energetic steam by a steam turbine or to use a combined heat and power unit for generating electricity. Besides own generated electricity the facilities are supplied with electricity from the public grid. The facilities are Sugar Plants JSC, Zebra AD JSC and Pirinplast JSC. The proposed project activities will mitigate GHG emissions in an economically sustainable manner, and will result in other environmental benefits, such as reduced exhaust gases.

The individual measures/sub-projects are shortly described below:

Sub-project Sugar Plants:

SP-ECO1. Reconstruction of the coal-fired boiler (efficiency increase 20%) and replacing the oil-burners (pilot burner) with more efficient combined gas-oil burner.

SP-ECO2. Additional counter pressure turbine transforming the waste steam (6 bar) into heating energy (1,2 bar) and a new construction of a heat exchanger for the foreseen new hot water system

Sub-project Zebra:

Z-ECO1. Implementation of combined steam/power unit (gas-fired engine), with utilization of a new boiler (peak demand), high efficient water treatment, de-aeration devices and steam pipeline replacement

Z-ECO2. Utilization of waste heat for process and heating purposes;

Z-ECO3. Replacement of the Calendar engine with frequency controlled engine.

Sub-project Pirinplast:

The project of Pirinplast Jsc envisages the replacement of 5 low efficient injection machines with new highly efficient injection moulding machines, characterized by a high productivity and low energy consumption.

The United Bulgarian Bank, 5 Sveta Sofia Street, Sofia is mentioned in the PDD as project participants in the Host Country. Host Party of the project activity is Bulgaria, however the Investor Party is not fixed yet, nevertheless it is foreseen that the Netherlands EBRD Carbon Fund will purchase the generated emission reductions.
The category of the project activity is in Scope 1 and 3 (energy generation and energy demand). The approved and applied baseline and monitoring CDM methodology is AMS-II.D “Energy efficiency and fuel switching measures for industrial facilities”

According to the PDD and involved parties the starting date of the project activity is 01/07/2004. The crediting period for ERUs is committed as a 5 years crediting period according to the Kyoto Protocol and it starts on 01/01/2008. A further crediting period for generating AAUs is defined from 01/10/2005 until 31/12/2007.

2 METHODOLOGY

The determination of the project consists of the following three phases:

- Desk review
- Follow-up interviews
- Resolution of clarification and corrective action requests

In order to ensure transparency, a determination protocol was customized for the project, according to the Determination and Verification Manual. 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 organizes details and clarifies the requirements a CDM 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 is enclosed in Annex 1 to this report.

Determination Protocol Table 1: Mandatory Requirements			
Requirement	**Reference**	**Conclusion**	**Cross reference**
The requirements the project must meet.	Gives reference to the legislation or agreement where the requirement is found.	This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) of risk or non-compliance with stated requirements. The corrective action requests are numbered and presented to the client in the Determination report.	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 should meet. The checklist is organised in seven different sections. Each section is then further subdivided. The lowest level constitutes a checklist question.	Gives reference to documents where the answer to the checklist question or item is found.	Explains how conformance with the checklist question is investigated. Examples of means of verification are document review (DR) or interview (I). N/A means not applicable.	The section is used to elaborate and discuss the checklist question and/or the conformance to the question. It is further used to explain the conclusions reached.	This is either acceptable based on evidence provided (OK), or a Corrective Action Request (CAR) due to non-compliance with the checklist question (See below). Clarification is used when the determination team has identified a need for further clarification.

Determination Protocol Table 3: Resolution of Corrective Action and Clarification Requests			
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 Client or other project participants during the communications with the determination team should be summarized in this section.	This section should summarize the determination team's responses and final conclusions. The conclusions should also be included in Table 2, under "Final Conclusion".

Figure 1 Determination Protocol Tables

2.1 Review of Documents

The project design document submitted by the client and additional background documents related to the project design and baseline were reviewed. The audit team has been provided with the first PDD-version issued in November 2005 which had been made public on www.netinform.net . The project design document was assessed by several revisions addressing changes to the baseline and monitoring methodology and clarification requests issued by TÜV SÜD. The final updated PDD was issued in August, 2006 serves as the basis for the assessment presented herewith.

2.2 Follow-up Interviews

In November 2005 TÜV SÜD performed interviews with project stakeholders to confirm selected information and to resolve issues identified in the document review. Representatives of the subprojects and UBB were interviewed. The main topics of the interviews are summarized in Table 1.

Table 1 Interview topics

Interviewed organisation	Interview topics
DHV	Project design, baseline, monitoring plan, environmental impacts, permits and licenses, stakeholder comments, additionality, monitoring procedures, Energy Sector, Approval of the project, JI-Guidelines
Sub-projects: Sugar Plants, Zebra, Pirinplast	Project design, baseline, monitoring, environmental impacts, permits and licenses, stakeholder comments, monitoring procedures, calibration of the measurement equipment, documentation, archiving of data, Energy Sector
United Bulgarian Bank	Baseline, additionality, evaluation of the projects by external experts, approval

National Electricity Company NEK	Baseline of electricity grid

2.3 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the determination was to resolve the requests for corrective actions and clarification and any other outstanding issues which needed to be clarified for TÜV SÜD's positive conclusion on the project design. The Corrective Action Requests (CAR) and Clarification Requests (CR) raised by TÜV SÜD were resolved during communications between the Client and TÜV SÜD. To guarantee the transparency of the determination process, the concerns raised and responses that have been given are summarized in chapter 3 below and documented in more detail in the determination protocol in Annex 1.

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

3 DETERMINATION FINDINGS

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

1) The findings from the desk review of the project design documents and the findings from interviews during the follow up visit are summarized. A more detailed record of these findings can be found in the Determination Protocol in Annex 1.

2) Where TÜV SÜD had identified issues that needed clarification or that represented a risk to fulfil project objectives, a Clarification Request or Corrective Action Request, respectively, have been issued. The Clarification and Corrective Action Requests are stated, where applicable, in the following sections and are further documented in the Determination Protocol in Annex 1. The determination of the project resulted in several Corrective Action Requests and Clarification Requests.

3) Where Clarification or Corrective Action Requests have been issued, the exchanges between the Client and TÜV SÜD to resolve these Clarification or Corrective Action Requests is summarized.

4) The final conclusions for determination subject are presented.

The determination findings relate to the project design as documented and described in the final project design documentation.

3.1 General Description of Project Activity

3.1.1 Discussion

The project participant is UBB. The project is developed by UBB, Bulgaria and DHV, Netherlands. Bulgaria as the host Party meets all relevant participation requirements. However the project has not been approved by the national DNA yet and no Letter of Authorization has been issued.

The objective of the project ”Bulgarian Energy Efficiency Bulgarian Energy Efficiency Portfolio” is to apply to the industrial facilities energy efficiency and electricity generation measures which will mitigate GHG emissions in an economically sustainable manner. The project bundles mitigation measures in three industrial facilities. The three sub-projects foresees to refurbish or replace old boilers, to implement new steam turbines or gas-engines in order to produce electricity for internal demand, to change from steam to hot-water-system for heating purposes, to mitigate electricity by frequency controlled engines and to mitigate electricity with high efficient production machines.

The project design does reflect current good practice. The technical design has been professionally developed. A determination of the compatibility of the single components carried out by the project developer resulted in a positive conclusion. The project does moreover apply state of the art equipment.

The project boundaries are clearly defined. During this assessment TÜV SÜD contacted and visited 3 sites indicated on the Information Reference List.

The project equipment can be expected to run for the whole project period and it can not be expected that it will be replaced by more efficient technologies.

Initial training and maintenance efforts are required. In the PDD and during the visit on site the project developer confirmed that such training has taken place and/or is envisaged. Documentation on executed and/or planned training activities has been submitted.

There is no hint that the project is currently not in line with the relevant legislation and plans in the host country. Environmental impact assessment deemed to be not necessary. The Letter of Endorsement of the Bulgarian NFP which shows in principle the support of the project was issued by MoEW.

Bulgaria has ratified the Kyoto Protocol on August 15th 2002. The Ministry for Environment and Water MoEW was appointed as national focal point of Bulgaria and has issued National JI-Guidelines "How to develop a climate change project and leverage the carbon benefits" (http://www.moew.government.bg/recent_doc/international/climate/Brochure_JI_eng.pdf). The project is considered to be in line with the sustainable development policies of Bulgaria as improvements to energy efficiency is a relevant issue in the national Bulgarian policy. The question can finally be answered after the issuance of the Letter of Approval by the Bulgarian NFP.

It can be expected that the project will create additional environmental benefits by reducing emissions of harmful gases. The project does moreover improve the competitiveness of the industrial activities.

The funding for the project does not lead to a diversion of official development assistance, as according to the information obtained by the audit team, ODA does not contribute to the financing of the project.

The project starting date and the operational lifetime are clearly defined. The crediting periods are clearly defined.

Hitherto there was no official form to be used in the context of the PDD development of JI projects besides the guidance given under the CDM. Meanwhile a draft JI PDD form for description of JI-Project is now available. The draft JI PDD shall be applied provisionally until the COP/MOP has adopted it in accordance with the JI guidelines. The JISC decided that the JI PDD form will be in effect as of 15 June 2006 and shall be used for JI projects after this date.

The submitted PDD as well as its revision use an official form for CDM projects. The PDD are considered to cover all aspects necessary to describe the project and to assess its conformity with the underlying regulations. In case of "Track 2" the application of the JI PDD form is necessary for the approval of the JI Project by the JI Supervisory Committee (JISC).

3.1.2 Findings

Corrective Action Request (CAR1):

It is envisaged that the project has to be approved by both countries (Netherlands and Bulgaria) at the end of the validation process. Written letters of approval were not available at the time of this determination.

Response:

The Approvals will be provided at the end of the validation.

Corrective Action Request (CAR2):

The Technical Description and the definition of project boundaries presented in the PDD, gives an overview of the project's system. Nevertheless there are some typing errors in the technical

description, which make understanding sometimes difficult. The technical descriptions should be revised.

Response:

A revised PDD was submitted.

3.1.3 Conclusion

The Letter of Approvals by both parties, investor and host country are not yet submitted. Therefore the project does not yet fulfil formally all belonging criteria set for the approval of JI-projects. The Letter of Approvals by both parties shall be submitted to TÜV SÜD at time of its availability. In case the issuance of ERUs will be done under the “First Track JI”- regime, there is no requirement to provide the validator such a LoA in order to forward it to the Supervisory Committee. Under that circumstance the issue can be considered to be resolved otherwise it will be considered as an outstanding issue requiring a final revision of this determination report.

The foreseen technology does reflect current good practice for improving energy efficiency. The project uses technology that goes beyond the state of the art in the host country. It is moreover very unlikely that the foreseseen project technology will be substituted during the crediting period by a still more efficient technology.

The PDD contains information how training, operating, controlling, maintenance will be organized and managed. The aspects regarding future responsibilities and quality assurance are fixed.

In case of “Track 2” the application of the JI PDD form is necessary for the approval of the JI Project by the JI Supervisory Committee (JISC).

3.2 Baseline Methodology

3.2.1 Discussion

The project is based on the approved CDM small scale methodology: AMS-II.D “Energy efficiency and fuel switching measures for industrial facilities”. The selected methodology has been designed for any energy efficiency and fuel switching measure implemented at a single industrial facility. The measures may have a wide range of different technologies and purpose designed for the special facility. Therefore the respective baseline methodology is not very detailed. Nevertheless the principles of applied methodology deemed to be the most applicable one for this project. The PDD responds convincingly to each of the applicability criteria which are outlined in the baseline methodology.

The application of the methodology and the discussion and determination of the baseline are tolerably transparent. The application follows the steps outlined in the methodology and answers the corresponding sections in a proper manner.

The baselines are been determined using reliable assumptions based on project specific data which were dedicated from the respective REUP-studies. The baselines do further take into account the Bulgarian JI-Guidelines, NEK-Baseline Study and the major national and/or sectoral policies, macro-economic trends and political developments. Relevant key factors are described and their impact on the baseline and the project risk is evaluated.

Concluding it can be stated that it has been made plausible that the chosen baseline scenario is the one deemed most realistic under the given frame conditions.

The additionality of the project is proven by using barrier test according Attachment A to Appendix B of the simplified modalities and procedures for small–scale CDM project activities. The project demonstrates via the description of barriers that it is not the baseline scenario. Each step of the respective section of the methodology has hereby been applied in a correct manner.

3.2.2 Findings

Corrective Action Request (CAR3):

The baseline methodology do not specify sufficiently data sources and assumptions The methodology should specify data sources and assumptions of each used/assumed figure (e.g. efficiencies, caloric values, emission factors, fuel consumption….).

Response:

A revised PDD was submitted.

Corrective Action Request (CAR4):

The baseline methodologies do not sufficiently describe the formula to determine baseline emissions. The used rationale and formulas for baseline emissions should be indicated.

Response:

A revised PDD was submitted. The respective calculation spread sheet as electronic version was submitted, too.

Corrective Action Request (CAR5):

The methodologies should be demonstrated in detail. All involved parameters should be indicated. The used formulas should be mentioned.
SugarPlant: Besides efficiency of boiler and efficiency improvement due heat exchanger the other necessary parameters like steam production, electricity generation by turbines and several emission factors have to be indicated and described.
Zebra: Besides electricity savings has the net-generation of cogeneration unit to be regarded for baseline determination.

Clarification Request (CR1):

The used assumptions should be checked whether they are sufficiently conservative. I.e: For determining baseline emissions the use of efficiency of heat exchangers under test circumstances can not be considered as conservative.

Response:

A revised PDD was submitted.

Corrective action request (CAR6):

The PDD does not show which baseline emission factor for the electricity grid is used and why the chosen factor is eligible for this project.

Response:

A revised PDD was submitted.

Corrective action request (CAR7):

Because of the independent sub projects it should be shown that each sub project itself is not a likely baseline scenario. Especially the technological barrier and the prevailing practice should be specified for each individual subproject.

Response:

A revised PDD was submitted.

Corrective Action Request (CAR8):

Risks for the baseline were not discussed in the PDD. It should be analyzed which major risks do exist for each individual project.

Response:

A revised PDD was submitted.

3.2.3 Conclusion

The used baseline methodologies are applicable for the reduction of steam demand and electricity demand. Regarding the emissions of electricity sector the application of NEK – Baseline Study is now according to Small Scale CDM-Methodology.

Nevertheless the NEK – Baseline Study itself, does not correspond exactly to CDM-Methodology because

- "Operating Margin EF" is calculated without consideration of the power plants, which are covered by the build margin.

- "Build Margin EF" is calculated without consideration of the “build” nuclear power plant units.

In case the issuance of ERUs will be done under the First Track JI”- regime, there is no requirement to comply to CDM-Methodology. Under that circumstance the issue can be considered to be resolved otherwise it should be noticed that this issue will probably require a further revision of the baseline determination.

After several revisions of the PDD the above discussed corrective action requests are considered to be resolved.
The formulas to determine baseline emissions and project emissions are sufficiently described, are proper for the used methodology. The used assumptions are sufficiently conservative and the needed parameters for baseline and project emissions are now regarded. Even the emission factors of coal and oil the used assumptions and factors are sufficiently referenced (Revised 1996 IPCC Guidelines for National GHG inventories) and derived. The respective calculation spread sheet as electronic version was submitted (CO2eq_EE_10_08_06.xls); printouts of this spread sheet are enclosed as annex to the PDD.

The additionality of the project is proven by using barrier test. The PDD demonstrates additionality in particular with the combination of the following barriers:

- lack of access to finance because of high investment and the risk not to gain provisioned savings due production risks according economic development or due unsecured prices for electricity or fuel.
- prevailing practice, lack of awareness on efficient technologies and lack of local technical expertise in terms of implementing and operating energy efficient measures
- as European Commission stated, the Bulgarian Energy Strategy does not yet define an active policy to improve energy efficiency. Hence there is very limited support from Bulgarian legislation and government regarding energy efficiency.
- The mentioned argument that increasing prices for natural gas would jeopardise the financial feasibility of the project can be accepted as true for the sub-project Zebra.

After the submitted revision of the PDD the project can be considered to be in compliance with the requirements.

3.3 Duration of the Project / Crediting Period

3.3.1 Discussion

For each sub-project the respective starting date is defined in the PDD. It can be assumed that the beginning of the construction is combined with the respective starting date. The estimated operational lifetimes of eight and seven years are reasonable and will end at least till the end of the Kyoto period.

The starting date of sub-project Sugar Plants is the earliest indicated starting date and is defined as the July 1, 2004. Hence the starting date of the ”Bulgarian Energy Efficiency Portfolio”-Project can be considered as July 1, 2004.

The length of the overall crediting period is seven years and 3 months (October 2005 to the end of 2012) and started from October 1, 2005 with the crediting period of the sub-project Sugar-Plant. It is distinguished between the Kyoto period 2008-2012 in accordance with the first commitment period defined in the Kyoto Protocol., when ERUs can be generated and the period before 2008, when only AAUs can be created. The project seeks Assigned Amount Units (AAUs) for 2005, 2006 and 2007 and Emission Reduction Units (ERUs) under Art.6 of the Kyoto Protocol for the whole 5-year period from 2008 to 2012.

3.3.2 Findings

None

3.3.3 Conclusion

The project activity started at the beginning of July 2004. The project seeks Assigned Amount Units (AAUs) for 2005, 2006 and 2007. The crediting period starts from October 1, 2005.

The project seeks Emission Reduction Units (ERUs) under Art.6 of the Kyoto Protocol for the whole 5-year Kyoto period from January 1, 2008 to December 31, 2012.

3.4 Monitoring Plan

3.4.1 Discussion

The project is based on the approved CDM-SSC Monitoring-Methodologie AMS II.D. The methodology has been approved by the CDM Executive Board at its 22nd meeting in November 2005.

The selected methodology has been designed for any energy efficiency and fuel switching measure implemented at a single industrial facility. The measures may have a wide range of different technologies and purpose designed for the special facility. Therefore the respective monitoring methodology is not very detailed. Nevertheless the principles of applied methodology deemed to be the most applicable one for this project.

No indicators for leakage emissions have been defined and no leakage emissions are monitored according to the monitoring plan as there are no emissions to be expected.

Environmental impacts of the projects are discussed in Section F of the PDD. No EIA were necessary, because the energy efficiency measures lead to a better environmental performance

of the respective facilities.The project is considered to have no negative environmental, social and economic effects and a monitoring of such data is also not required by the applied monitoring methodology. This approach is deemed sufficient.

3.4.2 Findings

Corrective Action Request (CAR9):

The monitoring methodology does not correspond to the individual energy efficiency measures and baseline determination. The monitoring parameters for baseline emissions and project emissions are not specified for the individual subproject. Hence the monitoring plan should be strongly revised and specified for the individual subproject.

Response:

A revised PDD was submitted.

Corrective Action Request (CAR10):

The PDD does not contain any analysis of monitoring errors or uncertainties. Possible monitoring errors or uncertainties should be analysed. If necessary, mitigation measures have to be defined.

Response:

A revised PDD was submitted.

Clarification Request (CR2):

No indicators have been defined and no leakage emissions are monitored according to the monitoring plan as there are no emissions to be expected. Nevertheless it should be regarded, that due reduced electricity demand from the grid the electricity sector would indirectly need less allowances to emit within the EU Emissions Trading System. Hence by preparing the national allocation plan the Bulgarian JI projects must be taken into consideration.
Letter of Endorsement should be provided to the audit team.

Response:

Letter of Endorsement was submitted.

3.4.3 Conclusion

The revised PDD responds convincingly to each of the applicability criteria which are outlined in the baseline methodology.

The application of the methodology and the discussion and determination of the baseline are tolerably transparent. The application in the revised PDD follows the steps outlined in the methodology and answers the corresponding sections in a proper manner. Details of the methodology as parameters to be obtained, recording frequency and archiving methods are considered being reasonable and appropriate.

The monitoring plan does include all relevant parameters to determine baseline and project emissions for each sub project and it is possible to monitor and/or measure the currently specified GHG indicators. The indicators which are not measured can be obtained from IPCC docu-

ments and the Baseline Study from National Electric Company. The parameters defined allow calculating the baseline and project emissions in a proper manner.

A monitoring plan as a work sheet (excel-spread-sheet; monitoring sheet v3.xls) for the monitoring personnel was provided to the audit team. The default values and relevant formulas are included, so that the emissions and emission reductions can be automatically calculated according to the baseline and monitoring methodology.

Although no leakage emissions have been defined, nevertheless it should be regarded, that due reduced electricity demand from the grid, the electricity sector would indirectly need less allowances to emit within the EU Emissions Trading System. The MoEW is aware about the issue of double-issuing of ERUs and Allowances. Bulgaria is planning to set aside a reserve for electricity producing JI projects (deducted from the allowances of the electricity sector) in order to avoid indirect double counting. This reserve will include the ERUs in the PDDs of the approved projects, the endorsed projects, and some new projects. Therefore the MoEW issued the Letter of Endorsement for this project.

The PDD (Section D.7.) indicates the authorities and responsibilities within the given project structure. It is described how the respective organizational structure, quality systems and instruction manuals are already implemented and/ or planned.

Quality control and quality assurance procedures for the data to be monitored are roughly described in the revised PDD (Section D.6.). The project owner of the sub project PirinPlast is responsible to monitor the production and to "modify" the baseline parameter in accord with the verifier, because the baseline is related to the products which have been produced the most in the current past.

The above mentioned requests are answered sufficiently.

3.5 Calculation of GHG Baseline Emissions, Project Emissions and Emission Reductions

3.5.1 Discussion

The calculations in the published version of PDD in section A.2., which are resulting in numbers of emission reductions have been presented in a way, which were not correspondent with the general methodology to determine baseline emissions and to subtract the calculated project emissions and leakage emissions.

The calculations in the published version of PDD in section E, which are resulting in numbers of emission reductions have been presented in a strong aggregated way, so that the given numbers were not reproducible for a third party. Nevertheless the overall result of indicated emission reductions was in a similar order like the figures in the final PDD.

Because of the already above mentioned CARs regarding the correct implementation of the baseline methodology and monitoring methodology a revision of the PDD was necessary which have consequences on the calculation of emissions, too.

3.5.2 Findings

Corrective Action Request (CAR11):

No calculations in chapter E are demonstrated. The calculations in chapter A.2. are not correspondent to the baseline methodology. These are not eligible to calculate GHG emissions

by monitored data. The calculations should be documented complete and in detail. They should be reproducible by a third party.

Response:

A revised PDD and additional excel-spread-sheets were submitted.

Corrective Action Request (CAR12):

Uncertainties in the GHG estimates are mentioned, but not completely. For all relevant data it should be the uncertainties analysed. It should be described if uncertainties in the emissions estimates have to be addressed.

Response:

A revised PDD was submitted.

3.5.3 Conclusion

A strongly revised PDD inclusive corrected calculation of GHG emissions was submitted. No aspects of leakage emissions have been identified; hence leakage calculation is not requested.

Finally the calculations and the used data are according to the applied methodology and its requirements. The additional submitted excel-spread-sheet makes the calculation transparent and reproducible. Printouts of the calculation spread-sheet are enclosed as annex to the PDD.

The project's spatial boundaries are clearly described. Uncertainties in the GHG emissions estimates are addressed in the documentation.

The project will definitely result in fewer GHG emissions than the baseline scenario.

3.6 Environmental Impacts

3.6.1 Discussion

As already mentioned above in section 3.4 Monitoring plan, the environmental impacts of the projects are discussed in Section F of the PDD. No EIAs were necessary, because of very low adverse impacts of the energy efficiency measures to the environment. The remaining low impacts have been sufficiently described in the PDD. Negative environmental effects are not expected to be created by the project. Given the nature of the project design this seems to be reasonable.

Transboundary effects are not expected as the project sites are far from the national boundary.

3.6.2 Findings

Clarification request (CR3):

Construction permits, which take environmental issues into account, should be submitted as far as possible.

Response:

No construction permits or approvals of local authorities were submitted yet to the determination team, as they will be delivered only at an advanced status of the projects implementation.

3.6.3 Conclusion

There is no hint that the project is currently not in line with the relevant legislation and plans in the host country. Environmental impact assessment deemed to be not necessary. The Letter of Endorsement of the Bulgarian NFP which shows in principle the support of the project was issued by MoEW.

The above mentioned requests are answered sufficiently.

3.7 Comments by Local Stakeholders

3.7.1 Discussion

Authorities and stakeholders have been consulted during the process of approval of the project. All projects were submitted to the Ministry of Environment and Water in the Project identification note. A Letter of Endorsement was provided by the Ministry, after the projects were reviewed by MoEW's staff regarding their environmental impacts and compliance with the official procedures.

The project participants applied for an approval of the local mayor, who announced the regarding project. There have been no comments, which would have required any further action. With issuing the construction permits stakeholder comments are regarded. No further stakeholder process is required according to national legislation.

Further for the BEERECL facility, two public conferences were organised. Advertisements were made in national and local newspapers, internet and radio. There were no comments received. Because of this, no further action has been undertaken.

3.7.2 Findings

Besides the above mentioned CR3 in section 3.6 "Environmental impacts" regarding construction permits no further findings are relevant.

3.7.3 Conclusion

The project can be considered to be in compliance with the requirements.

4 COMMENTS BY PARTIES, STAKEHOLDERS AND NGOS

TÜV SÜD published the project documents on its website from November 24, 2005 to December 23, 2005 and invited comments within 30 days, by Parties, stakeholders and non-governmental organizations.

During the commenting period there have been no comments received.

Industrie Service

5 DETERMINATION OPINION

TÜV SÜD has performed a determination of the "Bulgarian Energy Efficiency Portfolio"-Project. The determination was performed on the basis of relevant JI criteria.

The review of the project design documentation, the subsequent follow-up interviews and the revised PDD (final version August 2006) have provided TÜV SÜD with sufficient evidence to determine the fulfilment of stated criteria.

There is a remaining issue concerning the required letters of approval. Under the condition that this issue will be rectified sufficiently it is our opinion, that the project meets all relevant UNFCCC requirements for JI.

By implementing energy efficiency measures the project results in reductions of GHG emissions that are real, measurable and give long-term benefits to the mitigation of climate change. An analysis of barriers demonstrates that the proposed project activity is not a likely baseline scenario. Emission reductions attributable to the project are hence additional to any that would occur in the absence of the project activity. Given that the project is implemented as designed, the project is likely to achieve the estimated amount of emission reductions.

We can confirm that the indicated amounts of emission reductions of 95 403 t CO2e in the crediting period from 2008 – 2012 (to be issued as ERUs) represent a realistic estimation using the assumptions given by the project documents. As these figures will depend on the future performance of the project, this confirmation gives no guarantee on the realisation. Furthermore the project is expected to result in emission reductions 34 195 tonnes CO2 prior to this indicated crediting period.

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

Munich, 2006-09-29

Werner Betzenbichler

Head of Certification Body "Climate and Energy"

Munich, 2006-09-29

Klaus Nürnberger

Responsible Project Manager

Annex 1: 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)	**CAR 1** <u>Corrective Action Request:</u> The Approvals should be provided at the end of the validation. CAR1 remain as outstanding issue	It is envisaged that the project will be approved by both countries (Bulgaria and The Netherlands) at the end of the validation process. The Bulgarian National Focal Point has issued a Letter of Endorsement which shows in principle the support of the project. UBB envisaged submitting the Letters of Approval to the validator.
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)	☑	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	Kyoto Protocol Article 6.1 ©	☑	
4. The acquisition of emission reduction units shall be	Kyoto Protocol	☑	

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference / Comment
supplemental to domestic actions for the purpose of meeting commitments under Article 3	Article 6.1 (d)		
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	Marrakech Accords, JI Modalities, §20	☑	The Ministry for Environment and Water MoEW was appointed as national focal point of Bulgaria and has issued National JI-Guidelines "How to develop a climate change project and leverage the carbon benefits"
6. The host Party shall be a Party to the Kyoto Protocol	Marrakech Accords, JI Modalities, §21(a)/24	☑	Verified at UNFCCC website
7. The host Party's assigned amount shall have been calculated and recorded in accordance with the modalities for the accounting of assigned amounts	Marrakech Accords, JI Modalities, §21(b)/24	☑	Third National Communication is available
8. The host Party shall have in place a national registry in accordance with Article 7, paragraph 4	Marrakech Accords, JI Modalities, §21(d)/24	☑	This issue can not be answered by now as such as the JI system is not installed yet.
9. Project participants shall submit to the independent entity a project design document that contains all information needed	Marrakech Accords, JI Modalities, §31	☑	A PDD has been submitted in

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference / Comment
for the determination			December 2005, which contains the most relevant information.
10. The project desing document shall be made publicly available and Parties, stakeholders and UNFCCC accredited observers shall be invited to, within 30 days, provide comments	Marrakech Accords, JI Modalities, §32	☑	The project design document was made publicly available from November 25th, 2005 to December 24th 2005. No comments have been received.
11. Documentation on the analysis of the environmental impacts of the project activity, including transboundary impacts, in accordance with procedures as determined by the host Party shall be submitted, and, if those impacts are considered significant by the project participants or the Host Party, an environmental impact assessment in accordance with procedures as required by the Host Party shall be carried out	Marrakech Accords, JI Modalities, §33(d)	☑	Table 2, Section F
12. The baseline for a JI project shall be the scenario that reasonably represents the GHG emissions or removal by sources that would occur in absence of the proposed project	Marrakech Accords, JI Modalities, Appendix B	☑	Table 2, Section B.2
13. A baseline shall be established on a project-specific basis, in a transparent manner and taking into account relevant national and/or sectoral policies and circumstances	Marrakech Accords, JI Modalities, Appendix B	☑	Table 2, Section B.2
14. The baseline methodology shall exclude to earn CERs for decreases in activity levels outside the project activity or due to	Marrakech Accords, JI Modalities,	☑	Table 2, Section B.2

REQUIREMENT	REFERENCE	CONCLUSION	Cross Reference / Comment
force majeure	Appendix B		
15. The project shall have an appropriate monitoring plan	Marrakech Accords, JI Modalities, §33©	☑	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 – 8 12-14	DR, I	The project's spatial boundaries are clearly described for the project installation. The territory of Sugar Plant is located in province Lovech, near the city Veliko Tarnov. The territory of Zebra is located in the north of Sofia in Novi Iskar. Pirin Plast is located near Gotse Delchev in the south of Bulgaria, near the greek border.	☑	☑
A.1.2. Are the project's system (components and facilities used to mitigate GHGs) boundaries clearly defined?	1 – 8 12-14	DR, I	The Technical Description and the definition of project boundaries presented in the PDD, gives an overview of the project's system. Corrective Action Request: There are some typing errors in the technical description, which make	CAR2	☑

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

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			understanding sometimes difficult. The technical descriptions should be revised.		
A.2. Technology to be employed Validation 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 current good practices?	1 – 8 12-14	DR, I	Yes it does, technological and usual good practices of increasing energy efficiency	☑	☑
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 – 8 11–13 15–36	DR, I	Yes, state of the art is used by each of the subprojects.	☑	☑
A.2.3. Is the project technology likely to be substituted by other or more efficient technologies within the project period?	1 – 8 12-14 15–36	DR, I	It is not likely that the project technology will be substituted by a more efficient technology.	☑	☑
A.2.4. Does the project require extensive initial training and maintenance efforts in order to work as presumed during the project period?	1 – 8 12-14 15–36	DR, I	The project does not require extensive. For the first year the supplier of CHP-Module for Zebra fulfils the tasks for training the personnel and for maintenance.	☑	☑
A.2.5. Does the project make provisions for meeting training and maintenance needs?	1 – 8 12-14	DR, I	Yes, see comment above.	☑	☑

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

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
B. Project Baseline The validation 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 – 8 9, 10 12-14	DR, I	Yes, the CDM methodology AMS II.D which is designed for project activities aimed at energy efficiency is eligible for this project. The subprojects can be considered as small scale project.	☑	☑
B.1.2. Does the baseline methodology specify data sources and assumptions?	1 – 8 9, 10 12-14	DR, I	The baseline methodologies do not specify sufficiently data sources and assumptions. <u>Corrective Action Request:</u> The methodologies should specify data sources and assumptions of each used/assumed figure (e.g. efficiencies, caloric values, emission factors, fuel consumption….).	CAR3	☑
B.1.3. Does the baseline methodology sufficiently describe the underlying rationale for the algorithm/formulae used to determine baseline	1 – 8 9, 10 12-14	DR, I	The baseline methodologies do not sufficiently describe the formula to	CAR4	☑

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
emissions (e.g. marginal vs. average, etc.)			determine baseline emissions. Corrective Action Request: The used rationale and formulas for baseline emissions should be indicated.		
B.1.4. Does the baseline methodology specify types of variables used (e.g. fuels used, fuel consumption rates, etc)?	1 – 8 9, 10 12-14	DR, I	The baseline methodology does specify all necessary variables.	☑	☑
B.1.5. Does the baseline methodology specify the spatial level of data (local, regional, national)?	1 – 8 9, 10 12-14	DR, I	The spatial levels of data are not specified in detail but can be considered as appropriate.	☑	☑
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 – 8 9, 10 12-14	DR, I	The application of methodology and the determination of the baseline are not sufficiently transparent. Sugar Plant: The idea of the baseline determination is in principle well applicable. Besides efficiency of boiler and efficiency improvement due heat exchanger the other necessary		

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			parameters like steam production, electricity generation by turbines and several emission factors are not indicated and described. Zebra: The idea of baseline determination is in principle applicable. Besides electricity savings has the net-generation of cogeneration unit to be regarded for baseline determination. Pirinplast: The idea of baseline determination is in principle applicable. <u>Corrective Action Request:</u> The methodologies should be demonstrated in detail. All involved parameters should be indicated. The used formulas should be mentioned.	**CAR5**	☑
B.2.2. Has the baseline been determined using conservative assumptions where possible?	1 – 8 9, 10 12-14	DR, I	In some cases conservative assumptions where used. For determining baseline emissions the use of efficiency of heat exchangers under test circumstances can not be considered as conservative. <u>Clarification Request:</u>	**CR1**	☑

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			The used assumptions should be checked whether they are sufficiently conservative.		
B.2.3. Has the baseline been established on a project-specific basis?	1 – 8 9, 10 12-14	DR, I	Yes, project-specific baselines have been developed.	☑	☑
B.2.4. Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?	1 – 8 9, 10 12-14	DR, I	In principle yes. Corrective action request: However it is not shown which baseline emission factor for the electricity grid is used and why the chosen factor is eligible for this project.	CAR6	☑
B.2.5. Is the baseline determination compatible with the available data?	1 – 8 9, 10 12-14	DR, I	Yes, The inspected data during on-site-assessment shows that the selected baseline is based on available technical descriptions and annual reports.	☑	☑
B.2.6. Does the selected baseline represent a likely scenario in the absence of the project?	1 – 8 12-14	DR, I	Yes, the selected baselines represent the likely scenarios.	☑	☑
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	1 – 8 9, 10 12-14	DR, I	The additionality of the project is proven by using the barrier test according Attachment A to Appendix B of the simplified modalities and procedures for small–scale CDM project activities. The PDD demonstrates additionality in	CAR7	☑

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
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)?			particular with the combination of the following barriers: - prevailing practice and lack of awareness on modern technologies for energy efficiency improvements because relatively low prices for fuel. - risk of to gain provisioned electricity generation due weather risk - lack of access to finance because of high investment costs <u>Corrective action request:</u> Because of the independent subprojects it should be shown that each subproject itself is not a likely baseline scenario. Especially the technological barrier and the prevailing practice should be specified for each individual subproject.		
B.2.8. Have the major risks to the baseline been identified?	1 – 8 9, 10 12-14	DR, I	Risks for the baseline were not discussed in the PDD. <u>Corrective Action Request:</u> It should be analyzed which major risks do exist for each individual project.	CAR8	☑
B.2.9. Is all literature and sources clearly referenced?	1 – 8 12-14	DR, I	Yes, all literature and sources clearly referenced		☑

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 – 8 12-14	DR, I	Yes mainly, several starting dates for each sub-project are defined. It is not obviously which activities are interconnected with that dates. It is assumed that the beginning of the construction is combined with the respective starting date. The estimated operational lifetimes of 8 and seven years are reasonable. The starting date of sub-project Sugar Plants is the earliest indicated starting date and is defined as the July 1, 2004. Hence the starting date of the project is July 1, 2004.		☑
C.1.2. Is the project's crediting time clearly defined?	1 – 8 12-14	DR, I	The crediting period when ERUs can be generated is defined as the whole Kyoto period from January 1, 2008 to December 31, 2012		☑

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
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 – 8 12-14	DR, I	The used methodology is referenced to the same SSC-Methodologie AMS II.D. as for the baseline methodology.		☑
D.1.2. Is the selected monitoring methodology supported by the monitored and recorded data?	1 – 8 12-14	DR, I	No, the monitoring methodology does not correspond to the individual energy efficiency measures and to the baseline determination. The monitoring parameters for baseline emissions and project emissions are not specified for the individual subproject. <u>Corrective Action Request:</u> The monitoring plan should be strongly revised and should also be specified for the individual subproject.	CAR9	☑
D.1.3. Are the monitoring provisions in the monitoring methodology consistent with the project	1 – 8 12-14	DR, I	Yes, the monitoring parameters are consistent with methodology and project	☑	☑

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
boundaries in the baseline study?			boundaries of the baseline approach.		
D.1.4. Have any needs for monitoring outside the project boundaries been evaluated and if so, included as applicable?	1 – 8 12-14	DR, I	There is no need to monitor outside of project boundaries.	☑	☑
D.1.5. Does the monitoring methodology allow for conservative, transparent, accurate and complete calculation of the ex post GHG emissions?	1 – 8 12-14	DR, I	Yes, monitoring methodology allows reasonable calculation of GHG emissions.	☑	☑
D.1.6. Is the monitoring methodology clear and user friendly?	1 – 8 12-14	DR, I	It can not be assessed in this stage. See CAR9		☑
D.1.7. Does the methodology mitigate possible monitoring errors or uncertainties addressed?	1 – 8 12-14	DR, I	The PDD does not contain any analysis of monitoring errors or uncertainties. <u>Corrective Action Request:</u> Possible monitoring errors or uncertainties should be analysed. If necessary, mitigation measures have to be defined.	CAR10	☑
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	1 – 8 12-14, 37	DR, I	No, the monitoring methodology does not correspond to the individual energy efficiency measures and to the baseline determination. The monitoring parameters		

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
boundary during the crediting period?			are not specified for the individual subproject. Corrective Action Request see CAR 9	See CAR9	☑
D.2.2. Are the choices of project GHG indicators reasonable?	1 – 8 12-14	DR, I	No, e.g. the fuel demand and emission factors are not mentioned. See above CAR9		☑
D.2.3. Will it be possible to monitor / measure the specified project GHG indicators?	1 – 8 12-14	DR, I	Yes, in principle it will be possible:	☑	☑
D.2.4. Will the indicators enable comparison of project data and performance over time?	1 – 8 12-14	DR, I	Yes.	☑	☑
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 – 8 12-14	DR, I	No indicators have been defined and no leakage emissions are monitored according to the monitoring plan as there are no emissions to be expected. Clarification Request: Nevertheless it should be regarded, that due reduced electricity demand from the grid the electricity sector would indirectly need less allowances to emit within the EU Emissions Trading System. Hence by	CR2	☑

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			preparing the national allocation plan the Bulgarian JI projects must be taken into consideration. Letter of Endorsement should be provided to the audit team.		
D.3.2. Have relevant indicators for GHG leakage been included?	1 – 8 12-14	DR, I	See comment above.		☑
D.3.3. Does the monitoring plan provide for the collection and archiving of all relevant data necessary for determining leakage?	1 – 8 12-14	DR, I	See comment above.		☑
D.3.4. Will it be possible to monitor the specified GHG leakage indicators?	1 – 8 12-14	DR, I	See comment above.		☑
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 – 8 12-14, 37	DR, I	No, the monitoring plan does not correspond to the baseline determination. The monitoring plan is not specified for the individual subproject. See CAR 9	See CAR9	☑
D.4.2. Is the choice of baseline indicators, in particular for baseline emissions, reasonable?	1 – 8 12-14, 37	DR, I	No, see CAR9 above		

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

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
D.4.3. Will it be possible to monitor the specified baseline indicators?	1 – 8 12-14	DR, I	Yes.	☑	☑
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 – 8 12-14	DR, I	No, it is shown that there are not any relevant environmental impacts. The construction permission which takes into consideration environmental aspects does not foresee any monitoring of environmental impacts.	☑	☑
D.5.2. Will it be possible to monitor the specified environmental impact indicators?	1 – 8 12-14	DR, I	See comment above	☑	☑
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 – 8 12-14	DR, I	Yes, the project owner and operator are responsible for the project.	☑	☑
D.6.2. Is the authority and responsibility for registration, monitoring, measurement and reporting clearly described?	1 – 8 12-14	DR, I	Yes, the authority and responsibility for registration, monitoring, measurement and reporting is clearly described. The relevant persons for collection the data and	☑	☑

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

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			implementing the monitoring plan and reporting are specified.		
D.6.3. Are procedures identified for training of monitoring personnel?	1 – 8 12-14	DR, I	Yes, procedures are identified for training of monitoring personnel.	☑	☑
D.6.4. Are procedures identified for emergency preparedness where emergencies can result in unintended emissions?	1 – 8 12-14	DR, I	Yes, procedures are identified for emergency cases.	☑	☑
D.6.5. Are procedures identified for calibration of monitoring equipment?	1 – 8 12-14	DR, I	Yes, the PDD describes procedures for calibration/adjustment of monitoring equipment.	☑	☑
D.6.6. Are procedures identified for maintenance of monitoring equipment and installations?	1 – 8 12-14	DR, I	Yes, see comments above	☑	☑
D.6.7. Are procedures identified for monitoring, measurements and reporting?	1 – 8 12-14	DR, I	Yes, see comments above	☑	☑
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 – 8 12-14	DR, I	Yes, see comments above	☑	☑
D.6.9. Are procedures identified for dealing with possible monitoring data adjustments and uncertainties?	1 – 8 12-14	DR, I	Yes, see comments above	☑	☑
D.6.10. Are procedures identified for internal audits of GHG project compliance with operational requirements where applicable?	1 – 8 12-14	DR, I	Yes, see comments above	☑	☑
D.6.11. Are procedures identified for project	1 – 8	DR,	Yes, see comments above	☑	☑

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

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
performance reviews?	12-14	I			
D.6.12. Are procedures identified for corrective actions?	1 – 8 12-14	DR, I	Yes, see comments above	☑	☑
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 validation 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 – 8 12-14	DR, I	See CAR8, CAR9		☑
E.1.2. Are the GHG calculations documented in a complete and transparent manner?	1 – 8 12-14	DR, I	No calculations in chapter E are demonstrated. The calculations in chapter A.2. are not correspondent to the baseline methodology. These are not eligible to calculate GHG emissions by monitored data. <u>Corrective Action Request:</u> The calculations should be documented complete and in detail. They should be	CAR11	☑

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			reproducible by third party.		
E.1.3. Have conservative assumptions been used to calculate project GHG emissions?	1 – 8 12-14	DR, I	See CAR8 and CAR9		☑
E.1.4. Are uncertainties in the GHG emissions estimates properly addressed in the documentation?	1 – 8 12-14	DR, I	Uncertainties in the GHG estimates are mentioned, but not completely. Corrective Action Request: For all relevant data it should be the uncertainties analysed. It should be described if uncertainties in the emissions estimates have to be addressed.	CAR12	☑
E.1.5. Have all relevant greenhouse gases and source categories listed in Kyoto Protocol Annex A been evaluated?	1 – 8 12-14	DR, I	Yes.	☑	☑
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 – 8 12-14	DR, I	Leakage calculations are not requested	☑	☑
E.2.2. Have these leakage effects been properly accounted for in calculations?	1 – 8 12-14	DR, I	See comment above	☑	☑

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
E.2.3. Does the methodology for calculating leakage comply with existing good practice?	1 – 8 12-14	DR, I	See comment above	☑	☑
E.2.4. Are the calculations documented in a complete and transparent manner?	1 – 8 12-14	DR, I	See comment above	☑	☑
E.2.5. Have conservative assumptions been used when calculating leakage?	1 – 8 12-14	DR, I	See comment above	☑	☑
E.2.6. Are uncertainties in the leakage estimates properly addressed?	1 – 8 12-14	DR, I	See comment above	☑	☑
E.3. Baseline Emissions The validation 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 – 8 12-14	DR, I	No, see CAR8, CAR9		☑
E.3.2. Are the baseline boundaries clearly defined and do they sufficiently cover sources and sinks for baseline emissions?	1 – 8 12-14	DR, I	No, see CAR8 and CAR9		☑
E.3.3. Are the GHG calculations documented in a complete and transparent manner?	1 – 8 12-14	DR, I	No, see CAR11		☑
E.3.4. Have conservative assumptions been used when calculating baseline emissions?	1 – 8 12-14	DR, I	Yes.	☑	☑
E.3.5. Are uncertainties in the GHG emission estimates properly addressed in the	1 – 8	DR,	See CAR10		☑

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
documentation?	12-14	I			
E.3.6. Have the project baseline(s) and the project emissions been determined using the same appropriate methodology and conservative assumptions?	1 – 8 12-14	DR, I	Yes.		☑
E.4. Emission Reductions Validation 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 – 8 12-14	DR, I	Yes.	☑	☑
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 – 8 12-14	DR, I	Yes, No EIAs were necessary, because of low adverse impacts of energy efficiency measures.	☑	☑
F.1.2. Are there any Host Party requirements for an Environmental Impact Assessment (EIA), and if yes, is an EIA approved?	1 – 8 12-14	DR, I	No.	☑	☑
F.1.3. Will the project create any adverse environmental effects?	1 – 8 12-14	DR, I	Yes, but only very low impacts like noise could be expected during construction	☑	☑

CHECKLIST QUESTION	Ref.	MoV*	COMMENTS	Draft Concl.	Final Concl.
			works		
F.1.4. Are transboundary environmental impacts considered in the analysis?	1 – 8 12-14	DR, I	Transboundary impacts will not be expected.	☑	☑
F.1.5. Have identified environmental impacts been addressed in the project design?	1 – 8 12-14	DR, I	No, there are not any impacts which have to be addressed in the project design. .	☑	☑
F.1.6. Does the project comply with environmental legislation in the host country?	1 – 8 12-14	DR, I	<u>Clarification Request:</u> The constructions permits should be provided to the validation team as far as possible.	CR3	☑

Table 3 Resolution of Corrective Action and Clarification Requests

Draft report clarifications and corrective action requests	Ref. to checklist question in table 2	Summary of project owner response	Determination conclusion
CAR 1.	Table 1	The Approvals will be provided at the end of the validation.	The Letter of Approvals by both parties shall be submitted to TÜV SÜD at time of its availability. In case the issuance of ERUs will be done under the "First Track JI"- regime, there is no requirement to provide the validator such a LoA in order to forward it to the Supervisory Committee.
CAR2	A.1.2	A revised PDD was submitted.	The description is now described plausible. This issue is considered to be resolved.
CAR3	B.1.2.	A revised PDD was submitted.	The needed parameters for baseline and project emissions are now regarded. Now even the emission factors of coal and oil the used assumptions and factors are sufficiently referenced (Revised 1996 IPCC Guidelines for National GHG inventories) and derived. This issue is considered to be resolved.
CAR4 The baseline methodologies do not	B.1.4.	A revised PDD was submitted.	The final revision of PDD describes sufficiently the formulas to determine

Draft report clarifications and corrective action requests	Ref. to checklist question in table 2	Summary of project owner response	Determination conclusion
sufficiently describe the formula to determine baseline emissions. The used rationale and formulas for baseline emissions should be indicated.			baseline emissions and project emissions. The respective calculation spread sheet as electronic version was submitted (CO2eq_EE_10_08_06.xls)
CAR5 The methodologies should be demonstrated in detail. All involved parameters should be indicated. The used formulas should be mentioned.	B2.1	A revised PDD was submitted.	The methodologies are demonstrated in detail. All involved parameters are indicated. The used formulas are mentioned at least in the respective calculation spread sheet (CO2eq_EE_10_08_06.xls). This issue is considered to be resolved.
CR1 The used assumptions should be checked whether they are sufficiently conservative.	B.2.2	A revised PDD was submitted.	The used assumptions are sufficiently conservative. This issue is considered to be resolved.
CAR6 The PDD does not show which baseline emission factor for the electricity grid is used and why the chosen factor is eligible for this project.	**B.2.4**	A revised PDD was submitted.	This issue is considered to be resolved.
CAR7 Because of the independent sub projects it should be shown that	**B.2.7**	A revised PDD was submitted.	The additionality of the project is proven by using barrier test. The PDD demonstrates additionality in particular

Draft report clarifications and corrective action requests	Ref. to checklist question in table 2	Summary of project owner response	Determination conclusion
each sub project itself is not a likely baseline scenario.			with the combination of the following barriers: - lack of access to finance because of high investment and the risk not to gain provisioned savings due production risks according economic development or due unsecured prices for electricity or fuel. - prevailing practice, lack of awareness on efficient technologies and lack of local technical expertise in terms of implementing and operating energy efficient measures - as European Commission stated, the Bulgarian Energy Strategy does not yet define an active policy to improve energy efficiency. Hence there is very limited support from Bulgarian legislation and government regarding energy efficiency. - The mentioned argument that increasing prices for natural gas would jeopardise the financial feasibility of the project can be accepted as true for the sub-project

Draft report clarifications and corrective action requests	Ref. to checklist question in table 2	Summary of project owner response	Determination conclusion
			Zebra. This issue is considered to be resolved.
CAR8 Risks for the baseline were not discussed in the PDD. It should be analyzed which major risks do exist for each individual project.	**B.2.8**	A revised PDD was submitted.	Risks for the baseline were discussed. This issue is considered to be resolved.
CAR9 The monitoring methodology does not correspond to the individual energy efficiency measures and baseline determination. The monitoring parameters for baseline emissions and project emissions are not specified for the individual subproject. Hence the monitoring plan should be strongly revised and specified for the individual subproject.	**D.1.2**	A revised PDD was submitted.	The monitoring plan does include all relevant parameters to determine baseline and project emissions for each sub project and it is possible to monitor and/or measure the currently specified GHG indicators. The indicators which are not measured can be obtained from IPCC documents and the Baseline Study from National Electric Company. The parameters defined allow calculating the baseline and project emissions in a proper manner. This issue is considered to be resolved.
CAR10 The PDD does not contain any analysis of monitoring errors or uncertainties. Possible monitoring errors or uncertainties should be	**D.1.7**	A revised PDD was submitted.	Quality control and quality assurance procedures for the data to be monitored are described in the revised PDD (Section D.6.).

Draft report clarifications and corrective action requests	Ref. to checklist question in table 2	Summary of project owner response	Determination conclusion
analysed. If necessary, mitigation measures have to be defined.			This issue is considered to be resolved.
CR2 No indicators have been defined and no leakage emissions are monitored according to the monitoring plan as there are no emissions to be expected. <u>Clarification Request:</u> Nevertheless it should be regarded, that due reduced electricity demand from the grid the electricity sector would indirectly need less allowances to emit within the EU Emissions Trading System. Hence by preparing the national allocation plan the Bulgarian JI projects must be taken into consideration. Letter of Endorsement should be provided to the audit team.	**D.3.1**	A revised PDD was submitted.	Letter of Endorsement was submitted to the validation team. This issue is considered to be resolved.
CAR11 No calculations in chapter E are demonstrated. The calculations in chapter A.2. are not correspondent to the baseline methodology. These	**E.1.2**	A revised PDD and additional excel-spread-sheets were submitted.	The calculations should be documented complete and in detail. The calculations and the used data are according to the applied methodology and its requirements. The additional submitted

Draft report clarifications and corrective action requests	Ref. to checklist question in table 2	Summary of project owner response	Determination conclusion
are not eligible to calculate GHG emissions by monitored data. The calculations should be documented complete and in detail.			excel-spread-sheet makes the calculation transparent and reproducible. This issue is considered to be resolved.
CAR12 Uncertainties in the GHG estimates are mentioned, but not completely. <u>Corrective Action Request:</u> For all relevant data it should be the uncertainties analysed. It should be described if uncertainties in the emissions estimates have to be addressed.	**E.1.4**	A revised PDD was submitted.	Quality control and quality assurance procedures for the data to be monitored are described in the revised PDD (Section D.6.). Uncertainties in the GHG emissions estimates are addressed in the documentation. This issue is considered to be resolved.
CR3 <u>Clarification Request:</u> The constructions permits should be provided to the validation team as far as possible.	**F.1.6**	A revised PDD was submitted.	No construction permits or approvals of local authorities received. No construction permits or approvals of local authorities were submitted yet to the determination team, as they will be delivered only at an advanced status of the projects implementation. This issue is considered to be resolved.

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Annex 2: Information Reference List

Reference No.	Document or Type of Information
1.	On-site interviews at the offices of Energy Institute conducted on November 22th, 2005 by auditing team of TÜV SÜD Validation team on site: Eberhard Rothfuß (Auditor) — TÜV SÜD Industrie Service GmbH Kiril Bacharev (Local Expert) — TÜV SÜD, Subsidiary Bulgaria in Stara Zagora Interviewed persons: Christo K. Christov — Energy Institute JS Co., Sofia Luben Y. Gaydarow — Energy Institute JS Co., Sofia Hristo V. Vassilev — Energy Institute JS Co., Sofia
2.	On-site interviews at the offices of Zebra AD conducted on November 22th, 2005 by auditing team of TÜV SÜD Validation team on site: Eberhard Rothfuß (Auditor) — TÜV SÜD Industrie Service GmbH Kiril Bacharev (Local Expert) — TÜV SÜD, Subsidiary Bulgaria in Stara Zagora Interviewed persons: Slavja Steftcheva — Executive Director, Zebra AD Alexander Alexandrov — Technical Director, Zebra AD Dimitar Baev — Energy Efficient Systems Ltd. Borislav Mantchev — Lintec Christo K. Christov — Energy Institute JS Co., Sofia
3.	On-site interviews at the offices of Sugar Plant conducted on November 23th, 2005 by auditing team of TÜV SÜD Validation team on site: Eberhard Rothfuß (Auditor) — TÜV SÜD Industrie Service GmbH Kiril Bacharev (Local Expert) — Subsidiary Bulgaria in Stara Zagora Interviewed persons: Plamen Kunev — Director, power plant Anatoli Botov — Head of boiler house, power plant Raisa Benkova — Head of production and technical department

Reference No.	Document or Type of Information
	Stoyan Shubekov — Investments & technical development Christo K. Christov — Energy Institute JS Co., Sofia
4.	On-site interviews at the offices of Pirinplast conducted on November 24th, 2005 by auditing team of TÜV SÜD Validation team on site: Eberhard Rothfuß (Auditor) — TÜV SÜD Industrie Service GmbH Kiril Bacharev (Local Expert) — TÜV SÜD Subsidiary Bulgaria in Stara Zagora Interviewed persons: Stoyan Vakareev — Executive director, PIRINPLAST Hristo V. Vassilev — Energy Institute JS Co., Sofia
5.	On-site interview at the United Bulgarian Bank in Sofia conducted on December 1, 2005 by auditing team of TÜV SÜD **Validation team on-site:** Klaus Nürnberger (Project manager) — TÜV SÜD Industrie Service GmbH **Interviewed persons:** Hrisimira Malcheva (Project Developer, Sector Manager) — United Bulgarian Bank, International Lending Program Stefan Vassilev — United Bulgarian Bank Christo K. Christov (Executive Director, Consultant) — Energy Institute JS Co.; Sofia
6.	On-site interview at the Ministry of Economy and Energy in Sofia conducted on December 1, 2005 by auditing team of TÜV SÜD **Validation team on-site:** Klaus Nürnberger (Project manager) — TÜV SÜD Industrie Service GmbH **Interviewed persons:** Valentina Ilieva (Chief Environmental Expert) — Ministry of Economy and Energy, Environmental Protection Directorat Christo Schwabski — National Electric Company (NEK) Christo K. Christov (Executive Director, Consultant) — Energy Institute JS Co.; Sofia
7.	Project Design Document for JI project, published version, submitted November 2005

Reference No.	Document or Type of Information
8.	Project Design Document, final version, submitted September 2006
9.	Letter of Endorsement, Ministry of Environment and Water, 14 July 2005, Sofia
10.	Calculation of Baseline and Project Emissions, CO2eq_EE_10_08_06.xls, version from August 10, 2006
11.	Basic Data for Calculation of Baseline Emissions and Project Emissions mainly derived from REUP Studies, Revised calculation EE PDD 030806.xls, version August 3, 2006
12.	Sugar Plants: Rational Energy Utilisation for Sugar Plants Energy Efficiency Project, EnCon Services, June 2004
13.	Zebra: Rational Energy Utilisation Plan No. 25, Zebra Energy Efficiency Project, EnCon Services, May 2005,
14.	Pirinplast: Energy report "Rational Energy Utilisation Plan No. 20 Pirinplast Energy Efficiency Project", EnCon Service, March 2005
15.	Sugar Plant: Extracts of the tutorial program for the personnel of the power plant
16.	Sugar Plant: Extracts of the manual for maintenance and inspection of the metering equipment
17.	Sugar Plant: Permission for the power plant from Ministry of Environment of Bulgaria, 24.06.2005
18.	Sugar Plant: Copy of telefax of price for mazute from 09.09.2005
19.	Sugar Plant: Copy of telefax of price for mazute from 01.10.2005
20.	Sugar Plant: Technical data for mazute from 25.01.2005
21.	Sugar Plant: Technical data and analysis for coal from 22.04.2004
22.	Sugar Plant: Acceptance protocol from technical inspection, 11.11.05
23.	Sugar Plant: Contract for coal supply from 06.01.2004
24.	Sugar Plant: Copy of note of price for coal from 01.11.2004
25.	Sugar Plant: Monthly operating data for the boilers and turbines for the years 2002, 2003 and 2004: fuels, steam production, power generation and power consumption
26.	Sugar Plant: Technical report of boiler No. 3 (35 t/h) before improvement, feb. 2003
27.	Sugar Plant: Technical report of boiler No. 3 (35 t/h) after improvement, feb. 2005
28.	Sugar Plant: Diagrams boiler, back-pressure turbine, heat exchanger
29.	Sugar Plant: Daily operating data for boiler No. 3 for march 2005
30.	Zebra AD: Structural energy diagram with measurement points
31.	Zebra AD: Copy of bill for electrical energy consumption with the prices for electricity
32.	Zebra AD: List of the water boilers with technical data
33.	Zebra AD: Telefax with components for natural gas
34.	Zebra AD: Extracts of design specification for CHP-Module

Reference No.	Document or Type of Information
35.	Zebra AD: Extracts of CHP Module preliminary design specification
36.	Pirinplast: Copy of bill for electrical energy consumption with the prices for electricity, 31.10.2005
37.	Monitoring work sheet, prepared by DHV, submitted September 2006, “Monitoring sheet v3.xls”